



# **Responses to Public Comments on EPA's:**

**Standards of Performance for Municipal Solid Waste  
Landfills and Emission Guidelines and Compliance  
Times for Municipal Solid Waste Landfills: Proposed  
Rules**

July 2016

**Responses to Public Comments on EPA's  
Standards of Performance for Municipal Solid Waste  
Landfills and Emission Guidelines and Compliance  
Times for Municipal Solid Waste Landfills:  
Proposed Rules**

**U. S. Environmental Protection Agency  
Office of Air Quality Planning and Standards  
Sector Policies and Program Division  
Fuels and Incineration Group (MD E143-05)  
Research Triangle Park, NC 27711**

## FOREWORD

This document provides the EPA's responses to public comments on the EPA's Proposed *Standards of Performance for Municipal Solid Waste Landfills* (Standards of Performance) and *Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills* (Emission Guidelines). The EPA published four Federal Register notices related to these two landfills regulations:

- Advanced Notice of Proposed Rulemaking for the Emission Guidelines (July 17, 2014 at 79 FR 41772) (ANPRM)
- Notice of Proposed Rulemaking for the Standards of Performance (July 17, 2014 at 79 FR 41796)
- Supplemental Proposal to the Notice of Proposed Rulemaking for the Standards of Performance (August 27, 2015 at 80 FR 52162)
- Notice of Proposed Rulemaking for the Emission Guidelines (August 27, 2015 at 80 FR 52100).

The EPA received comments on these proposed rules via mail, email, and facsimile. The EPA also held one public hearing on August 12, 2014 at the EPA William Jefferson Clinton East Building, 1201 Constitution Avenue NW, Washington, DC. Copies of all comments submitted and a transcript of the public hearing are available at the EPA Docket Center Public Reading Room. Comments letters and transcripts of the public hearings are also available electronically through <http://www.regulations.gov> by searching Docket ID *EPA-HQ-OAR-2003-0215* and *EPA-HQ-OAR-2014-0451*.

In this document, the EPA provides responses to public comments received on the three notices of proposed rulemakings for the Standards of Performance and the Emission Guidelines. The EPA combined the responses to comments for the two rules because the Standards of Performance and Emission Guidelines are similar rules, and many commenters submitted either identical comment letters or comment letters with significant overlap of issues to both dockets. The EPA also recognized that, for this unique source category, comments submitted for one notice may be relevant to the review of the other. The EPA considered information and comments that it received on the Emission Guidelines in evaluating potential changes to the requirements for new sources beyond those in the July 17, 2014, proposed rule. Although the EPA is not legally obligated to provide responses to the Advanced Notice of Proposed Rulemaking on the Emission Guidelines, the EPA considered the information received in response to the ANPRM in evaluating whether additional changes beyond those in the proposed revisions for new sources are warranted. Although the EPA considered the information received in comments on the ANPRM, this document contains comments received on only the three notices of proposed rulemakings.

This document contains verbatim comment excerpts from the comment letters and the public hearing on the proposed rulemakings. For each comment excerpt, the name and affiliation of the commenter, the document control number (DCN) assigned to the comment letter, and the number of the comment excerpt are provided. *Table 1* of this document provides a complete list of the DCNs and affiliations included in this document. In some cases, commenters incorporated

by reference all or part of a comment letter submitted by another commenter. Rather than repeat the associated comment excerpts for each commenter, the EPA has listed the comment excerpt only once and provided a list of all the commenters who otherwise incorporated the comments by reference in *Table 2* of this document.

This document organizes the comment excerpts into comment codes. A comment code is an identifier for a group of similar topics. Each comment excerpt from the public comment letters and the public hearing appears in a comment code. The EPA provides its responses to comments after each comment excerpt. If commenters raised similar or related issues, the EPA has sorted these comments together, provided a single response after the first comment excerpt in the sort order, and referenced this response in the other comment excerpts. In these cases, the EPA references the appropriate DCN and excerpt number in a specific comment code. *Table 3* serves as an index to identify the section of this document that corresponds with each comment code.

Due to the size and scope of this rulemaking, the EPA paraphrased a limited amount of major comment themes, and those paraphrased comments appear in the preamble of the final rule. In these cases, the EPA provided responses to specific comments or groups of similar comments in the preamble to the final rulemaking. Rather than repeating those responses in this document, readers are referenced to a specific section of the preamble to the final Standards of Performance or the preamble to the Emission Guidelines, as applicable.

The primary contact regarding questions or comments on this document is:

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U.S. Environmental Protection Agency

Office of Air Quality Planning and Standards

Sector Policies and Programs Division

Fuels and Incineration Group (E143-05)

Research Triangle Park, North Carolina 27711

Comments, letters, and the public hearing transcript are also available electronically through <http://www.regulations.gov> by searching Docket ID *EPA-HQ-OAR-2003-0215* and *EPA-HQ-OAR-2014-0451*.

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**Table 1. List of Commenters from  
DCN No. EPA-HQ-OAR-2003-0215 and EPA-HQ-OAR-2014-0451**

DCN	NAME	AFFILITATION	DUPLICATE DCN
EPA-HQ-OAR-2003-0215-0076	Anonymous public comment	Private Citizen	
EPA-HQ-OAR-2003-0215-0077.1	Comment submitted by William O'Sullivan, Director, Division of Air Quality	New Jersey Department of Environmental Protection (DEP)	
EPA-HQ-OAR-2003-0215-0078.1	Comment submitted by Catharine Fitzsimmons, Chief, Air Quality Bureau	Iowa Department of Natural Resources (DNR)	
EPA-HQ-OAR-2003-0215-0079.1	Comment submitted by Craig W. Butler, Director	Ohio EPA	
EPA-HQ-OAR-2003-0215-0080.1	Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy	SBA Office of Advocacy	EPA-HQ-OAR-2014-0451-0031.1
EPA-HQ-OAR-2003-0215-0081.1	Comment submitted by Todd Parfitt, Director	Wyoming Department of Environmental Quality (WDEQ)	
EPA-HQ-OAR-2003-0215-0082.1	Comment submitted by William C. Allison V., Director, Air Pollution Control Division	Colorado Department of Public Health and Environment	
EPA-HQ-OAR-2003-0215-0083	Comment submitted by Matt Lamb	Smith Gardner, Inc	
EPA-HQ-OAR-2003-0215-0084.1	Comment submitted by Charlie Sedlock, Director	Hamm, Inc.	= EPA-HQ-OAR-2014-0451-0200
EPA-HQ-OAR-2003-0215-0085.1	Comment submitted by Kelly Dixon, Director, Land Protection Division	Oklahoma Department of Environmental Quality (DEQ)	
EPA-HQ-OAR-2003-0215-0087	Public Hearing Transcript	Various Speakers - see original file	
EPA-HQ-OAR-2003-0215-0088.1	Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director	Wisconsin Department of Natural Resources (WDNR)	
EPA-HQ-OAR-2003-0215-0089.1	Comment submitted by Sheila Holman, Director, Division of Air Quality	North Carolina Department of Environment and Natural Resources (NCDENR)	
EPA-HQ-OAR-2003-0215-0090	Anonymous public comment	Private Citizen	
EPA-HQ-OAR-2003-0215-0091.1	Comment submitted by Paul Aud, Environmental Engineering Manager	Louisville Metro Air Pollution Control District (APCD)	

**Table 1. List of Commenters from  
DCN No. EPA-HQ-OAR-2003-0215 and EPA-HQ-OAR-2014-0451**

DCN	NAME	AFFILITATION	DUPLICATE DCN
EPA-HQ-OAR-2003-0215-0092.1	Comment submitted by Patrick S. Sullivan, Senior Vice President and Raymond H. Huff, Vice President	SCS Engineers	EPA-HQ-OAR-2014-0451-0046.1
EPA-HQ-OAR-2003-0215-0093.1	Comment submitted by Jeffrey Vandebusch	Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)	
EPA-HQ-OAR-2003-0215-0094.1	Comment submitted by Joanne Spalding, Senior Attorney	Sierra Club Environmental Law Program	EPA-HQ-OAR-2014-0451-0051.1
EPA-HQ-OAR-2003-0215-0095.1	Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney	Environmental Defense Fund (EDF)	EPA-HQ-OAR-2014-0451-0038
EPA-HQ-OAR-2003-0215-0096.1	Comment submitted by Michael J. Barden	Hydro Geo Chem, Inc.	EPA-HQ-OAR-2014-0451-0042.1
EPA-HQ-OAR-2003-0215-0098.1	Comment submitted by Peter Anderson, Executive Director	Center for a Competitive Waste Industry	
EPA-HQ-OAR-2003-0215-0099.1	Comment submitted by Niki Wuestenberg, Manager, Air Compliance	Republic Services	
EPA-HQ-OAR-2003-0215-0100.1	Comment submitted by Kerry Kelly, Senior Director, Federal Affairs	Waste Management (WM)	EPA-HQ-OAR-2014-0451-0037.1
EPA-HQ-OAR-2003-0215-0101.1	Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal	Golder Associates Inc.	EPA-HQ-OAR-2014-0451-0053.1
EPA-HQ-OAR-2003-0215-0102.1	Comment submitted by Dave Heitz	Geosyntec Consultants	EPA-HQ-OAR-2014-0451-0201
EPA-HQ-OAR-2003-0215-0103	Comment submitted by Richard N. Lindstrom, P.E.	Private Citizen	
EPA-HQ-OAR-2003-0215-0104.1	Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager	Burns & McDonnell	EPA-HQ-OAR-2014-0451-0040.1
EPA-HQ-OAR-2003-0215-0105.1	Comment submitted by Dave McElroy, Landfill Superintendent	City of Sioux Falls Public Works, Sioux Falls, South Dakota	EPA-HQ-OAR-2014-0451-0041.1

**Table 1. List of Commenters from  
DCN No. EPA-HQ-OAR-2003-0215 and EPA-HQ-OAR-2014-0451**

DCN	NAME	AFFILITATION	DUPLICATE DCN
EPA-HQ-OAR-2003-0215-0108.1	Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)	Solid Waste Association of North America (SWANA)	EPA-HQ-OAR-2014-0451-0023.1 EPA-HQ-OAR-2014-0451-0062.1
EPA-HQ-OAR-2003-0215-0109.1	Comment submitted by Matt K. Stutz, Principal	Weaver Boos Consultants (WBC)	EPA-HQ-OAR-2014-0451-0063.1
EPA-HQ-OAR-2003-0215-0110.1	Comment submitted by Mark C. Messics, Senior Business Development Manager	PPL Renewable Energy, LLC	
EPA-HQ-OAR-2003-0215-0112.1	Comment submitted by Barry R. Stephens,	Tennessee Department of Environment and Conservation- Air Pollution Control (TDEC-APC)	
EPA-HQ-OAR-2003-0215-0113.1	Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems	Delaware Solid Waste Authority (DSWA)	EPA-HQ-OAR-2014-0451-0056.1
EPA-HQ-OAR-2003-0215-0114.1	Comment submitted by Kimberly Smelker	Granger III and Associates, LLC	EPA-HQ-OAR-2014-0451-0057.1
EPA-HQ-OAR-2003-0215-0115.1	Comment submitted by Sharon R. Frank, Manager, Environmental Compliance	Montauk Energy	EPA-HQ-OAR-2014-0451-0058.1
EPA-HQ-OAR-2003-0215-0116.1	Comment submitted by Grady McCallie, Policy Director	NC Conservation Network	EPA-HQ-OAR-2014-0451-0059.1
EPA-HQ-OAR-2003-0215-0117.1	Comment submitted by Michael Rice, Past President	Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)	EPA-HQ-OAR-2014-0451-0060.1
EPA-HQ-OAR-2003-0215-0118.1	Comment submitted by Curt Publow	Decatur Hills Inc.	
EPA-HQ-OAR-2003-0215-0119.1	Comment submitted by Richard Boyd, Manager, Process Evaluation Section, Transportation and Toxics Division	California Air Resources Board (ARB)	EPA-HQ-OAR-2014-0451-0070.1

**Table 1. List of Commenters from  
DCN No. EPA-HQ-OAR-2003-0215 and EPA-HQ-OAR-2014-0451**

DCN	NAME	AFFILITATION	DUPLICATE DCN
EPA-HQ-OAR-2003-0215-0121	Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity	Friends of the Earth	
EPA-HQ-OAR-2003-0215-0122	Juene Franklin, P.E.	Franklin Engineers & Consultants, LLC	
EPA-HQ-OAR-2003-0215-0188	Anonymous public comment	Private Citizen	
EPA-HQ-OAR-2003-0215-0189	Amanda B. (no surname provided)	Private Citizen	
EPA-HQ-OAR-2003-0215-0190	Matt Lamb, Scientist, Smith Gardner, Inc.	Smith Gardner, Inc.	EPA-HQ-OAR-2014-0451-0165
EPA-HQ-OAR-2003-0215-0191	Ali Mirzakhaili, Director	State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality	EPA-HQ-OAR-2014-0451-0170
EPA-HQ-OAR-2003-0215-0193	Anonymous public comment	Private Citizen	
EPA-HQ-OAR-2003-0215-0194	Ellen Smyth, President	Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)	EPA-HQ-OAR-2014-0451-0173
EPA-HQ-OAR-2003-0215-0195	Kelly Dixon, Director	Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)	EPA-HQ-OAR-2014-0451-0174
EPA-HQ-OAR-2003-0215-0196	Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO	National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)	EPA-HQ-OAR-2014-0451-0186
EPA-HQ-OAR-2003-0215-0197	Robert H. Colby and William O'Sullivan, Co-Chairs	National Association of Clean Air Agencies (NACAA)	EPA-HQ-OAR-2014-0451-0187
EPA-HQ-OAR-2003-0215-0198	Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs	Waste Management (WM)	EPA-HQ-OAR-2014-0451-0192
EPA-HQ-OAR-2003-0215-0202	Niki Wuestenberg, Manager, Air Compliance	Republic Services	
EPA-HQ-OAR-2003-0215-0204	Peter Zalzal	Environmental Defense Fund (EDF)	EPA-HQ-OAR-2014-0451-0181
EPA-HQ-OAR-2014-0451-0144	Arielle Eiser	National Society of Professional Engineers	

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DCN No. EPA-HQ-OAR-2003-0215 and EPA-HQ-OAR-2014-0451**

DCN	NAME	AFFILITATION	DUPLICATE DCN
EPA-HQ-OAR-2014-0451-0145	Jeffrey Vandebusch	Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills	
EPA-HQ-OAR-2014-0451-0146	Sean Alteri, Director	Division for Air Quality, Kentucky Department for Environmental Protection	
EPA-HQ-OAR-2014-0451-0148	S. Woodson	Private Citizen	
EPA-HQ-OAR-2014-0451-0149	Marc C. Bruner, Chief Administrative Officer	Solid Waste Authority of Palm Beach County Florida (SWA)	
EPA-HQ-OAR-2014-0451-0152	Edgard Chow, TS&D Manager	Kuraray	
EPA-HQ-OAR-2014-0451-0153	Anonymous public comment	Private Citizen	
EPA-HQ-OAR-2014-0451-0154	Ronald W. Gore, Chief, Air Division	Alabama Department of Environmental Management (ADEM)	
EPA-HQ-OAR-2014-0451-0155	Claudia R. Rodgers, Acting Chief Counsel	Small Business Administration	EPA-HQ-OAR-2003-0215-0187
EPA-HQ-OAR-2014-0451-0156	Karen D. Hays, chief, Air Protection Branch	Georgia Environmental Protection Division (EPD)	
EPA-HQ-OAR-2014-0451-0157	E. James Ferland, Chairman and Chief Executive Officer	Babcock and Wilcox	
EPA-HQ-OAR-2014-0451-0158	John Teppets, Director	Idaho Department of Environmental Quality (DEQ)	
EPA-HQ-OAR-2014-0451-0159	Landtec	Landtec	
EPA-HQ-OAR-2014-0451-0160	Mark C. Messics, Senior Business Development Manager	Talen Renewable Energy, LLC	
EPA-HQ-OAR-2014-0451-0161	Becky Tooley, Mayor, Office of City Commission	Coconut Creek, Florida	
EPA-HQ-OAR-2014-0451-0162	Catharine Fitzsimmons, Chief, Air Quality Bureau	Iowa Department of Natural Resources (Iowa DNR)	
EPA-HQ-OAR-2014-0451-0163	William C. Allison V, Director, Air pollution Control Division	Colorado Department of Public Health and Environment	
EPA-HQ-OAR-2014-0451-0166	Richard M. DiGia, President & CEO	Aria Energy	
EPA-HQ-OAR-2014-0451-0167	T.Thalhamer and V.Babrauskas	P. Foss-Smith	= EPA-HQ-OAR-2003-0215-0207



**Table 1. List of Commenters from  
DCN No. EPA-HQ-OAR-2003-0215 and EPA-HQ-OAR-2014-0451**

DCN	NAME	AFFILITATION	DUPLICATE DCN
EPA-HQ-OAR-2014-0451-0168	Jennifer Marsee, Bureau Supervisor	Regional Air Pollution Control Agency (RAPCA)	= EPA-HQ-OAR-2003-0215-0208
EPA-HQ-OAR-2014-0451-0169	John Quigley, Secretary	Pennsylvania Department of Environmental Protection (DEP)	
EPA-HQ-OAR-2014-0451-0175	Ted Michaels, President	Energy Recovery Council (ERC)	
EPA-HQ-OAR-2014-0451-0176	Niki Wuestenberg, Manager, Air Compliance	Republic Services	
EPA-HQ-OAR-2014-0451-0177	Stephanie Jones and Jason Schwartz	Institute for Policy Integrity	EPA-HQ-OAR-2003-0215-0203
EPA-HQ-OAR-2014-0451-0178	Barbara Klipp, Zero Waste Community Leader	Sierra Club, et al.	EPA-HQ-OAR-2003-0215-0209
EPA-HQ-OAR-2014-0451-0179	Andrew Campanella, Chief Executive Officer (CEO)	Loci Controls, Inc.	
EPA-HQ-OAR-2014-0451-0180	Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager	Cornerstone Environmental Group, LLC	
EPA-HQ-OAR-2014-0451-0182	John H. Dane, CAE, Executive Director	California Resource Recovery Association (CRRA)	
EPA-HQ-OAR-2014-0451-0183	Lynn Fieder, Division Chief, Air Quality Division	State of Michigan Department of Environmental Quality (MDEQ)	
EPA-HQ-OAR-2014-0451-0184	John R. Holladay	Local Government Coalition for Renewable Energy	
EPA-HQ-OAR-2014-0451-0185	Paul Gilman, Senior Vice President, Chief Sustainability Officer	Covanta	
EPA-HQ-OAR-2014-0451-0189	Darin Schroeder, Associate Attorney	Clean Air Task Force (CATF)	
EPA-HQ-OAR-2014-0451-0190	Richard L. Goodyear, Bureau Chief, Air Quality Bureau, Environment Department,	State of New Mexico	
EPA-HQ-OAR-2014-0451-0191	Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator	Californians Against Waste, et al.	
EPA-HQ-OAR-2014-0451-0193	Anonymous public comment		

**Table 1. List of Commenters from  
DCN No. EPA-HQ-OAR-2003-0215 and EPA-HQ-OAR-2014-0451**

<b>DCN</b>	<b>NAME</b>	<b>AFFILITATION</b>	<b>DUPLICATE DCN</b>
EPA-HQ-OAR-2014-0451-0194	Hydro Geo Chem, Inc.	Hydro Geo Chem, Inc.	
EPA-HQ-OAR-2014-0451-0196	Rachel Cleetus, Senior Climate Economist	Union of Concerned Scientists et al.	EPA-HQ-OAR-2003- 0215-0200
EPA-HQ-OAR-2014-0451-0197	Frank L. Kohlasch, Manager, Air Assessment Section Environmental Analysis and Outcome Division	Minnesota Pollution Control Agency (MPCA)	
EPA-HQ-OAR-2014-0451-0198	Allison D. Wood, Counsel	Utility Air Regulatory Group	EPA-HQ-OAR-2003- 0215-0201

**Table 2. List of Comment Letters Incorporated By Reference  
from DCN No. EPA-HQ-OAR-2003-0215 and EPA-HQ-OAR-2014-0451**

<b>Commenter DCN</b>	<b>Commenter Name</b>	<b>Commenter Affiliation</b>	<b>Name of the Commenter That Is Being Incorporated by Reference or Supported</b>	<b>IBR'd DCN</b>
EPA-HQ-OAR-2003-0215-0066.1	Angela Marconi	Delaware Solid Waste Authority	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2003-0215-0093.1	Jeffrey Vandenbusch	Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2003-0215-0102.1	Dave Heitz	Geosyntec Consultants	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2003-0215-0109.1	Matt K. Stutz	Weaver Boos Consultants LLC	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2003-0215-0113.1	Angela D. Marconi	Delaware Solid Waste Authority (DSWA)	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2003-0215-0115.1	Sharon Frank	Montauk Energy	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2014-0451-0056.1	Angela Marconi	Delaware Solid Waste Authority	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2003-0215-0114.1	Kimberly Smelker	Granger III and Associates, LLC	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2003-0215-0094.1	Joanne Spalding	Sierra Club	Center for Biological Diversity and Friends of the Earth	EPA-HQ-OAR-2003-0215-0121
EPA-HQ-OAR-2014-0451-0051.1	Joanne Spalding	Sierra Club	Center for Biological Diversity and Friends of the Earth	EPA-HQ-OAR-2003-0215-0121
EPA-HQ-OAR-2003-0215-0092.1	Patrick S. Sullivan	SCS Engineers	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2014-0451-0046.1	Patrick S. Sullivan	SCS Engineers	NWRA/SWANA	EPA-HQ-OAR-2014-0451-0062
EPA-HQ-OAR-2003-0215-0109.1	Matt K. Stutz	Weaver Boos Consultants (WBC)	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0108.1
EPA-HQ-OAR-2014-0451-0063	Matt K. Stutz	Weaver Boos Consultants (WBC)	NWRA/SWANA	EPA-HQ-OAR-2014-0451-0062
EPA-HQ-OAR-2014-0451-0065.1	Paula Del Giudice	Pacific Northwest Pollution Prevention Resource Center (PPRC)	CRRA	EPA-HQ-OAR-2014-0451-0034.1
EPA-HQ-OAR-2014-0451-0066.1	Nabil Yacoub	CalEPA-DTSC	CRRA	EPA-HQ-OAR-2014-0451-0034.1
EPA-HQ-OAR-2014-0451-0068.1	Andrés Leopoldo Pacheco Sanfuentes		CRRA	EPA-HQ-OAR-2014-0451-0034.1
EPA-HQ-OAR-2014-0451-0160	Mark C. Messies, Senior Business Development Manager	Talen Renewable Energy, LLC	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0196
EPA-HQ-OAR-2014-0451-0188	Eddie Westmoreland,	Waste Connections Inc.	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0196

**Table 2. List of Comment Letters Incorporated By Reference  
from DCN No. EPA-HQ-OAR-2003-0215 and EPA-HQ-OAR-2014-0451**

<b>Commenter DCN</b>	<b>Commenter Name</b>	<b>Commenter Affiliation</b>	<b>Name of the Commenter That Is Being Incorporated by Reference or Supported</b>	<b>IBR'd DCN</b>
	Vice President, Governmental Affairs			
EPA-HQ-OAR-2003-0215-0199	Patrick S. Sullivan, Senior Vice President	SCS Engineers	NWRA/SWANA	EPA-HQ-OAR-2003-0215-0196
EPA-HQ-OAR-2003-0215-0196	Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO	National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)	Waste Management and Republic Services	EPA-HQ-OAR-2003-0215-0198 EPA-HQ-OAR-2014-0451-0176
EPA-HQ-OAR-2014-0451-0180	Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager	Cornerstone Environmental Group, LLC	Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)	EPA-HQ-OAR-2003-0215-0108.1

**Table 3. Index of Comment Codes and Document Section Numbers**

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EG6	1.2 Direct Regulation of Methane
EG2	1.3 General 111(d) Procedures
EG3	1.4 Revisions to State or Federal plans
1c	1.5 BSER-General
1f	1.6 BSER Determination-BMPs
1h	1.7 Proposal of a New Subpart
EG5	1.8 Mandated Source Separation
EG11	1.9 Encouraging Organics Diversion
5t	1.10 Role of Organics Diversion in State Plan
1z	1.11 Legal Issues-Other
<b>2.0 APPLICABILITY ISSUES</b>	
2a	2.1 Definition of Modification
2b	2.2 Expansions
EG7	2.3 1987 Cutoff Date
<b>3.0 THRESHOLDS AND TIMING OF CONTROLS</b>	
3a	3.1 Design Capacity Threshold
3b	3.2 NMOC Emission Threshold
EG8	3.3 Other Thresholds
3c	3.4 GCCS Lag Times
3e	3.5 Criteria for Removing GCCS
3f	3.6 Excluding Non-productive Areas from Control
3g	3.7 Separate Thresholds for Wet Climates/ Recirculation
3h	3.8 Subcategory of Closed Landfills
3z	3.9 Thresholds and Timing-Other
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4b	4.2 GCCS-Design and Operational Standards
4c	4.3 GCCS-Destruction Efficiency-Energy Recovery
4d	4.4 GCCS-Destruction Efficiency-Open Flares BSER
4z	4.5 GCCS-Other
<b>5.0 ALTERNATIVE CONTROLS AND PRACTICES</b>	
5a	5.1 Biocovers-Performance and Applicability
5b	5.2 Biofiltration Cells-Performance and Applicability
5c	5.3 Biocovers and Biofiltration Cells: Costs
5e	5.4 Biocovers-Measurement
5f	5.5 Biocovers-RCRA Jurisdiction
5g	5.6 BMP-General

**Table 3. Index of Comment Codes and Document Section Numbers**

<b>Comment Code</b>	<b>New Section Number</b>
5i	5.7 BMP-Costs
5k	5.8 BMP-Enhanced Redundant Seals BSER
5l	5.9 BMP-Preventing Waterlogged Wells: Monitoring
5m	5.10 BMP-Preventing Waterlogged Wells: Recordkeeping
5n	5.11 BMP-Preventing Waterlogged Wells-Pumps
EG9	5.12 BMP-Preventing Waterlogged Wells-Surface Collector
5o	5.13 BMP-LFG from Leachate Collection Data
5p	5.14 Horizontal Collectors: Practical Considerations
EG10	5.15 BMP-Early Cover
5z	5.16 Alternative Controls-Other
<b>6.0 DATA SOURCES AND CORRECTIONS</b>	
6b	6.1 Projection of New and Modified Units
<b>7.0 GAS MODELING METHODOLOGY</b>	
7a	7.1 General-Modeling
7b	7.2 Modeling Parameters
7d	7.3 Results-Baseline
<b>8.0 IMPACTS ANALYSIS</b>	
8a	8.1 General-Analysis Timeframe
8b	8.2 Costs-GCCS Control Technology Assumptions
8c	8.3 Costs-All Other Testing and Monitoring
8e	8.4 Economic Impacts
8f	8.5 Emission Impacts
8i	8.6 Benefits - General
8j	8.7 Health/Welfare Effects (non-Methane)
8k	8.8 Climate Impacts (GWP Methane)
8l	8.9 Support/Oppose Marten et al
8m	8.10 Methodology for Marten et al
8o	8.11 SC-CH4- global vs domestic
8p	8.12 Uncertainty
8q	8.13 Discount Rates
8r	8.14 Process
8s	8.15 GWP-Based Approach to Estimating SC-CH4
8t	8.16 Application of the SC-CH4 to the Rulemaking
8z	8.17 Other Comments about Impacts
<b>9.0 ALTERNATIVE EMISSION MEASUREMENT</b>	
9a	9.1 Method 18 and 25A -Initial Removal and the addition of Method 25A
9b	9.2 Alternative Monitoring Technologies
9e	9.3 Use of Portable Analyzers for Monitoring Oxygen
9z	9.4 Other-Alternative Monitoring

**Table 3. Index of Comment Codes and Document Section Numbers**

<b>Comment Code</b>	<b>New Section Number</b>
<b>10.0 ALTERNATIVE EMISSION THRESHOLD DETERMINATIONS</b>	
10a	10.1 Alternative Modeling-Equation Format
10c	10.2 Alternative Modeling-Applicability
10k	10.3 Tier 4 - General/Other Comments
10l	10.4 Moving Through Tiers
10e	10.5 Tier 4 - Areas Subject to SEM
10f	10.6 Tier 4 - Frequency of SEM
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10h	10.8 Tier 4 - Exceedance Number
10i	10.9 Tier 4 - Practical Experience
10j	10.10 Tier 4 - Applicability
10n	10.11 Tier 4 SEM Notification
10o	10.12 Tier 4 SEM Corrective Action
10z	10.13 Other-Emission Threshold Determination
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11e	11.3 Treatment-Numeric-Continuous monitoring
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11g	11.5 Treatment- Non-Numeric-General
11h	11.6 Treatment-Applicability
11i	11.7 Treatment-Compliance Timing
11j	11.8 Treatment-Non-numeric-Site Specific Monitoring Plan
11k	11.9 Treatment as 1 of 3 Ways to Comply
11l	11.10 LMOP Promotion of Beneficial Use of LFG
11z	11.11 Treatment-Other Uses
<b>12.0 WELLHEAD MONITORING</b>	
12a	12.1 Monthly Monitoring and Negative Pressure
12b	12.2 Difficulty Meeting Oxygen and Temperature
12c	12.3 Wellhead Monitoring and BMPs
12d	12.4 Alt. 1 - Removing Applicability
12g	12.5 Alt. 2 - Reduced Frequency Applicability
12i	12.6 Alt. 3 - Continuous Monitoring
12z	12.7 Wellhead Monitoring-Other
<b>13.0 SURFACE MONITORING</b>	
13a	13.1 Surface Monitoring: Cover Penetrations
13x	13.2 Surface Monitoring General for or against
13b	13.3 Enhanced Surface Monitoring-Correcting Exceedances
13c	13.4 Enhanced Surface Monitoring-Traverse Pattern
13d	13.5 Enhanced Surface Monitoring-Integrated Reading
13e	13.6 Enhanced Surface Monitoring- Wind Speeds

**Table 3. Index of Comment Codes and Document Section Numbers**

<b>Comment Code</b>	<b>New Section Number</b>
13f	13.7 Enhanced Surface Monitoring-Practical Consideration
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13h	13.9 Surface Monitoring: Costs
13i	13.10 More Precise Locational Data
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13k	13.12 Varying the Walking Pattern
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<b>14.0 START-UP, SHUTDOWN, AND MALFUNCTION</b>	
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14c	14.3 SSM-Estimating Emissions
14d	14.4 SSM-Affirmative Defense
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<b>15.0 REPORTING AND RECORDKEEPING</b>	
15a	15.1 Approval of HOVs
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15e	15.5 Design Plan Streamlining
EG12	15.6 Design Plan 3rd party Certs
15g	15.7 Corrective Action Timeline Requests-Approval of GCCS Expansions
15h	15.8 Corrective Action Timeline Requests-Alternative Approach
15z	15.9 Other - Recordkeeping and Reporting
<b>16.0 RULE LANGUAGE CORRECTIONS</b>	
16a	16.1 Rule Language: Definitions (existing)
16b	16.2 Rule Language: Definitions (new)
16c	16.3 Rule language Excluding Definitions
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<b>17.0 EXECUTIVE ORDERS</b>	
17a	17.1 EO 12866-Regulatory Planning and Review
17e	17.2 Unfunded Mandates Reform Act (UMRA)
17f	17.3 RFA/SBREFA
17g	17.4 Paperwork Reduction Act/ICR
<b>18.0 GENERAL</b>	
GEN1	18.1 General Support
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**Table 3. Index of Comment Codes and Document Section Numbers**

<b>Comment Code</b>	<b>New Section Number</b>	
GEN3	18.3	General - Methane
EXT1	18.4	Comment Extension
OOS1	18.5	Out of Scope-Other Rules

## Acronyms and Abbreviations

The following acronyms and abbreviations are used in this document.

ANPRM	Advance notice of proposed rulemaking
ANSI	American National Standards Institute
BMP	Best management practice
BSER	Best system of emission reduction
Btu	British thermal unit
CA LMR	California Landfill Methane Rule
CAA	Clean Air Act
CBI	Confidential business information
CDX	Central Data Exchange
CEA	Council of Economic Advisers
CEDRI	Compliance and Emissions Data Reporting Interface
CFR	Code of Federal Regulations
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DOC	Degradable organic carbon
EPA	U.S. Environmental Protection Agency
ERT	Electronic Reporting Tool
FID	Flame ionization detector
GCCS	Gas collection and control system
GHG	Greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
GWP	Global warming potential
HAP	Hazardous air pollutant
HOV	Higher operating value
IAMS	Integrated assessment models
ICR	Information collection request
IPCC	Intergovernmental Panel on Climate Change
IRFA	Initial regulatory flexibility analysis
IWG	Interagency working group
lb/MMBtu	Pounds per million British thermal unit
LCRS	Leachate collection and removal system
LFG	Landfill gas
LFGCost	Landfill Gas Energy Cost Model
LMOP	Landfill Methane Outreach Program
m <sup>3</sup>	Cubic meters
Mg	Megagram
Mg/yr	Megagram per year

mph	Miles per hour
MSW	Municipal solid waste
mtCO <sub>2</sub> e	Metric tons of carbon dioxide equivalent
MW	Megawatt
MWh	Megawatt hour
NAICS	North American Industry Classification System
NMOC	Nonmethane organic compound
NRC	National Research Council
NSPS	New source performance standards
NTTAA	National Technology Transfer and Advancement Act
OAQPS	Office of Air Quality Planning and Standards
OMB	Office of Management and Budget
PM	Particulate matter
PM <sub>2.5</sub>	Fine particulate matter
ppm	Parts per million
ppmvd	Parts per million by dry volume
RCRA	Resource Conservation and Recovery Act
RD&D	Research, development, and demonstration
RFA	Regulatory Flexibility Act
RFS	Renewable Fuel Standard
RIA	Regulatory Impacts Analysis
SBAR	Small Business Advocacy Review
SC-CH <sub>4</sub>	Social cost of methane
SC-CO <sub>2</sub>	Social cost of carbon dioxide
SEM	Surface emissions monitoring
SER	Small entity representative
SO <sub>2</sub>	Sulfur dioxide
SSM	Startup, shutdown and malfunction
SSM	Startup, shutdown, and malfunction
Tg	Teragram
TIP	Tribal implementation plan
TTN	Technology Transfer Network
U.S.	United States
USGCRP	U.S. Global Change Research Program
VCS	Voluntary consensus standard
VOC	Volatile organic compound
WWW	World Wide Web

## 1.0 LEGAL ISSUES

### 1.1 Format of the Standard

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 2

#### **Comment Excerpt:**

Republic also agrees that the best format for the standard remains a combination of design and operational standards, as currently contained in Subpart WWW.

We agree with EPA's determination that a "well-designed and operated landfill GCCS remains BSER," 79 Fed. Reg. at 41801, and to maintain the combination of a design and operational standard for the collection system in lieu of an emission standard. 79 Fed. Reg. at 41802. As EPA notes, design and operational standards are appropriate because there is no technically feasible technology available to measure the landfill gas available for collection in comparison to the amount actually collected. *Id.*

#### **Comment Response:**

The EPA thanks the commenter for their support.

---

**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 170

#### **Comment Excerpt:**

WM supports EPA's determination that the design and operation criteria in Subpart WWW continue to ensure that the collections system efficiently collects landfill gas and that a gas collection and control system meeting these criteria continues to represent BSER for new landfills under Subpart XXX. 79 Fed. Reg. at 41802. We concur that this remains the best format for the rule. We also agree with EPA's reiteration that a standard of performance cannot be established for the gas collection system since is not technically feasible to measure the amount of landfill gas available for collection.

#### **Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 2, under comment code 1a.

## 1.2 Direct Regulation of Methane

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 73

### Comment Excerpt:

Without knowing exactly how EPA would consider addressing methane, it is difficult to predict specific implementation issues. However, from a general standpoint, direct regulation of methane would create administrative burden and legal uncertainty. First, methane emissions are not typically identified as a separate pollutant in landfills' Title V permits; regulation of methane under the EG, as separate from the current regulation of NMOC emissions, could create uncertainty and delay within state permitting programs. Further, given that certain state programs may seek to be more stringent than the NSPS standard, especially with respect to NSPS-based monitoring, record keeping and reporting requirements based on state authority, there is an unknown but significant potential for additional burden, misapplication of regulatory requirements and technical difficulty that may arise in this context. Second, the direct regulation of methane would certainly result in further confusion with respect to the Agency's authority to regulate greenhouse gases under the Prevention of Signification ("PSD") program, which is in flux following the Supreme Court's decision in *Utility Air Regulatory Group v. EPA*, 134 S.Ct. 2427. Finally, and in light of these implementation issues and others that would surely arise, we don't believe that EPA should take on a new regulatory regime for the regulation of methane.

In sum, we find that the language in the ANPRM is not sufficiently descriptive to enable commenters to fully understand what specific input EPA is seeking, and has thus forced WM and other commenters to first hypothesize and then respond to this ill-defined request. As a result, there is no basis on which EPA could use any input on this topic in a final rule. Finally, there is no reason to regulate methane or GHGs in this rule-making because doing so will not result in additional methane emission reductions as compared to the regulation of NMOC.

### Comment Response:

Methane is not the regulated pollutant under either the revised NSPS or revised emission guidelines. Rather, consistent with existing subparts WWW and Cc, both rules regulate MSW landfill emissions (commonly referred to as landfill gas or LFG) with non-methane organic compounds (NMOC) serving as a surrogate for those emissions. Since LFG is comprised of approximately 50% carbon dioxide and 50% methane (with trace amounts of other compounds, including NMOC) the revised NSPS and EG (as well as subparts WWW and Cc) also effectively control methane emissions.

---

**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number: 71**

**Comment Excerpt:**

In the ANPRM, EPA seeks input "on the extent to which methane should be addressed under the revised emissions guidelines" as well as "potential implementation issues associated with any adjustments that could be made to the current rule framework or any alternative frameworks that may achieve a larger fraction of methane emission reductions from existing landfills than the current performance based standard of a well-designed and well-operated GCCS." 79 Fed. Reg. at 41781.<sup>35</sup> The language of this request is ambiguous, and it is difficult to discern what type of information EPA is soliciting. Further, EPA has not identified the legal authority under which it would revise the emission guidelines to address methane; or that EPA has statutory authority to require further emission reductions from existing sources already regulated under Subpart WWW or the EG.

[Footnotes]

(35) WM has previously addressed this topic in a letter to EPA dated September 4, 2009, included at Docket No. EPAHQ-OAR-2014-0451.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 Comment Excerpt Number 73.

---

**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Direct regulation of methane would create administrative burden and legal uncertainty. First, methane emissions are not typically identified as a separate pollutant in landfills' Title V permits; regulation of methane under the EG, as separate from the current regulation of NMOC emissions, could create uncertainty and delay within state permitting programs. Further, given that certain state programs may seek to be more stringent than the NSPS standard, especially with respect to NSPS-based monitoring, recordkeeping and reporting requirements based on state authority, there is an unknown but significant potential for additional burden, misapplication of regulatory requirements and technical difficulty that may arise in this context. Second, the direct regulation of methane may result in further confusion with respect to the Agency's authority to regulate greenhouse gases under the Prevention of Signification ("PSD") program, which is in flux following the Supreme Court's decision in *Utility Air Regulatory Group v. EPA*, 134 S.Ct. 2427 (2014). Finally, although EPA has evaluated the proposed revisions to the EG in the context of the objectives of the President's Climate Action Plan and the Methane Strategy, these policy directives do not themselves provide a basis on which to regulate methane directly where doing so would not be prompted by a change in BSER for the source category. In light of these

implementation issues and others that would surely arise, we do not believe that EPA should take on a new regulatory regime for the regulation of methane.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 Comment Excerpt Number 73.

---

**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 75

**Comment Excerpt:**

EPA should not seek to regulate methane directly because doing so would not result in additional emission reductions.

Under the current NSPS and emission guidelines, landfills must already install GCCS to minimize landfill gas emissions once emissions are sufficient to warrant such controls. GCCS minimize emissions through use of a high-efficiency combustion device that converts the organic pollutants, including methane, to CO<sub>2</sub> and water vapor. Consequently, the current regulations applicable to MSW landfills already maximize the conversion of CH<sub>4</sub> into CO<sub>2</sub>, thus reducing the radiative-forcing properties of landfill emissions to less than 5% of what they would otherwise be if left uncontrolled.

As explained further below, Republic agrees with EPA that there are no new control technologies or techniques available that would warrant a change in the BSER for MSW landfills. As EPA has recognized, the BSER for existing landfills remains a well-designed and well-operated landfill GCCS that controls landfill gas emissions via open (non-enclosed) flares, enclosed flares, and/or any other control device capable of achieving 98 percent reduction of NMOC.

Because GCCS continues to be the best means of reducing landfill gas emissions generally, and EPA has not identified any additional control requirements that would achieve greater reductions in methane emissions specifically, Republic opposes any attempt to regulate methane directly under the NSPS or emission guidelines because doing so would not result in any additional emission reductions or environmental improvements beyond those already achievable under the current emission guidelines.

**Comment Response:**

The EPA is not directly regulating methane in these final actions. Further, BSER has not changed. While the EPA has acknowledged, co-benefits associated with methane reductions and provided appropriate justification for doing so, it has not establish a methane based emission threshold.

---

**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 72

**Comment Excerpt:**

To the extent that EPA is considering the direct regulation of methane under the EG, WM does not support this consideration. We have reached this conclusion for several reasons. First and foremost, the direct regulation of methane is unlikely to fundamentally change the structure of or benefits of the Landfill EG. Landfill gas is well understood to be composed of roughly 50% methane, 50% carbon dioxide and 1% NMOC. 79 Fed. Reg. at 41777. The current BSER is based on the well-designed and well-operated landfill gas collection system, and a control system for collected LFG that achieves 98% reduction of NMOC. 79 Fed. Reg. at 41803. This system of BSER is effective for all components of LFG, notwithstanding that EPA identified NMOC as surrogate for LFG in the initial Subpart WWW / EG rulemaking in 1996. *See* 79 Fed. Reg. at 48100. Therefore, adding methane as a pollutant under the Landfill NSPS/EG will not further reduce methane emissions, because they have already been addressed as a component of LFG, and are inseparable from the NMOCs in the LFG. There would be simply no environmental benefit to regulating methane directly. EPA has neither demonstrated nor even suggested that there is a more effective way to address methane emissions that already established via the EG's regulation of landfill gas emissions as a whole, and WM does not believe that there is any more effective or feasible manner in which to reduce methane emissions from landfills than through a well-designed and well-operated landfill gas collection system and control of collected gas to a 98% reduction standard for NMOC, which EPA has reaffirmed is BSER. Without such a showing, regulation of methane makes no sense.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 75.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 74

**Comment Excerpt:**

WM has been working steadily with EPA on many issues pertaining to greenhouse gas emissions associated with landfill operations, and EPA has much to address. WM has made it clear to EPA that issues surrounding the treatment of biogenic CO<sub>2</sub> emissions in EPA's PSD determinations and in the forthcoming Section 111 regulations for power plants are of critical importance to WM. Likewise, we have commented extensively on EPA's 2010 PSD and Title V Permitting Guidance for Greenhouse Gases and the manner in which landfill gas-to-energy projects may be viewed in that context; in particular, we have cautioned EPA that the consideration of off-site benefits of gas-to-energy facilities (i.e. offset of fossil fuel-fired electricity generation) is not



factually, technically or legally appropriate in PSD BACT determinations. We are concerned that considerations of landfill methane emissions as a separate basis for regulation under the EG will only serve to confuse the proper considerations attendant to LFG collection and control in these contexts, to no benefit. Instead, EPA should rely on its BSER determinations for landfill gas emissions both for the purposes of the NSPS and EG, and in its BACT determinations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 75.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 1

**Comment Excerpt:**

WM supports the Agency's continued focus on landfill gas as the regulated pollutant in the Proposed EG Rules (See 80 Fed. Reg. at 52105) and supports the same for the final NSPS. WM provided comments on the Proposed NSPS and ANPRM that outlined our reasoning. (See Docket # EPA-HQ-OAR-2014-0451-0037) First and foremost, the direct regulation of methane is unlikely to fundamentally change the structure of or benefits of the Landfill EG. Landfill gas is well understood to be composed of roughly 50% methane, 50% carbon dioxide and 1% NMOC. 79 Fed. Reg. at 41777. EPA's determination of the Best System of Emission Reduction ("BSER") is based on a well-designed and well-operated landfill gas collection system, and a control system for collected LFG that achieves 98% reduction of NMOC. 79 Fed. Reg. at 41803. This system of BSER is effective for all components of LFG, notwithstanding that EPA identified NMOC as surrogate for LFG in the initial Subpart WWW / EG rulemaking in 1996. See 79 Fed. Reg. at 48100. Therefore, adding methane as a pollutant under the Landfill NSPS/EG will not further reduce methane emissions, because they have already been addressed as a component of LFG, and are inseparable from the NMOCs in the LFG. There would be simply no environmental benefit to regulating methane directly. EPA has neither demonstrated nor suggested that there is a more effective way to address methane emissions than already established via the current regulation of landfill gas emissions as a whole. Further, WM does not believe that there is any more effective or feasible manner in which to reduce methane emissions from landfills than through a well-designed and well-operated landfill gas collection system and control of collected gas to a 98% reduction standard for NMOC, which EPA has reaffirmed is BSER. Without such a showing, regulation of methane makes no sense.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 75.

### 1.3 General 111(d) Procedures

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**Commenter Name:** Allison D. Wood, Counsel  
**Commenter Affiliation:** Utility Air Regulatory Group  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0198  
**Comment Excerpt Number:** 1  
**Sort Order:** 100

#### **Comment Excerpt:**

EPA promulgated emission guidelines to address emissions of landfill gas from existing municipal solid waste landfills in 1996. 61 Fed. Reg. 9905 (Mar. 12, 1996). EPA promulgated the emission guidelines pursuant to section 111(d) of the CAA, 42 U.S.C. § 7411(d), which is a rarely used – and seldom applicable – provision of the Act that governs regulation of emissions from existing source categories under very limited circumstances. On or after the date on which EPA establishes new source performance standards for a source category under section 111(b) of the CAA, 42 U.S.C. § 7411(b), it may also establish emission guidelines for existing sources in that category pursuant to section 111(d) if the pollutant being regulated from the source category is not regulated as a criteria air pollutant under section 108 of the Act and if the source category is not regulated under section 112 of the Act. 42 U.S.C. § 7411(d)(1). Between 1970 and 1990, EPA issued regulations under this provision only four times, regulating: (1) fluoride emissions from phosphate fertilizer plants;<sup>1</sup> (2) sulfuric acid mist from sulfuric acid production units;<sup>2</sup> (3) total reduced sulfur emissions from kraft pulp mills;<sup>3</sup> and (4) fluoride emissions from primary aluminum plants.<sup>4</sup> After enactment of the 1990 amendments to the CAA, which further restricted the applicability of section 111(d), only two section 111(d) regulations have been promulgated that remain in existence:<sup>5</sup> (1) the regulation addressing landfill gas emissions from municipal solid waste landfills that the Agency seeks to revise and make more stringent in this rulemaking;<sup>6</sup> and (2) the recently published regulation for existing electric generating units known commonly as the Clean Power Plan.<sup>7</sup> Since the enactment of section 111(d) in 1970, EPA has never before sought to make any emission guidelines under section 111(d) more stringent. This is with good reason. EPA lacks the statutory authority to do so. As EPA notes in the Proposed Guideline Revisions, it “is not statutorily obligated to conduct a review of the Emission Guidelines. . . .” 80 Fed. Reg. at 52,102 (emphasis added). Indeed, nothing in section 111(d) discusses review or revision of emission guidelines promulgated under that provision. This is in stark contrast to section 111(b), which provides that “[t]he Administrator shall, at least every 8 years, review and, if appropriate, revise such standards . . . .” 42 U.S.C. § 7411(b)(1)(B). Section 111(d) contains no similar provision. The Supreme Court has held that “[W]here Congress includes particular language in one section of a statute but omits it in another . . . , it is generally presumed that Congress acts intentionally and purposely in the disparate inclusion or exclusion.” *Keene Corp. v. United States*, 508 U.S. 200, 208 (1993) (quoting *Russello v. United States*, 464 U.S. 16, 23 (1983)). This presumption is at its strongest when, as here, “the portions of a statute treated differently had already been joined together and were being considered simultaneously when the language raising the implication was inserted.” *Lindh v. Murphy*, 521 U.S. 320, 330 (1997). In 1970, Congress jointly considered sections 111(b) and 111(d). *Clean Air Act Amendments of 1970*, Pub. L. No. 91-604 § 4, 84 Stat. 1676, 1684 (1970). Moreover, the express mandate in section 111(b) requiring EPA periodically to review, and authorizing EPA to revise, performance standards for new sources demonstrates that Congress knew how to

provide for such review and revision and did not do so with respect to section 111(d). Cf. *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 485 (1996) (“Congress thus demonstrated in CERCLA that it knew how to provide for the recovery of cleanup costs, and that the language used to define the remedies under RCRA does not provide that remedy.”).

Footnotes:

[1] 42 Fed. Reg. 12,022 (Mar. 1, 1977).

[2] 42 Fed. Reg. 55,796 (Oct. 18, 1977).

[3] 44 Fed. Reg. 29,828 (May 22, 1979).

[4] 45 Fed. Reg. 26,294 (Apr. 17, 1980).

[5] EPA also promulgated the Clean Air Mercury Rule under section 111(d), 70 Fed. Reg. 28,606 (May 18, 2005), but that rule was ultimately struck down by the D.C. Circuit on grounds unrelated to the issues addressed in these comments, *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008).

[6] 61 Fed. Reg. 9905 (Mar. 12, 1996).

[7] 80 Fed. Reg. 64,662 (Oct. 23, 2015).

#### **Comment Response:**

We disagree with commenter’s analysis. First, the cases relied upon by petitioners for the proposition that inclusion of language in one provision but not in another supports a “general presumption” that the inclusion or exclusion was intentional are inapposite because those cases do not involve instances of agency interpretation of a statute that an agency is responsible for administering. See, e.g., *Keene Corp. v. United States*, 508 U.S. 200, 208 (1993) (addressing court of federal claims jurisdiction); *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 485 (1996) (considering available remedies in clean up action in a case not involving agency interpretation). Accordingly, these cases do not apply the *Chevron* framework in which a deciding court will defer to an agency’s reasonable interpretation of an ambiguous statutory provision. “That Congress spoke in one place but remained silent in another, as it did here, ‘rarely if ever’ suffices for the ‘direct answer’ that *Chevron* step one requires.” *Cheney*, 902 F.2d at 69 (internal quotation marks omitted); See *id.* at 36.

In fact, the D.C. Circuit has explicitly recognized that in the context of cases involving agency action, statutory silence may signal permission rather than proscription. See *Catawba County v. EPA*, 571 F.3d 20, 35-36 (D.C. Cir. 2009):

When interpreting statutes that govern agency action, we have consistently recognized that a congressional mandate in one section and silence in another often “suggests not a prohibition but simply a decision not to mandate any solution in the second context, i.e., to leave the question to agency discretion.” *Cheney R. Co. v. ICC*, 902 F.2d 66, 69, 284 U.S. App. D.C. 101 (D.C. Cir. 1990); see also *Clinchfield Coal Co. v. Fed. Mine Safety & Health Review Comm’n*, 895 F.2d 773, 779, 282 U.S. App. D.C. 368 (D.C. Cir. 1990) (“[W]here an agency is empowered to administer the statute, Congress may have meant that in the second context the choice should be up to the agency.”).

Here, EPA is reasonably interpreting the exclusion of the mandatory 8-year review provision from 111(d) as meaning that Congress did not mandate that EPA review and (if appropriate) revise 111(d) regulations every 8 years. Rather, EPA's interpretation of 111(d) is that Congress' grant of authority to issue the initial 111(d) regulations included the normal inherent Congressional grant of authority to revise them as appropriate. Commenters point to no statutory language that indicates that Congress intended to deprive EPA of the authority to revise 111(d) regulations.<sup>[1]</sup> Interpreting section 111(d) as permitting EPA to update 111(d) regulations is the best, and possibly only reasonable, reading of the statute and best meets the purposes of the Act, as further explained in the preamble. <sup>[2]</sup>

In any event, the proposition that statutory interpretation is dictated by the inclusion or exclusion of text in other provisions is not instructive in this context because the "missing" language that appears in 111(b) and not in 111(d) creates a mandatory obligation to review and revise standards – not the authority to review and revise. Rather, Congress's grant of authority to issue regulations carries with it the authority to amend or update regulations<sup>[3]</sup> unless that authority is limited by Congress.<sup>[4]</sup> Indeed, "[r]egulatory agencies do not establish rules of conduct to last forever; they are supposed, within the limits of the law and of fair and prudent administration, to adapt their rules and practices to the Nation's needs in a volatile, changing economy. They are neither required nor supposed to regulate the present and the future within the inflexible limits of yesterday." American Trucking Ass'n v. Atchison, Topeka & Santa Fe Ry., 387 U.S. 397, 416 (1967),

Accordingly, 111(b)'s direction that the Agency "shall, at least every 8 years, review and, if appropriate, revise such standards" creates the *obligation* to conduct that review every 8 years, but does not create the *authority* to review itself (which is inherent). The fact that 111(d) lacks similar language merely means that Congress did not create a mandatory duty for EPA to review and revise 111(d) guidelines every eight years, not that it precluded the Agency from exercising its discretion. FTC v. Tarriff, 584 F.3d 1088, 1090-91 (D.C. Cir. 2009) ("We know of no usage, nor do appellants bring forward any, that suggests that the use of 'shall' mandating one act implies a corresponding 'shall not' forbidding other acts not inconsistent with the mandated performance.") Accordingly the Agency's interpretation here is simply not an analogous situation to that presented in the commenters' cases where there is an attempt to read a provision from one section into another.

For these reasons, we reject commenter's claims that the 8-year review dictate in section 111(b) restricts or undermines EPA's authority under section 111(d) to update or amend its existing regulation.

Footnotes:

<sup>[1]</sup> Commenters seem to suggest that the Agency has authority to revise standards to make them less stringent. They provide no explanation for this asymmetry. That is they do not explain why the Agency would have authority to review and make a requirement less stringent but not to review and make a requirement more stringent.

<sup>[2]</sup> Moreover, Section 111(d) requires that the Agency adopt procedures similar to Section 110. Section 110 anticipates that plans will be updated as NAAQS are updated. [CAA § 110(a)(1) and (2); 42 U.S.C. §7410(a)(1) and (2).] Accordingly, the directive to adopt

procedures similar to those under Section 110 can reasonably be read to anticipate that EPA will update guidelines requiring updated state plans. `

[3] Congress has provided the Agency with broad authority to issue regulations “as necessary to carry out [her] functions under” the Act. This broad grant of authority further supports the reasonableness of EPA’s interpretation.

[4] See *Trujillo v. General Electric Co.*, 621 F.2d 1084, 1086 (10th Cir. 1980) (“Administrative agencies have an inherent authority to reconsider their own decisions, since the power to decide in the first instance carries with it the power to reconsider.”) (citing *Albertson v. FCC*, 182 F.2d 397, 399 (D.C. Cir. 1950)). See 621 F.2d at 1088 (“The authority to reconsider may result in some instances, as it did here, in a totally new and different determination....”). For these reasons we also reject petitioner’s reliance on *Michigan v. EPA* to argue that the lack of express authority under 111(d) to update its regulations demonstrates a lack of authority to revise regulations issued under 111(d).

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**Commenter Name:** Allison D. Wood, Counsel  
**Commenter Affiliation:** Utility Air Regulatory Group  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0198  
**Comment Excerpt Number:** 2  
**Sort Order:** 101

**Comment Excerpt:**

In the Proposed Guideline Revisions, although EPA acknowledges, as noted above, that it “is not statutorily obligated to conduct a review of the Emission Guidelines,” EPA asserts, without citing any authority that it “has the discretion to do so when circumstances indicate that it is appropriate.” 80 Fed. Reg. at 52,102; see also *id.* at 52,109. EPA’s assertion mistakes an absence of statutory authority for a discretionary grant of authority. The absence of a statutory grant of authority in section 111(d) does not create a discretionary ability to seize authority that a statutory grant, such as the one in section 111(b), would give. As “a federal agency,” EPA is a creature of statute. It has no constitutional or common law existence or authority, but only those authorities conferred upon it by Congress. “It is axiomatic that an administrative agency’s power to promulgate legislative regulations is limited to the authority delegated by Congress.” Thus, if there is no statute conferring authority, a federal agency has none. *Michigan v. EPA*, 268 F.3d 1075, 1081 (D.C. Cir. 2001) (quoting *Bowen v. Georgetown Univ. Hosp.*, 488 U.S. 204, 208 (1988)).

Congress knows how to provide that an agency has discretionary authority by using words like “may” to confer such discretion. See, e.g., 42 U.S.C. § 7411(b)(2) (“The Administrator may distinguish among classes, types, and sizes within categories of new sources for the purpose of establishing such standards.”) (emphasis added). As EPA correctly notes, section 111(d) does not impose a statutory requirement on the Agency to review or revise emission guidelines, 80 Fed. Reg. at 52,102, 52,109, and conferred no discretionary authority on the Agency to revise existing emission guidelines to make them more stringent. Congress’s decision not to provide EPA with authority to revise section 111(d) emission guidelines by making them more stringent makes sense as a policy matter. Emission guidelines under section 111(d) are authorized only under

very limited circumstances to ensure that existing sources that are not covered by other provisions of the CAA (i.e., sections 108 and 112) do not go uncontrolled. Once EPA establishes new source performance standards for a source category under section 111(b), any source that commences (or has commenced) construction or modification after the date of publication of the standards (or, if earlier, after the date of publication of proposed standards) must comply with the final section 111(b) standards. 42 U.S.C. § 7411(a)(2). And any existing source that commenced construction or modification on or before that date may be subjected to the emission guidelines promulgated by EPA pursuant to section 111(d), under certain limited circumstances. Thus, a source category for which section 111(d) emission guidelines exist will not contain any source that is subject to neither a standard of performance under section 111(b) nor a standard of performance under section 111(d) – i.e., there will be no uncontrolled source.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0198, comment excerpt 1, under comment [code EG2].

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 85

**Sort Order:** 102

**Comment Excerpt:**

With respect to the ANPRM, EPA fails to identify any explicit authority to undertake an amendment of an existing emission guideline such as subpart Cc. Section 111(d) provides EPA with the authority to issue emission guidelines for existing sources in a source category when EPA has promulgated an NSPS for that category, the pollutant regulated is not a criteria pollutant, and the category is not subject to regulation under section 112. But section 111(d) provides no mechanism for EPA to review or revise those guidelines once they are issued to "determine the potential for additional reductions" from existing sources that have already complied with the EG. The absence of explicit review procedures within section 111(d) stands in stark contrast to other provisions of the Clean Air Act. *See, e.g.*, 42 U.S.c. §§ 7411(b)(1)(B), 7412(d)(6), 7429(a)(5). In fact, in section 111(b)(1)(B), which precedes section 111(d) by just two paragraphs, Congress explicitly provided procedures to periodically review Clean Air Act standards, but did so on a prospective basis only. The scope of EPA's proposed Subpart XXX, which would apply to new or modified landfills, is based on this provision; and likewise, EPA's revisitation of other NSPS standards have applied only to new or modified sources. The imposition of new requirements upon existing sources that are not undergoing a modification is particularly troubling in the landfill context, where many existing landfills subject to the EG are closed or nearing closure and have established financial plans based on settled expectations that new requirements would not be triggered in the absence of an expansion.

**Comment Response:**

The Agency interprets section 111(d) as providing discretionary authority to update emission guidelines, and by extension to require states to update standards of performance, in appropriate

circumstances. EPA believes this is the best, and perhaps only, permissible interpretation of the Act. It is consistent with the gap filling nature of section 111(d), the general purposes of the Act to protect and enhance air quality. Moreover, this is supported because Congress's grant of authority to issue regulations carries with it the authority to amend or update regulations<sup>[1]</sup> that they have issued. <sup>[2]</sup> "Regulatory agencies do not establish rules of conduct to last forever; they are supposed, within the limits of the law and of fair and prudent administration, to adapt their rules and practices to the Nation's needs in a volatile, changing economy. They are neither required nor supposed to regulate the present and the future within the inflexible limits of yesterday." <sup>[3]</sup>

To interpret the Act otherwise would mean that Congress intended to allow existing sources to operate forever without any consideration of the need for updated controls simply because, at some point in the distant past, the Agency had previously required these sources to be regulated. EPA's interpretation is consistent with the gap filling nature of section 111(d), whereas the opposite interpretation would undermine it. By its terms, section 111(d) was designed to address emissions from existing sources of non-national ambient air quality standards (NAAQS), non-CAA section 112 hazardous air pollutants. <sup>[4]</sup> A one-off approach would mean that the Agency would be unable to address the threats from these sources even as we improve our understanding of the danger presented by the pollutant at issue or new or improved control options become available. Indeed, this lack of authority would exist even in cases such as the instant one where some affected sources had not yet been required to invest in emission controls.

The overall structure of the CAA also supports EPA's interpretation. The primary goal of the CAA is: "[T]o protect and enhance the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." CAA §101(b)(1), 42 U.S.C. §7401(b)(1). The CAA goes about this in a number of ways. Under §111 the chosen approach is through the application of technology designed to reduce emissions to the atmosphere. This technology changes over time. Where such changes have the effect of substantially reducing harmful air emissions, it is illogical that the Agency would be precluded from requiring existing sources to update their controls in recognition of those changes, particularly when those sources may continue to operate for decades. Had Congress intended to preclude EPA from updating the emission guidelines to reflect these changes, it would surely have specifically said so, <sup>[5]</sup> something it did not do.

The fact that EPA has the authority to update the emission guidelines does not, however, mean that it is unconstrained in exercising that authority. Rather, the decision whether to update a particular set of emission guidelines must be made on a rule-specific basis after considering the same factors the Agency considered in establishing those guidelines, including the level of reductions achievable and the cost of achieving those reductions.<sup>1</sup> EPA has determined that it is appropriate to update the emission guidelines for municipal solid waste (MSW) landfills. EPA's final rule is not a requirement to install new and different control equipment (compared to the existing rule), but rather to install the same basic controls, i.e., a well-designed and well-operated landfill gas collection and control system, on an accelerated basis. While this will result in some additional cost, EPA believes that cost is fully justified given the substantial reduction in

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<sup>1</sup> The consideration of these factors and any subsequent revision of the standards applies to the universe of sources that would be covered by this updated standard, whether these sources were subject to the prevailing new source performance standard or the existing source emission guidelines.

emissions of landfill gas and its constituent components, including methane, that will result. As indicated in the final rule lowering the threshold above which landfill owners/operators must install a gas collection and control system from 50 Mg of non-methane organic compounds (NMOC) per year to 34 Mg/year will result in an additional reduction in NMOC emissions of 1,810 Mg/yr and a concomitant reduction in methane emissions of 0.285 million Mg/yr. In these circumstances, EPA believes that it not only has the legal authority to update the emission guidelines, but that doing so is imminently reasonable.

The absence of explicit authority in CAA section 111(d) to update emission guidelines does not mean that EPA lacks discretionary authority to do so. In fact, the D.C. Circuit has explicitly recognized that in the context of cases involving agency action, statutory silence may signal permission rather than proscription. See Catawba County v. EPA, 571 F.3d 20, 35-36 (D.C. Cir. 2009):

When interpreting statutes that govern agency action, we have consistently recognized that a congressional mandate in one section and silence in another often "suggests not a prohibition but simply a decision not to mandate any solution in the second context, i.e., to leave the question to agency discretion." Cheney R. Co. v. ICC, 902 F.2d 66, 69, 284 U.S. App. D.C. 101 (D.C. Cir. 1990); see also Clinchfield Coal Co. v. Fed. Mine Safety & Health Review Comm'n, 895 F.2d 773, 779, 282 U.S. App. D.C. 368 (D.C. Cir. 1990) ("[W]here an agency is empowered to administer the statute, Congress may have meant that in the second context the choice should be up to the agency.").

Here, EPA is reasonably interpreting the exclusion of the mandatory 8-year review provision from 111(d) as meaning that Congress did not mandate that EPA review and (if appropriate) revise 111(d) regulations every 8 years. Rather, EPA's interpretation of 111(d) is that Congress' grant of authority to issue the initial 111(d) regulations included the normal inherent Congressional grant of authority to revise them as appropriate. Commenters point to no statutory language that indicates that Congress intended to deprive EPA of the authority to revise 111(d) regulations.<sup>[1]</sup> Interpreting section 111(d) as permitting EPA to update 111(d) regulations is the best, and possibly only reasonable, reading of the statute and best meets the purposes of the Act, as further explained in the preamble. <sup>[2]</sup>

In any event, the proposition that statutory interpretation is dictated by the inclusion or exclusion of text in other provisions is not instructive in this context because the "missing" language that appears in 111(b) and not in 111(d) creates a mandatory obligation to review and revise standards – not the authority to review and revise. Rather, Congress's grant of authority to issue regulations carries with it the authority to amend or update regulations<sup>[3]</sup> unless that authority is limited by Congress.<sup>[4]</sup> Indeed, "[r]egulatory agencies do not establish rules of conduct to last forever; they are supposed, within the limits of the law and of fair and prudent administration, to adapt their rules and practices to the Nation's needs in a volatile, changing economy. They are neither required nor supposed to regulate the present and the future within the inflexible limits of yesterday." American Trucking Ass'n v. Atchison, Topeka & Santa Fe Ry., 387 U.S. 397, 416 (1967),

Accordingly, 111(b)'s direction that the Agency "shall, at least every 8 years, review and, if appropriate, revise such standards" creates the *obligation* to conduct that review every 8 years, but does not create the *authority* to review itself (which is inherent). The fact that 111(d) lacks similar language merely means that Congress did not create a mandatory duty for EPA to review



and revise 111(d) guidelines every eight years, not that it precluded the Agency from exercising its discretion. FTC v. Tarriff, 584 F.3d 1088, 1090-91 (D.C. Cir. 2009) (“We know of no usage, nor do appellants bring forward any, that suggests that the use of ‘shall’ mandating one act implies a corresponding ‘shall not’ forbidding other acts not inconsistent with the mandated performance.”)

Footnotes:

[1] Commenters seem to suggest that the Agency has authority to revise standards to make them less stringent. They provide no explanation for this asymmetry. That is they do not explain why the Agency would have authority to review and make a requirement less stringent but not to review and make a requirement more stringent.

[2] Moreover, Section 111(d) requires that the Agency adopt procedures similar to Section 110. Section 110 anticipates that plans will be updated as NAAQS are updated. [CAA § 110(a)(1) and (2); 42 U.S.C. §7410(a)(1) and (2).] Accordingly, the directive to adopt procedures similar to those under Section 110 can reasonably be read to anticipate that EPA will update guidelines requiring updated state plans.

[3] Congress has provided the Agency with broad authority to issue regulations “as necessary to carry out [her] functions under” the Act. This broad grant of authority further supports the reasonableness of EPA’s interpretation.

[4] See Trujillo v. General Electric Co., 621 F.2d 1084, 1086 (10th Cir. 1980) (“Administrative agencies have an inherent authority to reconsider their own decisions, since the power to decide in the first instance carries with it the power to reconsider.”) (citing Albertson v. FCC, 182 F.2d 397, 399 (D.C. Cir. 1950)). See 621 F.2d at 1088 (“The authority to reconsider may result in some instances, as it did here, in a totally new and different determination....”). For these reasons we also reject petitioner’s reliance on *Michigan v. EPA* to argue that the lack of express authority under 111(d) to update its regulations demonstrates a lack of authority to revise regulations issued under 111(d).

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**Commenter Name:** Ronald W. Gore, Chief, Air Division

**Commenter Affiliation:** Alabama Department of Environmental Management (ADEM)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0154

**Comment Excerpt Number:** 1

**Sort Order:** 103

**Comment Excerpt:**

The proposed rule establishes emission guidelines under new Subpart Cf for existing landfills constructed or modified prior to July 17, 2014. In section I 2. "Legal Authority", the notice states that "The EPA is not statutorily obligated to conduct a review of the Emission Guidelines, but has the discretion to do so when circumstances indicate that it is appropriate." This discretion does not exist under Section 111(d) of the Clean Air Act, which governs standards for existing sources. Emission guidelines for existing landfills were set previously as Subpart Cc, for landfills constructed or modified prior to May 30, 1991. EPA does not have the statutory authority under Section 111(d) to revisit the standards for existing sources. This is in contrast to Section 111(b), which expressly directs the Administrator to, at least every eight years, review and if necessary

revise standards for new sources. Given the lack of statutory authority for revising standards for existing sources under Section 111(d) of the Clean Air Act, we respectfully request that this revision not be promulgated as a final rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 85, under comment [code EG2].

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**Commenter Name:** Darin Schroeder, Associate Attorney

**Commenter Affiliation:** Clean Air Task Force (CATF)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0189

**Comment Excerpt Number:** 1

**Sort Order:** 200

**Comment Excerpt:**

CATF welcomes EPA’s proposal to review and revise Emission Guidelines (“EGs”) for existing landfills pursuant to section 111(d) of the Clean Air Act (the “Act”). Reducing landfill gas emissions and thus methane pollution<sup>1</sup> from existing landfills is a critical priority, as landfills are the third largest stationary source of methane pollution, emitting approximately 18 percent of the nation’s methane pollution,<sup>2</sup> and the vast majority of this pollution will, for the foreseeable future, likely continue to be emitted by landfills that were already in service at the time of EPA’s proposal.

EPA’s EG Proposal is directionally correct. These comments focus on the fundamental point that EPA clearly has the authority to revise Emission Guidelines for existing facilities under 111(d), especially in conjunction with the revision of standards of performance for new facilities under 111(b).<sup>3</sup> EPA has appropriately exercised its authority under §111(d) to review and revise Emission Guidelines for landfill gas pollution from existing landfills—indeed, EPA has an obligation to exercise this authority when it is appropriate to do so.<sup>4</sup>

It is a cardinal principle of administrative law that regulatory agencies have the authority to review and revise their own policies and rules over time. As the Supreme Court stated a half century ago, in *American Trucking Assoc. v. Atchison, T. & S.F.R.Co.*, 387 U.S. 397, 416; 87 S. Ct. 1608 (1967):

“Regulatory agencies do not establish rules of conduct to last forever; they are supposed, within the limits of the law and of fair and prudent administration, to adapt their rules and practices to the Nation's needs in a volatile, changing economy. They are neither required nor supposed to regulate the present and the future within the inflexible limits of yesterday.”<sup>5</sup>

In this case, EPA also explicitly has authority—in fact, an obligation—to review periodically the standards of performance for a given source category:

“The Administrator shall, at least every 8 years, review and, if appropriate, revise such standards following the procedure required by this subsection for promulgation of such standards.”<sup>6</sup>

EPA also has the authority to establish emission guidelines under Section 111(d) that provide for application of the revised standards of performance by States to existing facilities. Thus, EPA is required to prescribe regulations “which shall establish a procedure under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source....and (B) provides for the implementation and enforcement of such standards of performance.” Section 111(d)(1). EPA has promulgated those regulations, initially in 1975,<sup>7</sup> and they provide, among other things, that EPA will propose, and subsequently finalize, emission guidelines “concurrently upon or after proposal of standards of performance for the control of a designated pollutant from affected facilities.” 40 CFR 60.22(a).

Such a coordinated review of the standards of performance for a particular new source category under §111(b) along with a review of the standards for existing sources within the same category under §111(d) is perfectly reasonable. “Standards of performance” are defined in §111(a) as standards “for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated....” Clearly, these standards must change over time as control technology improves, and better, more efficient, cheaper and different “systems of emission reduction” become “adequately demonstrated.” This is just as true for controls of existing source emissions as for new source emissions.

In any event, there certainly is nothing in the Act that would prohibit EPA from periodically reviewing existing EGs under §111(d). Although §111(b) explicitly *requires* periodic review of new source standards, the fact that §111(d) does not contain that explicit *requirement* certainly does not imply that periodic EG review is prohibited.

Not only does EPA have clear authority to review §111(d) EGs, but CATF also agrees with EPA that it is appropriate here for EPA to review and revise its existing emission guidelines for landfills, promulgated almost 20 years ago (in 1996).<sup>8</sup> As EPA states, when the initial EGs for landfills were promulgated, NMOCs represented the collection of air pollutants that “were of most concern due to their adverse effects on health and welfare.”<sup>9</sup> Between then and now, EPA has recognized greenhouse gases, including methane, as pollutants subject to regulation under the Clean Air Act, finding that “elevated concentrations of greenhouse gases in the atmosphere may reasonably be anticipated to endanger the public health and to endanger the public welfare of current and future generations.”<sup>10</sup>

[Footnotes]

<sup>1</sup> Landfill gas is primarily a mixture in even parts of methane and carbon dioxide, with a small percentage of nonmethane organic compounds (NMOC). 80 Fed. Reg. 52100 at 52105.

<sup>2</sup> 80 Fed. Reg. 52100 at 52105.

<sup>3</sup> *See, e.g.*, 80 Fed. Reg. at 52109.

<sup>4</sup> When EPA reviews the standards of performance for new sources within a particular source category, in the absence of a determination that it is inappropriate, EPA is required by, among other things, its own regulations, to also review the emission guidelines for existing sources in that category. *See, e.g.*, 40 CFR 60.22(a).

<sup>5</sup> See also, e.g., *Permian Basin Area Rate Cases*, 390 U.S. 747, 784; 88 S. Ct. 1344 (1968) (“administrative authorities must be permitted, consistently with the obligations of due process, to adapt their rules and policies to the demands of changing circumstances”); and *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 41; 103 S. Ct. 2856 (1983) (“we fully recognize that [regulatory] agencies do not establish rules of conduct to last forever and that an agency must be given ample latitude to adapt their rules and policies to the demands of changing circumstances (internal quotations and citations omitted)”).

<sup>6</sup> Section 111(b)(1)(B) of the Act.

<sup>7</sup> Those regulations have been reviewed and revised from time to time, going through the same basic notice and rulemaking process that EPA is proposing here with respect to revisions to the landfill Emission Guidelines.

<sup>8</sup> EPA (1996), “Standards of Performance for New Stationary Sources and Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills, Final Rule and Guidelines,” 61 Fed. Reg. 9905 (March 12, 1996); thus, as is the case here, in 1996 EPA promulgated both performance standards for new sources under §111(b) and emission guidelines for existing sources under §111(d) at the same time.

<sup>9</sup> 80 Fed. Reg. at 52105.

<sup>10</sup> EPA (2009), Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496 at 66516 (December 15, 2009).

### **Comment Response:**

EPA agrees with the commenter that it has the necessary legal authority to review, and if appropriate, revise section 111(d) Emission Guidelines in conjunction with its statutorily mandated review of new source performance standards (NSPS) for a particular source category and thanks commenter for its support in that regard. EPA disagrees with the commenter that either the Clean Air Act itself or EPA's regulation at 40 CFR 60.22(a) requires it to conduct such a review each time it reviews the relevant NSPS. Rather, as explained below, EPA believes that its exercise of this authority is discretionary. As also explained below, EPA agrees with the commenter that it is particularly appropriate to review, and if appropriate, revise the Emission Guidelines for MSW Landfills. EPA also agrees that states are required to update their state plans to apply the revised requirements to existing sources within the state when it does revise Emission Guidelines.

The Agency interprets section 111(d) as providing discretionary authority to update emission guidelines, and by extension to require states to update standards of performance, in appropriate circumstances. EPA believes this is the best, and perhaps only, permissible interpretation of the Act. It is consistent with the gap filling nature of section 111(d), the general purposes of the Act to protect and enhance air quality. Moreover, this is supported because Congress's grant of authority to issue regulations carries with it the authority to amend or update regulations<sup>[1]</sup> that they have issued. <sup>[2]</sup> “Regulatory agencies do not establish rules of conduct to last forever; they are supposed, within the limits of the law and of fair and prudent administration, to adapt their rules and practices to the Nation's needs in a volatile, changing economy. They are neither required nor supposed to regulate the present and the future within the inflexible limits of yesterday.” <sup>[3]</sup>

To interpret the Act otherwise would mean that Congress intended to allow existing sources to operate forever without any consideration of the need for updated controls simply because, at some point in the distant past, the Agency had previously required these sources to be regulated. EPA's interpretation is consistent with the gap filling nature of section 111(d), whereas the opposite interpretation would undermine it. By its terms, section 111(d) was designed to address emissions from existing sources of non-national ambient air quality standards (NAAQS), non-CAA section 112 hazardous air pollutants. [4] A one-off approach would mean that the Agency would be unable to address the threats from these sources even as we improve our understanding of the danger presented by the pollutant at issue or new or improved control options become available. Indeed, this lack of authority would exist even in cases such as the instant one where some affected sources had not yet been required to invest in emission controls.

The overall structure of the CAA also supports EPA's interpretation. The primary goal of the CAA is: "[T]o protect and enhance the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." CAA §101(b)(1), 42 U.S.C. §7401(b)(1). The CAA goes about this in a number of ways. Under §111 the chosen approach is through the application of technology designed to reduce emissions to the atmosphere. This technology changes over time. Where such changes have the effect of substantially reducing harmful air emissions, it is illogical that the Agency would be precluded from requiring existing sources to update their controls in recognition of those changes, particularly when those sources may continue to operate for decades. Had Congress intended to preclude EPA from updating the emission guidelines to reflect these changes, it would surely have specifically said so, [5] something it did not do.

The fact that EPA has the authority to update the emission guidelines does not, however, mean that it is unconstrained in exercising that authority. Rather, the decision whether to update a particular set of emission guidelines must be made on a rule-specific basis after considering the same factors the Agency considered in establishing those guidelines, including the level of reductions achievable and the cost of achieving those reductions.<sup>2</sup> EPA has determined that it is appropriate to update the emission guidelines for municipal solid waste (MSW) landfills. EPA's final rule is not a requirement to install new and different control equipment (compared to the existing rule), but rather to install the same basic controls, i.e., a well-designed and well-operated landfill gas collection and control system, on an accelerated basis. While this will result in some additional cost, EPA believes that cost is fully justified given the substantial reduction in emissions of landfill gas and its constituent components, including methane, that will result. As indicated in the final rule lowering the threshold above which landfill owners/operators must install a gas collection and control system from 50 Mg of non-methane organic compounds (NMOC) per year to 34 Mg/year will result in an additional reduction in NMOC emissions of 1,810 Mg/yr and a concomitant reduction in methane emissions of 0.285 million Mg/yr. In these circumstances, EPA believes that it not only has the legal authority to update the emission guidelines, but that doing so is imminently reasonable.

The absence of explicit authority in CAA section 111(d) to update emission guidelines does not mean that EPA lacks discretionary authority to do so. The D.C. Circuit has explicitly recognized

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<sup>2</sup> The consideration of these factors and any subsequent revision of the standards applies to the universe of sources that would be covered by this updated standard, whether these sources were subject to the prevailing new source performance standard or the existing source emission guidelines.

that in the context of cases involving agency action, statutory silence may signal permission rather than proscription. See Catawba County v. EPA, 571 F.3d 20, 35-36 (D.C. Cir. 2009):

When interpreting statutes that govern agency action, we have consistently recognized that a congressional mandate in one section and silence in another often "suggests not a prohibition but simply a decision not to mandate any solution in the second context, i.e., to leave the question to agency discretion." Cheney R. Co. v. ICC, 902 F.2d 66, 69, 284 U.S. App. D.C. 101 (D.C. Cir. 1990); see also Clinchfield Coal Co. v. Fed. Mine Safety & Health Review Comm'n, 895 F.2d 773, 779, 282 U.S. App. D.C. 368 (D.C. Cir. 1990) ("[W]here an agency is empowered to administer the statute, Congress may have meant that in the second context the choice should be up to the agency.").

Here, EPA is reasonably interpreting the exclusion of the mandatory 8-year review provision from 111(d) as meaning that Congress did not mandate that EPA review and (if appropriate) revise 111(d) regulations every 8 years. Rather, EPA's interpretation of 111(d) is that Congress' grant of authority to issue the initial 111(d) regulations included the normal inherent Congressional grant of authority to revise them as appropriate. Commenters point to no statutory language that indicates that Congress intended to deprive EPA of the authority to revise 111(d) regulations.<sup>[1]</sup> Interpreting section 111(d) as permitting EPA to update 111(d) regulations is the best, and possibly only reasonable, reading of the statute and best meets the purposes of the Act, as further explained in the preamble. <sup>[2]</sup>

In any event, the proposition that statutory interpretation is dictated by the inclusion or exclusion of text in other provisions is not instructive in this context because the "missing" language that appears in 111(b) and not in 111(d) creates a mandatory obligation to review and revise standards – not the authority to review and revise. Rather, Congress's grant of authority to issue regulations carries with it the authority to amend or update regulations<sup>[3]</sup> unless that authority is limited by Congress.<sup>[4]</sup> Indeed, "[r]egulatory agencies do not establish rules of conduct to last forever; they are supposed, within the limits of the law and of fair and prudent administration, to adapt their rules and practices to the Nation's needs in a volatile, changing economy. They are neither required nor supposed to regulate the present and the future within the inflexible limits of yesterday." American Trucking Ass'n v. Atchison, Topeka & Santa Fe Ry., 387 U.S. 397, 416 (1967),

Accordingly, 111(b)'s direction that the Agency "shall, at least every 8 years, review and, if appropriate, revise such standards" creates the *obligation* to conduct that review every 8 years, but does not create the *authority* to review itself (which is inherent). The fact that 111(d) lacks similar language merely means that Congress did not create a mandatory duty for EPA to review and revise 111(d) guidelines every eight years, not that it precluded the Agency from exercising its discretion. FTC v. Tarriff, 584 F.3d 1088, 1090-91 (D.C. Cir. 2009) ("We know of no usage, nor do appellants bring forward any, that suggests that the use of 'shall' mandating one act implies a corresponding 'shall not' forbidding other acts not inconsistent with the mandated performance.")

Footnotes:

<sup>[1]</sup> Commenters seem to suggest that the Agency has authority to revise standards to make them less stringent. They provide no explanation for this asymmetry. That is they do not explain

why the Agency would have authority to review and make a requirement less stringent but not to review and make a requirement more stringent.

[2] Moreover, Section 111(d) requires that the Agency adopt procedures similar to Section 110. Section 110 anticipates that plans will be updated as NAAQS are updated. [CAA § 110(a)(1) and (2); 42 U.S.C. §7410(a)(1) and (2).] Accordingly, the directive to adopt procedures similar to those under Section 110 can reasonably be read to anticipate that EPA will update guidelines requiring updated state plans.

[3] Congress has provided the Agency with broad authority to issue regulations “as necessary to carry out [her] functions under” the Act. This broad grant of authority further supports the reasonableness of EPA’s interpretation.

[4] See Trujillo v. General Electric Co., 621 F.2d 1084, 1086 (10th Cir. 1980) (“Administrative agencies have an inherent authority to reconsider their own decisions, since the power to decide in the first instance carries with it the power to reconsider.”) (citing Albertson v. FCC, 182 F.2d 397, 399 (D.C. Cir. 1950)). See 621 F.2d at 1088 (“The authority to reconsider may result in some instances, as it did here, in a totally new and different determination....”). For these reasons we also reject petitioner’s reliance on *Michigan v. EPA* to argue that the lack of express authority under 111(d) to update its regulations demonstrates a lack of authority to revise regulations issued under 111(d).

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**Commenter Name:** Darin Schroeder, Associate Attorney  
**Commenter Affiliation:** Clean Air Task Force (CATF)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0189  
**Comment Excerpt Number:** 3  
**Sort Order:** 201

**Comment Excerpt:**

We also agree that “changes in the landfill industry and in the size, ownership and age of landfills” support the appropriateness of EPA’s review and upgrading of the landfill EGs presently.<sup>18</sup> These changes include a trend toward fewer active, but larger, landfills; an increase in the number of landfill gas energy projects; the availability of more comprehensive data, including that reported by existing landfills pursuant to EPA’s GHG Reporting Program;<sup>19</sup> a significant change in the composition of landfill waste materials; and a 26% increase in total waste placed in landfills from 1990 to 2012.<sup>20</sup>

[Footnotes]

<sup>18</sup> See, e.g., 80 Fed. Reg. at 52102.

<sup>19</sup> GHGRP, 40 C.F.R. part 98, subpart HH.

<sup>20</sup> See e.g., Initial MSW Proposal, 79 Fed. Reg. at 41777---80.

**Comment Response:**

EPA appreciates the commenter's support in this regard.

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**Commenter Name:** Darin Schroeder, Associate Attorney  
**Commenter Affiliation:** Clean Air Task Force (CATF)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0189  
**Comment Excerpt Number:** 5  
**Sort Order:** 202

**Comment Excerpt:**

EPA's determination that it is appropriate for it to review and revise its EGs for existing landfills is a reasonable interpretation of its authority under §111(d) of the Act and its long-standing regulations found at 40 CFR Part 60.<sup>25</sup>

[Footnote]

<sup>25</sup> See, e.g., *Chevron USA v. Natural Resources Defense Council*, 467 U.S. 837, 844; 104 S. Ct. 2778 (1984)

**Comment Response:**

EPA appreciates the commenter's support in this regard. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 85, under comment [code EG2] for a detailed discussion of EPA's authority to update the emission guidelines.

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**Commenter Name:** Peter Zalzal  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0204  
**Comment Excerpt Number:** 4  
**Sort Order:** 203

**Comment Excerpt:**

The goal of encouraging continuous improvement in pollution reduction is not unique to Section 111. Rather, it is a core element of the CAA. The ability of EPA to update emission guidelines to reflect advances in systems of emission reduction is thus not only central to fulfilling EPA's Section 111 duties, but also its broader duties under the CAA "to protect and enhance" air quality.<sup>25</sup>

In amending the CAA in 1977 Congress explicitly noted the importance of providing for continuous development and updating of standards. The Senate Environment and Public Works Committee stated:

Throughout this bill there is a philosophy of encouragement of technology development. It is an encouragement to induce, to stimulate, and to augment the innovative character of industry in reaching for more effective, less-costly systems to control air pollution;<sup>26</sup>

As State authority and flexibility is vital to an effective program, so too is a program that is built on standards that are sound and a technology that is improving;<sup>27</sup>



Basic to any effective program of pollution control with economic growth must be improvements in the technology of pollution control;<sup>28</sup>

This sentiment was further enunciated by the House Committee on Interstate and Foreign Commerce discussing one of the main purposes of 1977 amendments was "to promote the development and utilization of innovative technologies for pollution control or prevention, which are more effective, less costly, and less energy intensive than presently available technologies."<sup>29</sup>

In order for 111(d) standards to comport with the goal of the CAA to incent pollution control technologies, EPA must be able to periodically update standards as industry practices change and pollution control measures advance.

[Footnote 26] S. Rep. No. 95-127 at \*18 (1977).

[Footnote 27] *Id.* at \*15

[Footnote 28] *Id.* at \*17.

[Footnote 29] H.R. REP. NO. 95-924, \*2 (1977).

#### **Comment Response:**

EPA appreciate commenter's support regarding its authority to update the emission guidelines. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 85, under comment [code EG2] for a detailed discussion of EPA's authority to update the emission guidelines.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 5

**Sort Order:** 204

#### **Comment Excerpt:**

Congress must also be understood to have crafted section 111 against the backdrop of basic principles of administrative law, which can be assumed to apply unless Congress has provided otherwise. A basic principle of administrative law is that agencies have discretion to amend previous regulations over time. The principle applies equally to EPA's ability to periodically update 111(d) standards.

The Supreme Court has repeatedly invoked this principle in numerous cases involving administrative agency revisions to their regulations. For example, reviewing a decision by the Federal Power Commission that was challenged as contrary to a former decision by the Commission, the Supreme Court stated "administrative authorities must be permitted, consistently with the obligations of due process, to adapt their rules and policies to the demands of changing circumstances."<sup>30</sup>

The Court again applied this basic tenet of administrative law in a case involving the Interstate Commerce Commission's reversal of its regulations, stating:

Regulatory agencies do not establish rules of conduct to last forever; they are supposed, within the limits of the law and of fair and prudent administration, to adapt their rules and practices to the Nation's needs in a volatile, changing economy. They are neither required nor supposed to regulate the present and the future within the inflexible limits of yesterday.<sup>31</sup>

Congress can be assumed to have been aware of this background principle when it enacted section 111(d) in 1970 and when it revised the provision in 1977 and 1990.<sup>32</sup> Given the strong background principle of administrative law supporting agency authority to review and amend previously-issued regulations, and the absence of any indication in the statute to the contrary, it is reasonable for EPA to interpret section 111(d) to allow review and revision of Section 111(d) standards.

Moreover, the Administrative Procedure Act (APA) expressly provides for revisions to federal rules. As a centerpiece of public participation rights in Agency policymaking, the APA states that "[e]ach agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule." 5 U.S.C. 553(e). This is mandatory. Accordingly, the updating of emissions standards under section 111(d) is plainly provided for by the terms and fundamental purpose of the Clean Air Act, essential to ensure that these national standards are fundamentally grounded in reason, and required to carry out the basic requirements of the Administrative Procedure Act which guarantees to citizens the right seek improvements to federal rules.

[Footnote 30] *Permian Basin Area Rate Cases*, 390 U.S. 747, 784; 88 S. Ct. 1344, 1369 (1968).

[Footnote 31] *American Trucking Associations, Inc., et al. v. Atchison, Topeka & Santa Fe RR Co., et al.*, 387 U.S. 397; 87 S. Ct. 1608 (1967); *See also Motor Vehicles Mfr. Ass'n of the U.S. et al. v. State Farm Mutual Auto. Ins. Co. et al.*, 463 U.S. 29, 41, 103 S.Ct. 2856, 2866 (1983).

[Footnote 32] *See Nassar*, 133 S. Ct. at 2525.

#### **Comment Response:**

EPA appreciates the commenter's support of its authority to update the emission guidelines. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 85, under comment [code EG2] for a detailed discussion of EPA's authority to update the emission guidelines.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 6

**Sort Order:** 205

#### **Comment Excerpt:**

Despite the fact that Congress did not explicitly require EPA to review, and as appropriate, revise Section 111(d) requirements, as discussed above, we believe this intent is clear. Even if there were some ambiguity on this point, the EPA's interpretation of its clean air authorities is clearly reasonable and should be entitled to substantial deference by a reviewing court.<sup>33</sup>

As discussed above, Section 111(d) standards must reflect the "best system of emission reduction." What this means changes over time in response to industry practices and innovation and evolution in systems of emission reduction. Accordingly, to ensure that Section 111(d) standards continue to reflect the "best system of emission reduction" EPA must be permitted to review, and revise as necessary, its emission guidelines.

[Footnote 33] *Chevron U.S.A. Inc., v. Natural Resources Defense Council, Inc., et al.*, 467 U.S. 837, 844 104 S. Ct. 2778, 2782 (1984).

**Comment Response:**

EPA agrees with commenter that the BSER changes over time and that this further supports the reasonableness of EPA's interpretation as further explained in the preamble and in response to DCN EPA-HQ-OAR-20003-0215-0100.1, comment excerpt 85, under comment [code EG2].

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 3

**Sort Order:** 206

**Comment Excerpt:**

For decades, the courts have understood that section 111 standards should be forward-looking and reflect the latest advancements in pollution control. One of the seminal D.C. Circuit cases interpreting section 111 held that "section 111 looks toward what may fairly be projected for the regulated future, rather than the state of the art at present . . ." <sup>18</sup> This conclusion was echoed in another landmark case, *Sierra Club v. Costle*, which held that the BSER determination specifically "embraces consideration of technological innovation," and that ". . . EPA does have authority to hold the industry to a standard of improved design and operational advances, so long as there is substantial evidence that such improvements are feasible." <sup>19</sup> As EPA has properly recognized, section 111 standards must "effectively promote further deployment or development of advanced technologies." <sup>20</sup>

The legislative history for Section 111 also demonstrates that EPA must look to currently available and evolving techniques in determining what constitutes the "best system of emission reduction" that has been adequately demonstrated. When amending the CAA in 1970 the Senate Public Works Committee stated "[t]he performance standards should be met through application of the latest available emission control technology or through other means of preventing or controlling air pollution." <sup>21</sup> The Committee explicitly stated that "standards of performance are not static" and that they "should provide an incentive for industries to work toward constant improvement in techniques for preventing and controlling emissions from stationary sources. . . ." <sup>22</sup> The Senate Environment and Public Works Committee reiterated this sentiment in amending the CAA in 1977:

In passing the Clean Air Amendments of 1970, the Congress for the first time imposed a requirement for specified levels of control technology . . . . This requirement sought to assure the use of available technology *and to stimulate the development of new technology*. Standards have

been set on the basis of public health and welfare protection. If technology does not exist to meet emission limitations necessary to achieve such standards, then technology must be developed.<sup>23</sup>

The House Interstate and Foreign Commerce Committee noted the same when discussing Section 111 during the 1977 amendments, stating that:

[T]he best technology requirement was intended to create incentives for improved technology, which could achieve greater or equivalent emission reduction at equivalent or lower cost, energy demand, and environmental impacts. This was to be accomplished by assuring any vendor who produced such an improved technological system that the standards would be revised to reflect that improvement, and a guaranteed market for the technology would thereby be created.<sup>24</sup>

The language, history, and judicial interpretation of section 111 have clear implications for EPA's authority to revise emission guidelines under section 111(d). If EPA is to meet its statutory obligation to ensure that emission guidelines reflect the BSER that has been adequately demonstrated, and reflect the continuous improvement of systems of emission reduction that section 111 was intended to promote, it must have the ability to ensure that emission guidelines are updated over time.

By contrast, an interpretation of section 111(d) that prohibited EPA from ever revising a section 111(d) emission guideline—regardless of new systems of emission reduction or changes in the industry—would be contrary to the statute and subvert the intent of this forward-looking program. Rather than remain vibrant over time, as Congress intended, section 111(d) emission guidelines would stagnate and be forever based on industry characteristics and known systems of emission reduction at a single snapshot in time. Such an interpretation contradicts the legislative history and case law interpreting section 111, and is not compelled by the text of the statute.

[Footnote 18] *National Asphalt Pavement Ass'n v. Train*, 539 F.2d 775, 785 (D.C. Cir. 1976) (quoting *Portland Cement Ass'n v. Ruckelshaus*, 286 F.2d 375, 391 (D.C. Cir. 1973).

[Footnote 19] *Sierra Club v. Costle*, 657 F.2d 298, 347 (D.C. Cir. 1981).

[Footnote 20] 79 Fed. Reg. 34,960, 34,964 (June 18, 2014) (summarizing Section 111 case law).

[Footnote 21] S. REP. No. 91-1196, \*13 (1970) (emphasis added).

[Footnote 22] *Id.* at \*17.

[Footnote 23] S. REP. No. 95-127, \*17 (1977) (emphasis added).

[Footnote 24] H.R. REP. No. 95-294, \*186 (1977).

### **Comment Response:**

EPA agrees with commenter that the BSER changes over time and that this further supports the reasonableness of EPA's interpretation as further explained in the preamble and in response to DCN EPA-HQ-OAR-20003-0215-0100.1, comment excerpt 85, under comment code EG2.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number: 2**

**Sort Order: 207**

**Comment Excerpt:**

EPA's authority to revise emission guidelines to ensure they keep up with current industry circumstances and systems of emission reduction flows inexorably from the language, history and purpose of section 111, which is fundamentally provision intended to ensure that stationary sources operate as cleanly as the latest pollution reduction systems allow, consistent with cost and other factors.

Section 111(d) of the Clean Air Act charges EPA with ensuring that "standards of performance" are established for certain pollutants from existing sources.<sup>15</sup> Under section 111(a) of the Clean Air Act, "standards of performance" must "reflect the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated."<sup>16</sup> Emission guidelines for existing sources are a critical part of fulfilling EPA's responsibility to ensure that all state plans under section 111(d) (and where necessary, federal plans) establish standards consistent with the "best system of emission reduction" (BSER). Importantly, Congress established but a single definition for standards of performance promulgated pursuant to sections 111(b) and 111(d), demonstrating it intends EPA to consider the same factors when establishing both sets of requirements.<sup>17</sup>

[Footnote 15] *Id.*

[Footnote 16] 42 U.S.C. § 7411(a)(1).

[Footnote 17] Congress initially required state plans to establish "emission standards" for existing sources, rather than "performance standards." Public Law 91-604, Sec. 111(d)(1) (1970). However, in 1977 Congress amended 111(d) to replace "emission standards" with "performance standards." The fact that Congress chose to amend 111(d) in 1977 to specify that 111(d) standards are "standards of performance" just as 111(b) standards is illustrative that Congress intended EPA to consider the same factors when promulgating emission standards and NSPS.

**Comment Response:**

EPA appreciates the commenter's support regarding its authority to update the emission guidelines. See the response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 85, under comment [code EG2] for a detailed discussion of EPA's authority to update the emission guidelines.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 3

**Sort Order:** 300

### **Comment Excerpt:**

In our comments on the Proposed NSPS and ANPRM, WM questioned the basis of EPA's legal authority under Section 111 of the Clean Air Act to revise the NSPS and EG, particularly where EPA has determined that BSEER remains unchanged for the source category. WM is concerned that the incremental costs and burdens that will result from some of EPA's proposals are inconsistent with the objectives of Section 111. In particular, WM is concerned that a 34 Mg/yr emission threshold for non-methane organic compounds (NMOC) is not cost-effective, and fails to deliver emission reductions commensurate with the increased burden on the regulated community. We are also concerned that lowering the NMOC emissions threshold to either 40 or 34 Mg/yr will not be reasonable or achievable unless coupled with promulgation of provisions related to Tier 4 monitoring and wellhead operating parameters. While WM supports certain aspects of EPA's proposal, as set forth herein, EPA needs to review and revise its costs and benefits estimates to ensure that the benefits of the rulemaking package are proportionate to the costs, and to support EPA's determination under Section 111(d) that the circumstances would warrant a revision of the EG. *See* 80 Fed. Reg. at 52109.

### **Comment Response:**

The Agency interprets section 111(d) as providing discretionary authority to update emission guidelines, and by extension to require states to update standards of performance, in appropriate circumstances. EPA believes this is the best, and perhaps only, permissible interpretation of the Act. It is consistent with the gap filling nature of section 111(d), the general purposes of the Act to protect and enhance air quality. Moreover, this is supported because Congress's grant of authority to issue regulations carries with it the authority to amend or update regulations<sup>[1]</sup> that they have issued. <sup>[2]</sup> "Regulatory agencies do not establish rules of conduct to last forever; they are supposed, within the limits of the law and of fair and prudent administration, to adapt their rules and practices to the Nation's needs in a volatile, changing economy. They are neither required nor supposed to regulate the present and the future within the inflexible limits of yesterday." <sup>[3]</sup>

To interpret the Act otherwise would mean that Congress intended to allow existing sources to operate forever without any consideration of the need for updated controls simply because, at some point in the distant past, the Agency had previously required these sources to be regulated. EPA's interpretation is consistent with the gap filling nature of section 111(d), whereas the opposite interpretation would undermine it. By its terms, section 111(d) was designed to address emissions from existing sources of non-national ambient air quality standards (NAAQS), non-CAA section 112 hazardous air pollutants. <sup>[4]</sup> A one-off approach would mean that the Agency would be unable to address the threats from these sources even as we improve our understanding of the danger presented by the pollutant at issue or new or improved control options become available. Indeed, this lack of authority would exist even in cases such as the instant one where some affected sources had not yet been required to invest in emission controls.

The overall structure of the CAA also supports EPA's interpretation. The primary goal of the CAA is: "[T]o protect and enhance the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." CAA §101(b)(1), 42 U.S.C. §7401(b)(1). The CAA goes about this in a number of ways. Under §111 the chosen approach is through the application of technology designed to reduce emissions to the atmosphere. This technology changes over time. Where such changes have the effect of substantially reducing

harmful air emissions, it is illogical that the Agency would be precluded from requiring existing sources to update their controls in recognition of those changes, particularly when those sources may continue to operate for decades. Had Congress intended to preclude EPA from updating the emission guidelines to reflect these changes, it would surely have specifically said so, [5] something it did not do.

The fact that EPA has the authority to update the emission guidelines does not, however, mean that it is unconstrained in exercising that authority. Rather, the decision whether to update a particular set of emission guidelines must be made on a rule-specific basis after considering the same factors the Agency considered in establishing those guidelines, including the level of reductions achievable and the cost of achieving those reductions.<sup>3</sup> EPA has determined that it is appropriate to update the emission guidelines for municipal solid waste (MSW) landfills. EPA's final rule is not a requirement to install new and different control equipment (compared to the existing rule), but rather to install the same basic controls, i.e., a well-designed and well-operated landfill gas collection and control system, on an accelerated basis. While this will result in some additional cost, EPA believes that cost is fully justified given the substantial reduction in emissions of landfill gas and its constituent components, including methane, that will result. As indicated in the final rule lowering the threshold above which landfill owners/operators must install a gas collection and control system from 50 Mg of non-methane organic compounds (NMOC) per year to 34 Mg/year will result in an additional reduction in NMOC emissions of 1,810 Mg/yr and a concomitant reduction in methane emissions of 0.285 million Mg/yr. In these circumstances, EPA believes that it not only has the legal authority to update the emission guidelines, but that doing so is imminently reasonable.

The absence of explicit authority in CAA section 111(d) to update emission guidelines does not mean that EPA lacks discretionary authority to do so. The D.C. Circuit has explicitly recognized that in the context of cases involving agency action, statutory silence may signal permission rather than proscription. See Catawba County v. EPA, 571 F.3d 20, 35-36 (D.C. Cir. 2009):

When interpreting statutes that govern agency action, we have consistently recognized that a congressional mandate in one section and silence in another often "suggests not a prohibition but simply a decision not to mandate any solution in the second context, i.e., to leave the question to agency discretion." Cheney R. Co. v. ICC, 902 F.2d 66, 69, 284 U.S. App. D.C. 101 (D.C. Cir. 1990); see also Clinchfield Coal Co. v. Fed. Mine Safety & Health Review Comm'n, 895 F.2d 773, 779, 282 U.S. App. D.C. 368 (D.C. Cir. 1990) ("[W]here an agency is empowered to administer the statute, Congress may have meant that in the second context the choice should be up to the agency.").

Here, EPA is reasonably interpreting the exclusion of the mandatory 8-year review provision from 111(d) as meaning that Congress did not mandate that EPA review and (if appropriate) revise 111(d) regulations every 8 years. Rather, EPA's interpretation of 111(d) is that Congress' grant of authority to issue the initial 111(d) regulations included the normal inherent Congressional grant of authority to revise them as appropriate. Commenters point to no statutory language that indicates that Congress intended to deprive EPA of the authority to revise 111(d) regulations.[1] Interpreting section 111(d) as permitting EPA to update 111(d) regulations is the

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<sup>3</sup> The consideration of these factors and any subsequent revision of the standards applies to the universe of sources that would be covered by this updated standard, whether these sources were subject to the prevailing new source performance standard or the existing source emission guidelines.

best, and possibly only reasonable, reading of the statute and best meets the purposes of the Act, as further explained in the preamble. [2]

In any event, the proposition that statutory interpretation is dictated by the inclusion or exclusion of text in other provisions is not instructive in this context because the “missing” language that appears in 111(b) and not in 111(d) creates a mandatory obligation to review and revise standards – not the authority to review and revise. Rather, Congress’s grant of authority to issue regulations carries with it the authority to amend or update regulations[3] unless that authority is limited by Congress.[4] Indeed, “[r]egulatory agencies do not establish rules of conduct to last forever; they are supposed, within the limits of the law and of fair and prudent administration, to adapt their rules and practices to the Nation’s needs in a volatile, changing economy. They are neither required nor supposed to regulate the present and the future within the inflexible limits of yesterday.” American Trucking Ass’n v. Atchison, Topeka & Santa Fe Ry., 387 U.S. 397, 416 (1967),

Accordingly, 111(b)’s direction that the Agency “shall, at least every 8 years, review and, if appropriate, revise such standards” creates the *obligation* to conduct that review every 8 years, but does not create the *authority* to review itself (which is inherent). The fact that 111(d) lacks similar language merely means that Congress did not create a mandatory duty for EPA to review and revise 111(d) guidelines every eight years, not that it precluded the Agency from exercising its discretion. FTC v. Tarriff, 584 F.3d 1088, 1090-91 (D.C. Cir. 2009) (“We know of no usage, nor do appellants bring forward any, that suggests that the use of ‘shall’ mandating one act implies a corresponding ‘shall not’ forbidding other acts not inconsistent with the mandated performance.”) Accordingly the Agency’s interpretation here is simply not an analogous situation to that presented in the commenters’ cases where there is an attempt to read a provision from one section into another.

In regards to the cost and benefits, the EPA has updated its impacts from proposal as outlined in the the following document: “Regulatory Impact Analysis for the Final Revisions to the Emission Guidelines for Existing Sources and the New Source Performance Standards in the Municipal solid Waste Landfill Sector”.

Footnotes:

[1] Commenters seem to suggest that the Agency has authority to revise standards to make them less stringent. They provide no explanation for this asymmetry. That is they do not explain why the Agency would have authority to review and make a requirement less stringent but not to review and make a requirement more stringent.

[2] Moreover, Section 111(d) requires that the Agency adopt procedures similar to Section 110. Section 110 anticipates that plans will be updated as NAAQS are updated. [CAA § 110(a)(1) and (2); 42 U.S.C. §7410(a)(1) and (2).] Accordingly, the directive to adopt procedures similar to those under Section 110 can reasonably be read to anticipate that EPA will update guidelines requiring updated state plans. `

[3] Congress has provided the Agency with broad authority to issue regulations “as necessary to carry out [her] functions under” the Act. This broad grant of authority further supports the reasonableness of EPA’s interpretation.



[4] See *Trujillo v. General Electric Co.*, 621 F.2d 1084, 1086 (10th Cir. 1980) (“Administrative agencies have an inherent authority to reconsider their own decisions, since the power to decide in the first instance carries with it the power to reconsider.”) (citing *Albertson v. FCC*, 182 F.2d 397, 399 (D.C. Cir. 1950)). See 621 F.2d at 1088 (“The authority to reconsider may result in some instances, as it did here, in a totally new and different determination....”). For these reasons we also reject petitioner’s reliance on *Michigan v. EPA* to argue that the lack of express authority under 111(d) to update its regulations demonstrates a lack of authority to revise regulations issued under 111(d).

## 1.4 Revisions to State or Federal Plans

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**Commenter Name:** John Teppets, Director

**Commenter Affiliation:** Idaho Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0158

**Comment Excerpt Number:** 1

### Comment Excerpt:

EPA originally promulgated Emission Guidelines for existing MSW Landfills in 1996. DEQ submitted a state plan for the control of air emissions from Municipal Solid Waste Landfills on December 16, 1999. One of the requirements for an approvable state plan is that it shall include demonstration of the state's legal authority to: (a) adopt emission standards (enforceable conditions) and compliance schedules applicable to the designated facilities and designated pollutants for which the state plan is submitted, (b) enforce applicable laws, regulations, standards, and compliance schedules, and seek injunctive relief, (c) obtain information necessary to determine compliance, (d) require recordkeeping, make inspections, and conduct tests, (e) require the use of monitors and require emission reports of owners or operators, and (f) make emission data publicly available. In order to demonstrate this legal authority for its state plan, Idaho DEQ conducted rulemaking to obtain the appropriate authority.

In order to submit a revised state plan in response to updated Emission Guidelines, Idaho DEQ will need to undertake additional rulemaking. EPA's proposed timeline: a final rule released summer of 2016 and a state plan due nine months later (March 2017) is legally impossible for Idaho based on our rulemaking schedule.

All of DEQ's new rules must be negotiated, subject to public comment, promulgated by the Board of Environmental Quality and then approved by the Idaho State Legislature. To make sure that required administrative procedures are followed, a proposed negotiated rule must go through public comment and be promulgated by the DEQ Board by November for inclusion in the following year's legislative session. A negotiated rulemaking that begins in mid-summer of 2016 would not be finished in time to present to the 2017 legislative session. At the earliest it could be presented to the 2018 legislative session with a possible effective date of April/May of 2018.

DEQ is requesting that the timeline for state plan submittal be increased to at least two years. This allowance for a time extension is consistent with the newly promulgated Clean Power Plan, which provides up to 3 years for a state plan submittal.

### Comment Response:

The implementing regulations (40 CFR 60.23) require that state plans be submitted to the EPA within 9 months of promulgation of the emission guidelines, unless the EPA specifies otherwise (40 CFR 60.23(a)(1)).

EPA recognizes that some states may not be able to submit a revised plan within this time frame due to the specific circumstances of the state's rulemaking process. EPA believes, however, that such circumstances will be the exception rather than the rule and that the majority of states will be able to complete the process within the prescribed 9 months. Additionally, some states may not submit a state plan as required by the final emission guidelines and section 111(d) of the CAA. For states that do not submit a state plan, the CAA gives the EPA express authority to implement a federal plan for sources in that state upon determination by the EPA that a state has failed to submit a state plan by the required date.

Our emission guidelines simply reflect an achievable emissions limit through the application of [\[WH2\]](#) the BSER and do not in themselves require states or sources to implement the BSER. That is, EPA is responsible for determining the level of emission limitation from the source category, while states have the responsibility of assigning emission requirements to their sources that will ensure their achievement of that level of emission limitation. States may fulfil their responsibility by establishing emission standards or creating plans consistent with the guidelines.

[\[WH2\]](#)From CPP RTC 1.11.8

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs  
**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0197  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

NACAA recommends that EPA provide a minimum of 12 months for state and local agencies to develop their state plans to comply with the regulations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0158 Comment Excerpt Number 1.

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**Commenter Name:** Catharine Fitzsimmons, Chief, Air Quality Bureau  
**Commenter Affiliation:** Iowa Department of Natural Resources (Iowa DNR)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0162  
**Comment Excerpt Number:** 5

**Comment Excerpt:**

*Comment Excerpt:*

The Iowa DNR recommends that EPA allow states up to one year from publication of the final emission guidelines to submit a state 111(d) plan to EPA, rather than the nine months that EPA has proposed.

*Rationale:* Providing one year to submit a state plan would be consistent with what EPA has provided for submittal of 111(d) state plans for other source categories, such as incinerators. Further, many states' administrative processes to adopt necessary rule changes can easily take longer than nine months, even to adopt a federal model rule by reference. A one-year submittal deadline would be more feasible for many states and would be consistent with EPA's other 111(d) deadlines.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0158 Comment Excerpt Number 1.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 2

**Comment Excerpt:**

As currently proposed in Section 60.30f (relating to scope and delegated authorities), the final Guidelines would require States to develop and submit a State Plan to EPA nine months after the date the final Emission Guidelines for MSW landfills are published in the *Federal Register*. While the DEP is committed to implementing measures expeditiously in Pennsylvania to reduce LFG emissions including methane, the proposed nine-month deadline for the development and submission of the State Plan is not achievable, in light of the resources devoted to developing the State Plan to implement EPA's "Clean Power Plan" by September 2016. To this end, the DEP recommends that EPA provide at least 12 months for the development and submission of State Plans to reduce LFG emissions including methane.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0158 Comment Excerpt Number 1.

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**Commenter Name:** Richard L. Goodyear, Bureau Chief, Air Quality Bureau, Environment Department,

**Commenter Affiliation:** State of New Mexico

**Document Control Number:** EPA-HQ-OAR-2014-0451-0190

**Comment Excerpt Number:** 1

**Comment Excerpt:**

NMED recommends that EPA allow 12 to 18 months for air quality management agencies to develop their implementation plans for the EG regulation. Based on our past experience, a

minimum of 12 months will be required for the state to amend its rules. Given the amount of time needed for rule development, public outreach, public notice, and to hold a public hearing for rule adoption, a 9 month time frame will be inadequate in most states.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0158 Comment Excerpt Number 1.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 71

**Comment Excerpt:**

**EPA SHOULD ADDRESS SEVERAL POTENTIAL IMPLEMENTATION CONCERNS.**

Republic urges EPA to consider the implementation issues likely to arise while State Plans are developed. Because the new emission guidelines in Subpart Cf will apply to all existing landfills, and the NSPS Subpart XXX will only apply to new landfills or those that modify, far more landfills will become subject to Subpart Cf. However, existing landfills will remain regulated under the current subparts WWW or Cc until a State Plan or a Federal plan is adopted, which means that the changes EPA has proposed could be delayed for the majority of landfills. If EPA relies solely on states to develop State Plans, implementation is likely to be significantly delayed since States are already facing workload challenges, given the numerous other rulemakings that have recently been adopted. Therefore, we encourage EPA to develop a Federal Plan expeditiously as a part of the rulemaking process.

**Comment Response:**

The EPA believes its approach is consistent with the requirements outlined in Clean Air Act section 111. As described in the emission guidelines proposal, 80 FR 52110 EPA also intends to revise the existing federal plan (40 CFR part 62, subpart GGG) to incorporate any changes and other requirements that result from the EPA's review of the Emission Guidelines. The revised federal plan will apply in states that have either never submitted a state plan or not received approval of any necessary revised state plan until such time as an initial state plan or revised state plan is approved.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 109

**Comment Excerpt:**

We urge EPA to expeditiously prepare and propose a Federal Plan.

Far more landfills will become subject to the EG Rule than will be subject to the new NSPS Rule. Until states develop a State Plan or adopt the Federal Plan, landfills will remain regulated under current subparts WWW or Cc. This places additional burden on states already facing major workloads associated with the Clean Power Plan and new Ozone NAAQS to develop their State Plan rulemakings.

A Federal Plan would guide states with their plans, clarify issues that might arise in transitioning from the former to the new rules, and facilitate earlier implementation of the new rules. We remind EPA that 12 agencies relied on Subpart GGG.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 71.

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**Commenter Name:** Comment submitted by Richard Boyd, Manager, Process Evaluation Section, Transportation and Toxics Division

**Commenter Affiliation:** California Air Resources Board (ARB)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0119.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

California's regulation differs from the EG and the State's local air district landfill rules in that the focus is generally on methane and not NMOCs; it applies to smaller landfills (in addition to larger landfills); and has more stringent requirements for methane collection and control, and component leak testing and surface emissions monitoring. Some of these differences are noted below.

- The triggers for installing a gas collection and control system (GCCS) under the EG are based on the landfill's design capacity and NMOC emission rate. The triggers for installing a GCCS under California's regulation are based on landfill size threshold (waste-in-place) and the landfill's heat input capacity.
- The triggers for requiring the expansion of a gas collection system under the EG are based on a specific time factor (five years for active cells; two years for closed cells or cells at final grade). California's regulation requires the expansion of the collection system based on exceedance of either the integrated and/or instantaneous surface methane emission limits that cannot be corrected after the third measured exceedance. In most cases, this results in system expansion sooner than the timelines in the proposed rule. To date, we have received 20 GCCS design plan modifications from landfill owners and operators to upgrade their systems in order to meet the requirements of California's regulation.
- The EG requires only instantaneous surface methane emissions monitoring, whereas California's regulation requires both instantaneous and integrated surface methane emissions monitoring. Integrated monitoring averages the point source measurements and is a good indicator of how well the gas collection system is operating overall. California's regulation

provides an incentive for establishing a history of compliance with the surface methane emission standards. If in compliance, the landfill owner or operator of a closed or inactive MSW landfill can decrease their sampling frequency from quarterly to annually.

- The EG provides a walking pattern spacing of 30 meters (or about 100 feet), whereas California's regulation requires an initial walking pattern spacing of 25 feet, then 100 feet once consistent compliance is demonstrated and maintained.
- The EG contains requirements for wellhead monitoring of nitrogen, oxygen, temperature and pressure. California's regulation requires only pressure monitoring for fire prevention, and to demonstrate sufficient vacuum on individual extraction wells in order to minimize methane emissions.
- California's regulation requires component leak testing. In summary, California's regulation is more stringent than the proposed rule in that it applies to smaller landfills (in addition to larger landfills), and has more stringent requirements for methane collection and control, component leak testing and surface emissions monitoring, and compliance times. We would like to discuss what impacts the proposed rule will have on California's State Plan to implement and enforce the EG (40 CFR part 60, subpart Cc), and the possibility of using California's statewide methane regulation to satisfy US EPA's requirements.

**Comment Response:**

The final rules are consistent with the President's Climate Action Plan and the President's Methane Strategy, which instruct the EPA to pursue additional methane reductions from the landfill sector. Further, the agency asserts that its approach, which continues to apply to large landfills, coupled with a tighter emission threshold, will achieve significant emission reductions. The EPA is aware of the California Landfill Methane Rule. As outlined in the proposal, the agency incorporated similar aspects of the California rule where appropriate (e.g., Tier 4). The agency's proposal also provided a description of current surface emission monitoring requires in comparison to the California Landfill Methane Rule approach (including cost estimates). The agency also requested information comparing the reductions achieved under EPA Method 21 to reductions achieves through the use of the California approach (which includes a tighter traverse pattern, integrated and instantaneous readings, and wind speed restrictions). Beyond the industry report outline in 80 FR 52136, no additional data were received.

Climate Action Plan: Strategy to Reduce Methane Emissions. March 2014. p.5.

[http://www.whitehouse.gov/sites/default/files/strategy\\_to\\_reduce\\_methane\\_emissions\\_2014-03-28\\_final.pdf](http://www.whitehouse.gov/sites/default/files/strategy_to_reduce_methane_emissions_2014-03-28_final.pdf).

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The State of Delaware agrees that nine months will be sufficient time to develop a State Plan.

**Comment Response:**

The agency agrees that its approach is consistent with 40 CFR 60.23 and that it has provided sufficient time to develop a state plan.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 73

**Comment Excerpt:**

EPA must also address the compliance obligations that may result for sites that must transition from Subpart WWW to Subpart XXX following a modification after July 17, 2014. EPA should clarify the timeframe for compliance with Subpart XXX requirements to the extent those requirements differ from existing obligations under Subpart WWW or the emissions guidelines. Further, for sites that rely on an existing gas treatment system, the final rule should allow an implementation period to allow the landfill to prepare treatment system monitoring plans.

**Comment Response:**

The rules are effective upon publication. However, the requirements in subparts WWW and Cc have been retained to ensure compliance. Further landfills will remain subject to subparts WWW and Cc and will need to continue to comply with the requirements in that rule unless and until they become subject to more stringent requirements in the revised Emission Guidelines as implemented through a revised state or federal plan. See section III.E of the 2016 Emission Guidelines Preamble for additional discussion.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 74

**Comment Excerpt:**

EPA should also consider the burdens and challenges for any landfills forced to re-report or update historical documentation as a result of its rule revisions. Such unnecessary paperwork would be particularly pointless for sites that have already triggered the GCCS requirement, given that there should be little reason to question the applicability of the regulations. To avoid confusion, EPA should also clarify that NMOC sampling results used for Tier 2 and Tier 3 demonstrations remain valid for five years from the sampling date, as stated in 40 C.F.R. § 60.35f(a)(3)(iii). Results obtained prior to the effective date of the rule that are within this 5-year

period should remain valid and acceptable for use in demonstrating applicability with XXX, Cf, and future state plan requirements.

**Comment Response:**

Because the EPA is promulgating two new subparts, open landfills are subject to the full recordkeeping and reporting requirements of the rules. Many of these reports are required to be reported electronically. The EPA believes that the electronic submittal of the reports addressed in this rulemaking will increase the usefulness of the data contained in those reports, is in keeping with current trends in data availability, will further assist in the protection of public health and the environment and will ultimately result in less burden on the regulated community. Electronic reporting can also eliminate paper-based, manual processes, thereby saving time and resources, simplifying data entry, eliminating redundancies, minimizing data reporting errors and providing data quickly and accurately to the affected facilities, air agencies, the EPA and the public.

Regarding the request to use previous Tier 2 and Tier 3 NMOC sampling results, the EPA has refined the sampling procedures for these Tiers. Therefore, owners and operators that choose to conduct Tier 2 or Tier 3 testing instead of installing and operating a GCCS according to the rules would be required to conduct Tier 2 or Tier 3 testing following the procedures and schedule in the final rule and must submit those results electronically.

In addition, to minimize the recordkeeping and reporting burden for existing landfills, landfills in the closed landfills subcategory would be exempt from initial reporting requirements (i.e., initial design capacity, initial NMOC emission rate, GCCS design plan, initial annual report, closure report, equipment removal report, and initial performance test report), provided that the landfill already met these requirements under subparts Cc or WWW of 40 CFR part 60 (or the state or federal plan implementing subpart Cc). In addition, landfills in the closed landfill subcategory are also exempt from the annual wet landfill report. While the standard continues to require monthly monitoring of wellhead parameters, the EPA has removed the wellhead operating standards for oxygen/nitrogen, which will reduce the burden associated with corrective actions, re-monitoring, and requests for alternative timelines.

## **1.5 BSER-General**

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 13

**Comment Excerpt:**

This proposed rule is also required by the Clean Air Act, which directs EPA to review, and if appropriate, revise the NSPS for each category at least once every eight years. EPA's current NSPS for landfills has not been updated since 1996 and no longer reflects the full range of technologies to reduce emissions from landfills. Just in the last two years, for example, the state of California extensively analyzed the latest technologies and practices for reducing landfill



emissions. California adopted well-designed modern standards that protect human health and the environment beyond the NSPS by covering a large number of landfills, ensuring rapid installation and expansion of emission controls, and requiring rigorous monitoring to ensure landfills prevent leaks of methane and other harmful pollutants to the atmosphere. EPA action to modernize standards for both new and existing landfills is urgently needed and long overdue.

**Comment Response:**

As part of the review of the existing NSPS (subpart WWW) for new MSW landfills and the existing Emission Guidelines (subpart Cc) for existing MSW landfills, the EPA examined whether a well designed and well operated landfill GCCS remains BSER for the purpose of controlling landfill gas emissions. As noted in the preamble to subpart XXX (79 FR 41800-41805), the EPA considered GCCSs, as well as other emission control technologies that are either currently used at landfills, or could be adopted, and considered the emission reductions achieved by those systems. Based on the results of this analysis, the EPA determined that a well designed and well operated landfill GCCS remains BSER. In the proposed Emission Guidelines (80 FR 52113), the EPA again evaluated whether a well designed and well operated GCCS was BSER for existing MSW landfills. This determination was based on the EPA's review of the NSPS for new and modified MSW landfills, as well as public comments and information received on the proposed NSPS and public input received on the ANPRM (79 FR 41796) for existing MSW landfills.

As stated in the preamble for the Emission Guidelines (80 FR 52113), the majority of the comments on this topic agreed that a GCCS capable of 98 percent NMOC destruction represented BSER for MSW landfills. Comments were received from industry owners and operators, landfill engineering consultants, and trade organizations.

Similar to the commenter's note about California's requirements for MSW landfills, the EPA is finalizing requirements that will result in additional reductions of NMOC by requiring the installation of a GCCS when the NMOC emission rate reaches 34 Mg/yr, which is lower than the existing NMOC threshold of 50 Mg/yr. The early installation and operation of the GCCS will reduce NMOC emissions by an additional 281 Mg/yr at new and modified landfills and 1,180 Mg/yr at existing landfills and result in methane emission reductions of 44,300 Mg/yr at new and modified landfills and 285,000 Mg/yr at existing landfills.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 15

**Comment Excerpt:**

The proposed rule misses opportunities to set standards that truly reflect state-of-the-art technologies and best practices in this industry, as section 111 of the Clean Air Act requires.

**Comment Response:**

The EPA has determined that a well designed and well operated GCCS that collects the LFG from the landfill and routes the collected gas to a combustion device that reduces NMOC by 98 percent by weight or an outlet concentration of 20 ppmvd of NMOC, as hexane, or to a treatment system that processes the gas for subsequent beneficial use in a process that ensures that such reductions are achieved continues to be BSER for controlled LFG emissions for both new and existing MSW landfills. This determination is based on the EPA's review of the NSPS for new landfills (79 FR 41796), as well as public comments and information received on the proposed NSPS (79 FR 41796), the ANPRM (79 FR 41772) and proposed Emission Guidelines (80 FR 52113). The EPA has also clarified that the use of treated LFG is not limited to use as a fuel for a stationary combustion device but may be used for other beneficial uses such as vehicle fuel, production of high-British thermal unit (Btu) gas for pipeline injection, or use as a raw material in a chemical manufacturing process

The majority of the comments regarding BSER agreed that a GCCS capable of 98 percent NMOC destruction represented BSER for MSW landfills. These comments included information from industry owners and operators, landfill engineering consultants, and trade organizations. Information received was not sufficient to support a change in the BSER determination, therefore, the EPA has not made changes to its determination of BSER.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

In general, Republic agrees with EPA that there is no additional information that would warrant a change in the BSER for landfills at this time. That is, the BSER for landfills continues to be a well-designed and well-operated landfill gas collection and control system that includes open (non-enclosed) flares, enclosed flares, and/or any other control device capable of achieving 98 percent reduction of nonmethane organic compounds. 79 Fed. Reg. at 41802 (“The current technology review shows that the same types of collection and control systems reviewed in 1996 [citation omitted] continue to be prominently used to reduce landfill gas emissions and the design and operational standards promulgated in 1996 continue to be robust.”).

**Comment Response:**

The EPA thanks the commenter for their support.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 169

**Comment Excerpt:**

We note that EPA did not cite BSER as the relevant standard for its promulgation of Subpart WWW in 1996, instead relying on its determination of Best Demonstrated Technology (BDT). *See e.g.* 61 Fed. Reg. at 9907. EPA has not explained in the Subpart XXX preamble whether its application of BSER differs in any material respect from its application of BDT, so it is difficult to determine whether EPA has taken a consistent and appropriate approach to this determination.

**Comment Response:**

The commenter has noted a difference in terminology between the existing NSPS (40 CFR part 60, subpart WWW) and the NSPS proposal (40 CFR part 60, subpart XXX). When subpart WWW was promulgated, the EPA cited that the "best demonstrated technology" (BDT) for both new and existing MSW landfills was a well-designed and well-operated GCCS with controls that achieve a 98 percent reduction in NMOC emissions (61 FR 9907). BDT was a term commonly used by the EPA for these standards at the time. In the preamble for the proposed subpart XXX, the EPA determined that the "best system of emission reduction" (BSER) was a well-designed and well-operated GCCS with controls that achieve a 98 percent reduction in NMOC emissions (79 FR 41801). As discussed below, a consistent approach was used by the EPA in making the BSER determination for subpart XXX.

Section 111(b)(1)(A) of the Clean Air Act (CAA) requires the EPA to establish performance standards for new, modified, and reconstructed sources for source categories which cause or contribute significantly to air pollution that may reasonably be anticipated to endanger public health or welfare. The performance standard must reflect the application of BSER that (taking into consideration the cost of achieving such emission reductions, any non-air quality health and environmental impact, and energy requirements) the Administrator determines has been adequately demonstrated (CAA section 111(a)(1)).

The level of control prescribed by CAA section 111 historically has been referred to as "Best Demonstrated Technology" or BDT. In order to better reflect that CAA section 111 was amended in 1990 to clarify that "best systems" may or may not be "technology", the EPA now uses the term "best system of emission reduction" or BSER in its rulemaking packages. As was done previously in analyzing BDT, the EPA uses available information and considers the emissions reductions achieved by the different systems available and the costs of achieving those reductions. The EPA also considers the "other factors" prescribed by the statute in its BSER analysis. After considering all of this information, the EPA then establishes the appropriate standard representative of BSER.

## **1.6 BSER Determination-BMPs**

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**Commenter Name:** Stephanie Jones and Jason Schwartz

**Commenter Affiliation:** Institute for Policy Integrity

**Document Control Number:** EPA-HQ-OAR-2014-0451-0177

**Comment Excerpt Number:** 9

**Comment Excerpt:**

EPA should consider how revised—specifically, more stringent—emission guidelines for landfills will interact with other state and federal regulatory schemes. The proposed emissions guidelines for existing landfills come under EPA’s authority from Clean Air Act Section 111(d). EPA recently completed another major rulemaking on greenhouse gas emissions from existing sources under Section 111(d)—the Clean Power Plan. As EPA carefully explained in the Clean Power Plan, EPA’s role under Section 111(d) is to set emissions targets for the states and to allow the states to pursue those targets through whatever flexible compliance plans they design. EPA should import some of the Clean Power Plan’s discussions into the final emissions guidelines for existing landfills, to clarify EPA’s authority under Section 111(d). For example, though EPA is correct that it may chose “not [to] consider any particular [Best Management Practices] to constitute BSER and, thus, is not proposing to prescribe the use of [Best Management Practices],”<sup>40</sup> it might be useful to highlight that states can still choose require best management practices as part of a state implementation plan that otherwise fully meets EPA’s targets for emissions reductions from that state’s landfills. EPA might additionally consider discussing other flexible compliance options available to the states in designing implementation plans, including inter-source and inter-state trading of emissions credits.

Footnote:

40 Proposed Rule, 80 Fed. Reg. at 52,115.

**Comment Response:**

In the proposed Emission Guidelines, the EPA acknowledged potential benefits of the use of BMPs and added compliance flexibilities to encourage their use. While the agency agrees that its approach to the Clean Power Plan was appropriate, it does not support a position that asserts that the same framework must be used for additional source categories under CAA section 111(d).

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

WM believes that the imposition of BMPS as required practices would be inconsistent with EPA's determination that a well-designed and well operated gas collection system constitutes BSER under CAA Section 111(d). As noted in EPA's background documents to Subpart WWW and in the text of the current rules, a well-maintained and well-operated gas collection system is driven by site-specific factors that cannot be reduced to a one-size-fits-all standard. *See e.g.* 40 C.F.R. §60.7S2(b)(2)(D).

WM is not making the case that the actions EPA is evaluating as BMPs are never practical or useful. To the contrary, WM currently employs many of these BMPs at our MSW landfills. We are not able to use any of these BMPs routinely at all of our landfills, however, because of the significant site-specific differences between sites. Our GCCS operations experience has shown us that BMPs may work at some sites but are not effective at others.

Therefore the BMPs should be discretionary to supplement GCCS operations but must not and cannot be required as BSER as they are not feasible for all sites and could jeopardize compliance with NSPS. Further study and research is required for BMPs; specifically, for redundant/advanced seals, biocovers/biofilters and remote wellhead monitoring. These are not proven, commercially available or cost effective at this point in time. We support further development of these technologies; however, these BMPs do not meet BSER and are not adequately demonstrated technologies at this time.

**Comment Response:**

The agency agrees that there are many variations in landfill design and operation. Further, as a result, the agency has not mandated the use of BMPs or considered them to be part of BSER. The agency continues to encourage the use of BMPs, where appropriate and recognizes that these practices have the potential to achieve additional emission reductions.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 57

**Comment Excerpt:**

Many concepts for best management practices (BMP) exist for the design, construction, maintenance and operation of active gas collection systems at landfills. Where those practices are sound, they should be required and enforced, not merely recommended or suggested as voluntary measures.

**Comment Response:**

While the agency acknowledged the efficacy of BMPs in its proposal, it also recognized site-specific variations in landfill design and operations and therefore encouraged the use of BMPs as a compliance flexibility capable of potentially achieving additional emission reductions. The EPA has concluded that the various emission reduction techniques and BMPs should not be considered to be components of BSER and, therefore, is not requiring their use.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 17

**Will be summarized and responded to in the preamble:**

**Comment Excerpt:**

The proposed rule adds language to include atmospheric vents on condensate storage tanks as exempt from the emission requirements since they are not part of the treatment system. *This is a good addition to the proposed rule and we would like to see this exemption expanded to include other safety devices, such as emergency pressure relief valves, that may allow a very small amount of gas to escape during malfunction or emergency events.*

**Comment Response:**

The final rules maintain the proposed exemption for atmospheric vents located on condensate storage tanks. The EPA has chosen not to include additional safety devices, such as emergency pressure relief valves, because these devices are part of the treatment system.

## **1.7 Proposal of a New Subpart**

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Due to the small number of MSW landfills estimated to be subject to Subpart XXX and the similarity in construction and design to the MSW landfills subject to Subpart WWW, the Division suggests EPA codify the proposed provisions concerning new MSW landfills in the existing Subpart WWW. The Division is concerned that the creation of new subparts concerning subcategories of existing regulated categories could make Part 60 even more confusing and unwieldy. In addition, the clarifications EPA has proposed to address landfill gas treatment, startup, shutdown, and malfunction provisions, and other issues raised during the implementation of Subpart WWW are relevant to Subpart WWW. Including these proposed clarifications along with the proposed new requirements in the existing Subpart WWW would avoid the duplicative efforts of having to later include the clarifications in Subpart WWW. Lastly, incorporating the new requirements of the proposed Subpart XXX into the existing Subpart WWW would provide consistent application of the requirements for similarly situated existing and new MSW landfills, especially considering that EPA determined the design and operational criteria in Subpart WWW continues to represent the best system of emission reduction ("BSER") for new MSW landfills.

**Comment Response:**

The agency has discretion to create a new subpart for this rulemaking. The current subpart WWW contains a number of cross references which would likely make additional updates and amendments confusing. As such, a new subpart (XXX) was acquired and will contain all relevant requirements for new landfills. Consistent with the general approach evinced by section 111, sources currently subject to subpart WWW would need to continue to comply with the requirements in that rule unless and until they become subject to more stringent requirements in the revised Emission Guidelines as implemented through a revised state or federal plan. The current Emission Guidelines, subpart Cc, refer to subpart WWW for their substantive

requirements. That is, the requirements regarding the installation and operation of a well-designed and well-operated GCCS and compliance with the specified emission limits are the same in both rules. Thus, since the EPA is finalizing its proposal to revise the Emission Guidelines to increase their stringency, a landfill currently subject to 40 CFR part 60, subpart WWW would need to comply with the more stringent requirements in a revised state plan or federal plan implementing the revised Emission Guidelines (40 CFR part 60, subpart Cf).

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 83

**Comment Excerpt:**

EPA's legal authority for proposed subpart XXX and the ANRPM is unclear. The Agency's legal authority to promulgate a new Subpart xxx and/or to revise existing Subpart Cc is unclear, and has not been adequately explained. First, with respect to the proposed Subpart XXX, section 111(b)(1)(B) authorizes EPA to review and, if appropriate, revise any previously published standard of performance. EPA undertook such a review with respect to BSER as determined in Subpart WWW and concluded that BSER remains unchanged. Specifically, EPA concluded that a well-designed and well-operated landfill gas collection and control system remains BSER for the landfill source category. Notwithstanding this conclusion, EPA proposes to extensively revise the landfill NSPS through the new Subpart XXX in a manner which will significantly increase the costs and compliance burdens associated with landfill operations. While WM has supported EPA's efforts to clarify certain aspects of Subpart WWW, we are concerned that EPA is not authorized in this context to substantially rework the NSPS (whether through direct revision of the existing subpart or promulgating a new subpart) in the current circumstance where the underlying BSER determination has not changed.

**Comment Response:**

Consistent with the requirements in section 111(b)(1)(B), the EPA is required to review, and if appropriate, revise its standards of performance at least every eight years. The agency's review is not limited to an evaluation of whether BSER should be changed; nor is it limited to only the need for clarifications and minor changes. Once EPA determines that it is appropriate to revise an NSPS, it is required to do so following the same procedure it followed in promulgating the NSPS in the first instance (CAA section 111(b)(1)(B); 42 U.S.C. section 7411(b)(1)(B)). The EPA believes that this requires it to make any changes that it determines are appropriate following its review of the NSPS. As to the creation of a new subpart, the EPA believes that it has ample authority to do this where it has a reasonable basis for doing so. In the current circumstances, the EPA determined that creating a new subpart would result in less confusion when compared with making changes to existing subpart WWW.

## **1.8 Mandated Source Separation**

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator

**Commenter Affiliation:** Californians Against Waste, et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0191  
**Comment Excerpt Number:** 8  
**Sort Order:** 100

**Comment Excerpt:**

Organics Diversion Is Essential to Effect Meaningful Reductions in Landfill Methane Emissions. The single most effective measure for reducing landfill methane is organics diversion. This eliminates the source of landfill gas itself, thereby avoiding the complicated issues associated with fugitive emissions from landfill gas collection. The EPA estimates that compostable material (food waste and yard trimmings) constitutes nearly 30 percent of all waste in MSW landfills.<sup>12</sup> Thus, diverting these materials both saves space and avoids landfill gas generation. Furthermore, organics diversion would alleviate the concerns related to the high cost of installing landfill gas collection systems for small entities.<sup>13</sup>

Organics diversion is a proven system. The European Union has had diversion rules (the “Landfill Directive”) in effect since 1999.<sup>14</sup> In the United States, 29 states already have regulations in place related to organics diversion.<sup>15</sup> Moreover, California recently released a draft short-lived climate pollutant (“SLCP”) strategy that proposes to eliminate all organics in the state’s waste-stream by 2025 as a part of its methane reduction strategy.<sup>16</sup> These states have provided more than “adequate” demonstration under section 111 of the Clean Air Act<sup>17</sup> that organics diversion is a feasible system for reducing landfill gas emissions.

In lieu of including organics diversion as a part of BSER, the EPA proposes to provide compliance flexibilities to incentivize organics diversion.<sup>19</sup> Incentives will not be enough, however. Those states which would have been motivated by incentives have likely already taken action. Motivating the remaining states and harmonizing individual state actions will require a robust regulatory signal.

Furthermore, it is essential that BSER include organics diversion in addition to enhanced landfill gas collection requirements to avoid dis-incentivizing state efforts to divert organics. This rule will result in deployment of more landfill gas collection systems (the current BSER), which can result climate and health benefits. In the absence of a balancing requirement to divert organics, however, operators will be motivated to keep organics in landfills in an effort to increase the volume of collected landfill gas, making the gas collection system more economical. As outlined above, because methane reduction from organics diversion is superior to the reduction from landfill gas collection, a decrease in motivation to divert organics will harm the environment and public health.

The economics of landfill operation point to the need for more stringent emission limits. One of the stated barriers to organics diversion is the low cost of landfilling organic waste (making separation seem relatively more expensive).<sup>20</sup> On the other hand, the externalized cost of harms to public health and the climate of landfilling organic waste, rather than diverting and composting it, is enormous. A strong regulatory signal will be necessary to correct this disparity.

The failure of the Proposed Rule to include organics diversion in the definition of BSER is not legally defensible. For the reasons provided above, the Center and Californians Against Waste request that the EPA re-consider its position with regard to organics diversion.



Footnotes:

12 Draft RIA at 2-6.

13 Proposed Rule at 52,120.

14 See [http://ec.europa.eu/environment/waste/landfill\\_index.htm](http://ec.europa.eu/environment/waste/landfill_index.htm).

15 Draft RIA at 2-39.

16 California Air Resources Board, *Draft Short-Lived Climate Pollutant Reduction Strategy* 49 (Sept. 2015),

available at <http://www.arb.ca.gov/cc/shortlived/2015draft.pdf>.

17 42 U.S.C. § 7411(a)(1).

18 Proposed Rule at 52,116.

19 Proposed Rule at 52,116.

20 *Id.*

**Comment Response:**

EPA continues to believe that organics diversion and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 10

**Sort Order:** 101

**Comment Excerpt:**

Efforts to collect gas in the especially challenging environment of mega-sized landfills are inherently difficult and of limited efficacy. By contrast, diverting organics from landfills is widely demonstrated in practice and extremely effective, as it prevents methane from being produced in the first place. It is cost-effective, as its adoption in numerous localities across the

U.S. demonstrates. We therefore urge the agency to determine that organics diversion is one element of the “best system of emissions reductions,” or BSER, under section 111(b) of the Clean Air Act<sup>27</sup> for landfills. Adopting organics diversion for new landfills is particularly important since the measure will ensure that these new landfills truly have a fresh start, not accumulating methane-producing organic material or doing so only in minimal amounts, an essential step towards reducing U.S. methane emissions.

[Footnote]

<sup>27</sup> 42 U.S.C. §§ 7411(a)(1), 7411(b).

**Comment Response:**

EPA continues to believe that organics diversion and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 14

**Sort Order:** 102

**Comment Excerpt:**

In the ANPRM, the agency has asked for input concerning alternative regulatory frameworks that may achieve a larger fraction of methane reduction for existing landfills than the current performance-based standard of well-designed and well-operated GCCS. We propose that the agency should adopt as a part of BSER a regulatory framework that prevents organic discards from being placed into landfills, thereby preventing the formation of methane in the first place, and apply it to new as well as existing landfills.

As we read the ANPRM, the agency acknowledges that removal of organic waste from landfills – and diverting them to proper composting facilities instead – would prevent the formation of all or nearly all landfill methane. We come to this conclusion because EPA states that “LFG is a by-product of the decomposition of organic material in MSW under anaerobic conditions in landfills.” It then suggests that a rule exemption for landfills diverting 100 percent of organic waste might be appropriate because “[i]f only non-degradable wastes were accepted, then the

waste inputs for the [gas creation] model would be zero, the emission thresholds would not be exceeded, and thus GCCS would not be required.” In other words, the agency acknowledges that the elimination of organics from landfills eliminates, or comes close to eliminating, the formation of landfill gases.

This insight should lead EPA to include landfill material separation requirements within its rulemaking. EPA, however, fails to do so, based on the same rationale it gave in 1996: “EPA continues to believe RCRA and local regulations are the most appropriate vehicle to address wide-ranging issues associated with solid waste management for landfills.” In 2014, this rationale is no longer persuasive, even assuming that it was so in 1996. EPA has now acknowledged that waste separation would essentially solve the landfill methane problem; requiring this step in the landfill NSPS and emission guidelines is thus clearly “the most appropriate” regulatory vehicle.

**Comment Response:**

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 15

**Sort Order:** 103

**Comment Excerpt:**

There is no doubt that organics separation is a system of emission reduction which “has been adequately demonstrated,”<sup>44</sup> and thus is eligible to become an element of BSER for landfills. As the agency notes in the ANPRM, organic material recovery, including composting, has

increased. “[The amount of recovered yard trimmings has increased from negligible amount [sic] in 1960 to 57.7 percent in 2012. Recovered food waste has increased less significantly from negligible amounts in 1960 to 4.8 percent in 2012. . . . [S]tates and cities with vigorous recovery programs have proven that a greater percentage recovery is possible. Organic waste diversion regulations and zero waste programs are currently in effect in multiple U.S. states and cities, with 183 municipalities providing separate curbside collection of residential food waste. For example, state programs in California, Connecticut, and Massachusetts focus on diversion from commercial or certain multifamily residential waste generators. . . . Ordinances in Seattle and San Francisco extend the separation mandate to single family dwellings.” In other words, the feasibility and effectiveness of organics separation and diversion is more than amply demonstrated, and works cost-effectively in many localities throughout the United States. The agency may find it necessary to implement organics diversion even at new landfills over time, and can do so by increasing the percentage diversion requirements over several years. But there is no doubt that this demonstrated emission reduction technique is far superior to GCCS alone and thus should become part of landfill BSER.

[Footnotes]

<sup>44</sup> 42 U.S.C. § 7411(a)(1).

#### **Comment Response:**

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 54

**Sort Order:** 104

**Comment Excerpt:**

WM supports the EPA determination that organics diversion and source separation are not considered components of BSER.

WM agrees with the Agency's conclusion that organics diversion and source separation are not part of a well-designed, installed and operated GCCS system, and therefore not part of BSER. Nonetheless, we agree with the Agency that organics diversion and source separation are advantageous practices, particularly where the materials are used to produce beneficial products such as renewable biogas for energy or fuel, or high-quality compost material for enhancing soils.

**Comment Response:**

EPA appreciates the commenter's support regarding its decisions relative to organics diversion and source separation. See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 8, under comment code EG5 for a detailed discussion of this issue.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 2

**Sort Order:** 105

**Comment Excerpt:**

Despite the rule's statement that organic waste continues to be the largest component of MSW discarded<sup>7</sup>, EPA decided NOT to require organics diversion in its proposed rule or to single out organic waste for thermal treatment. By way of comparison, in the European Union (EU), a law that went into effect in 1999 requires member countries to reduce from 1995 levels the total amount (by weight) of biodegradable (organic) municipal waste going to landfills: 25% less by 2006, 50% less by 2009, and 65% less by 2016.<sup>8</sup> EPA's decision NOT to require organics diversion is inconsistent with its acknowledgement that more than 198 communities now implement organics management programs and at least 21 States have mandated organics diversion and/or banned disposal of at least some organics (primarily yard waste) from landfills.<sup>9</sup> EPA did not even list WTE technology as an organics reduction technology.<sup>10</sup>

**[FOOTNOTES]**

(7) At West Palm Beach, approximately 53% of the MSW combusted in Renewable Energy Facility Unit 1 is or contains organic matter as determined by sampling and modeling of the waste stream. Organic waste is comprised of discarded food, spoiled produce, food scraps, yard waste, etc. The final rule should make very clear that it is not decay of non-biogenic MSW that creates methane. [http://www.atsdr.cdc.gov/HAC/landfill/html/ch2.html#t2\\_1](http://www.atsdr.cdc.gov/HAC/landfill/html/ch2.html#t2_1) If EPA's goal is to reduce the production of methane quickly in order to combat climate change, then EPA should require organics diversion from landfills, as has been done highly successfully in Europe.

(8) The EU Landfill Directive separated landfills into three groups: landfills for hazardous waste, landfills for non-hazardous waste, and landfills for inert waste. Some EU member countries have

implemented additional measures for landfills, including landfill taxes (e.g., UK escalator tax) and bans on landfilling certain types of MSW (e.g., ban on landfilling untreated waste in Germany).<http://resource.co/government/article/landfill-tax-increase-line-rpi>;  
[http://cewep.eu/media/cewep.eu/org/med\\_557/1406\\_2015-02-02\\_ewep\\_landfill\\_inctaxesbans.pdf](http://cewep.eu/media/cewep.eu/org/med_557/1406_2015-02-02_ewep_landfill_inctaxesbans.pdf).

(9) 80 Fed. Reg. at 52116.

(10) The phrase “WTE technology” includes every kind of thermal treatment, including anaerobic digestion in a bioreactor that produces methane gas that is then combusted. Transforming waste into a gas and then combusting it via pyrolysis or plasma gasification uses more energy to produce the gas; transforming waste into a gas through anaerobic digestion produces less gas. RDF and mass-burn WTE technologies are superior to these because RDF and mass-burn produce more usable energy, displacing more fossil fuel. Pyrolysis, plasma gasification, and anaerobic digestion require more pre-processing of waste; consequently, more waste is rejected and must be landfilled. Presentation by Bettina Kamuk, Chair, Working Group on Energy Recovery, IWSA at NAWTEC 2012. Diverting resources that cannot be recycled away from landfills is one of the reasons the WTE industry developed in the US and abroad.

**Comment Response:**

EPA agrees that the use of WTE technology is one approach to the reduction of organics in landfills. However, EPA does not believe that the use of WTE technology, or any other specific approach to reducing organics in landfills, is properly considered a part of BSER due to: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics reduction program, including the use of WTE technology, could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics reduction strategies when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which include organics reduction on a case-by-case basis.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 3

**Sort Order:** 106

**Comment Excerpt:**

## **EPA Should Update its Determination of Best System of Emission Reduction to Include Organics Diversion**

EPA has determined that the Best System of Emission Reduction (BSER) for MSW landfills has not changed since 1996 and still is landfill gas collection and control through combustion in a boiler, engine, or turbine; flaring<sup>11</sup>; or filtering, dewatering, and compressing landfill gas (methane) for sale. EPA estimates that, beginning in 2025, the proposed rule would reduce methane by 436,000 metric tons or the equivalent of 10.9 million metric tons of carbon dioxide<sup>12</sup> and 238,000 metric tons of carbon dioxide due to electricity generated from LFG reducing demand for electricity from the grid.<sup>13</sup> If EPA required organics diversion, then zero methane would be emitted.<sup>14</sup> EPA should phase in requirements to divert organics; for example, 25% less organics in landfills by 2018, 50% less by 2021, and 65% less by 2024. EPA should move the US in the direction of diversion of organics from landfills and zero landfilling.

### [FOOTNOTES]

(11) EPA finds both enclosed and non-enclosed (open) flares to be BSER combustion devices and states that commenters noted the prevalence of non-enclosed flares as both primary and secondary control device. 80 Fed. Reg. at 52113. California is moving to phase out or are phasing out LFG flaring. <http://www.arb.ca.gov/regact/2009/landfills09/landfillfinalfro.pdf>

(12) For calculations of CO<sub>2</sub> equivalency, EPA used a global warming potential of 25 for methane. 80 Fed. Reg. at 52106.

(13) Id. at 52103.

(14) See e.g., <http://www.sandiegoreader.com/news/2015/oct/08/ticker-southern-california-food-waste-conference/#>. The requirement to collect and combust, flare, or compress LFG is only triggered if a landfill is designed to hold 2.5 million metric tons of MSW and 2.5 million cubic meters of waste. EPA estimates that there are 989 open and closed landfills of this size in the US, of which 105 open landfills would only have to report their LFG emissions and would not have to control these emissions.

### **Comment Response:**

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or

a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 11

**Sort Order:** 107

**Comment Excerpt:**

EPA's reluctance to go beyond what was BSER in 1996: collecting and combusting, flaring, or collecting and processing LFG for sale leads to unnecessary and high methane emissions, with adverse effects for human health and the climate. A recent estimate of the greenhouse gas debits resulting from US landfilling of MSW is approximately 18 MMT of CO<sub>2</sub>e annually.<sup>30</sup> The creation of these methane emissions could readily be avoided.

(30) *Climate Change Mitigation Potential* at 103.

**Comment Response:**

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 33

**Sort Order:** 108



**Comment Excerpt:**

In order to successfully divert organics from landfills, local and state plans will need to be developed and funding secured that not only will organize separate curbside organics collection in denser communities, but also for local or regional processing facilities to be built, and markets for compost encouraged. To account for the majority of the country where nothing has been done to this end, a five year phase in period should be provided. The climate crisis is too urgent to be lackadaisical in our response.

During this same time, it will be even more important that EPA devote resources to coordinating a national effort to support these local efforts with funding, research and advise.

EPA's refusal to include diversion in BSER, at the same time it includes the most unsupportable landfill extremes like horizontal gas collectors, undermines the White House methane initiative.

**Comment Response:**

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

EPA believes that the approach it has taken is fully supportive of the President's Methane Emission Reduction Strategy.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 4

**Sort Order:** 109

**Comment Excerpt:**

For, as discussed next in Part II, the logical response to the President's call for major methane reductions to avert crossing irreversible tipping points, should have been to eliminate the source

of the methane in the first instance. That would be to rapidly phase out the obsolete practice of landfilling decomposable discards. This is exactly what the European Union, the State of California and hundreds of municipal programs have already moved to do.<sup>6</sup>

Conservative estimates of diversion's benefits, which considers what has been achieved with actual programs, indicate a reduction in methane emissions from landfills of approximately 58%. Another study that was cited with approval by EPA in the Notice suggests a smaller 19% reduction.

That is to say, the ignored diversion option would achieve between 2.4 and 7.6 times greater methane reductions than the best-case claimed from the proposed rule. Thus, even before turning to the tenuousness of EPA's claims, its proposal fails to show the agency was responsive to the President's directive because the reductions are so small absolutely and in comparison to the alternative.

Footnote:

6 European Commission, COUNCIL DIRECTIVE on the landfill of waste, 1999/31/EC (April 26, 1999) (European Landfill Directive). 10 CCR §95463

**Comment Response:**

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 30

**Sort Order:** 110

**Comment Excerpt:**

The benefits of diverting organics from landfills to composters are substantial. About 70%-75%, or about 85 MMT CO<sub>2</sub>eq, of the decomposables in landfills can readily be diverted if there is a solid commitment to do so.<sup>39</sup>

That would not produce an immediate payoff, for organic landfill bans would need to be phased in. Also, the undecomposed remainder of previously discarded wastes in landfills, which originally were more than half organic, will continue to slowly decay for decades longer. But, during that same 10 year phase-in period, the majority, albeit not the entirety, of the lifetime decay potential of the easily decomposable garbage from the past will have been spent.



That is to say, by that 2025 reference year in EPA's analysis, the majority of that practical potential 70%-75% reduction in rapid decomposing organics, and hence methane gas generation, would be realized. The benefit that would follow will depend on what fraction of gas generation one assumes is presently captured for the baseline case. If the IPCC's 20% lifetime capture rate is used, the benefit will be about a 58% reduction in GHG emissions, and if EPA's standard 75% value is used, an 18% reduction. In addition, there would also be the co-benefits to soil fertility from composting.<sup>40</sup>

Among the supporting documents EPA cites in its rule notice is a study on the effect of organics diversion on methane emissions, had EPA elected to require diversion, which was prepared by the landfill industry's preferred consultant, SCS Engineers, as reproduced in the accompanying chart.<sup>41</sup>

This summary graph shows that even the industry's reluctant acknowledgment of diversion's benefits is that an organics ban would reduce methane emissions by almost 20%, which is twice the 10% that EPA claims – wrongly – would be achieved by small adjustments in the emissions threshold. Interestingly, the difference between our estimate at the top and the SCS's study turns essentially on how effective one assumes the baseline capture efficiency to be, not on the underlying gains in reduced methane generation from diversion itself.

[Footnote 39] EPA, *Municipal Solid Waste Generation, Recycling, and Disposal in the United States* (2013). Of the organic fraction of discards in landfills, which is 60%-65% of the discard stream, approximately 20% of the readily decomposable organic fraction are the remaining yard trimmings not already diverted by landfill bans in 22 states; 75% are food scraps and soiled paper (often collectively referred to as "source separated organics" or "SSO"); and about 5% are textiles, dimensional lumber and other miscellaneous decomposable organics. The rest of the unsoiled and dry paper is largely recalcitrant to decay and not likely to decompose in large volumes until too far in the future to be immediately relevant. State yard trimming landfill bans have shown themselves to be nearly 100% effective, and innovative strategies, such as less than weekly collection of waste residues that incentivize non-cooperators to cooperate, have shown themselves capable of achieving 70% or greater diversion of SSOs. Ineffective SSO programs, on the other hand, only capture about 30%. To avoid confusion, these numbers use the now outdated EPA top down estimate of MSW generation, instead of the recently updated *Nature* figures that are 2.2× greater.

[Footnote 40] Sally Brown, "Connections: CO<sub>2</sub> Math For Compost Benefits," *BioCycle* (August 2013), at p. 45.

[Footnote 41] Alex Stege, “The Effects of Organic Waste Diversion on LFG Generation and Recovery from U.S. Landfills,” SCS Engineers (2014), at p. 27.

**Comment Response:**

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 28

**Sort Order:** 111

**Comment Excerpt:**

While the Notice devotes an extensive amount of time to very minor tweaks to the emissions threshold, it all but ignores the methane reducing strategy adopted by other leading regulators and hundreds of communities in North America. That is to divert the decomposable discards that, only when landfilled, generate methane in the first instance.

Food scraps, grass clippings, leaves, brush, and textiles should not be landfilled where they not only generate massive volumes of methane. Each year, it had been thought that approximately 137 million tons of solid waste are landfilled in the U.S. In modern landfills, the accumulated annual output of trash generates something in the order of 8 million tons of methane over the site’s life,<sup>22</sup> which is equivalent to 244 million metric tons-carbon dioxide equivalent.<sup>23</sup> We now know from more recent research with the GHG Reports published in *Nature* that there is more than twice as much landfilled garbage and that much more again in methane generation.<sup>24</sup>

Moreover, buried organics prolong biological activity in the waste mass, and mobilize the release of pollutants into the environment that also threatens site stability for centuries. Instead, the diverted generate energy in digesters.<sup>25</sup>

This is neither rocket science, nor is it impractical nor unrealistic nor legally questionable. For this is the same policy that Europe's Landfill Policy first began making a reality 16 years ago in 1999 and is now well under way, California's Short-Lived Climate Pollutant Reduction Strategy followed last month, and that is unguided by dozens of communities in the State already moving ahead of the regulatory curve, and hundreds of communities across North American that have been leading by example for the past decade. Also, 20 states have some form of ban on the landfilling of yard trimming.<sup>26</sup> These widespread practices clearly meet the "adequately demonstrated" test for a emissions guidelines under §111(d).<sup>27</sup>

[Footnote 22] Landfilled municipal solid waste in the U.S., or 137.2 million tons in 2007, is from EPA, *MSW Generation, Recycling and Discards in the United States*, at Table ES-1; quantity of gas generated per pound of waste is from EPA, *Turning a Liability Into an Asset* (EPA 430-B-96-0004, 1996), at p. 2-6, and 57 FEDERAL REGISTER 33791 (June 21, 1993). More recent reported decreases in assumed gas generation rates appear to ignore residual carbon remaining in closed landfills. The most recently IPCC approved 100-year methane GWP of 25 is used to convert methane quantities into CO<sub>2</sub>-equivalents.

[Footnote 23] The calculation is performed by multiplying methane quantities by the most recent estimate of its 100-year Methane Global Warming Potential. After accounting for indirect interactions with aerosols, that multiplier is 34 times CO<sub>2</sub>. Drew T. Shindell, et al., "Improved Attribution of Climate Forcing Emissions," 326 SCIENCE 716 (2009).

[Footnote 24] Jon Powell et al., "Estimates of solid waste disposal rates and reduction targets for landfill gas emissions," *Nature Climate Change* (September 21, 2015).

[Footnote 25] Sally Brown, "Connections: CO<sub>2</sub> Math For Compost Benefits," *BioCycle* (August 2013), at p. 45.

[Footnote 26] European Landfill Directive. California Air Resources Board, *Short-Lived Climate Pollutant Reduction Strategy* (September 2015). Rhodes Yepsen, "BioCycle Nationwide Survey: Residential Food Waste Collection In The U.S.," *BioCycle* (January 2015), at p. 53. Brenda Platt and Nora Goldstein, "State of Composting in the U.S.," *BioCycle* (July 2014), at p. 19

[Footnote 27] 42 USC §7411(d). *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), cert. denied, 416 U.S. 969 (1974).

### **Comment Response:**

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill

owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 29

**Sort Order:** 112

**Comment Excerpt:**

EPA's justification for rejecting diversion rings hollow. EPA does not directly explain why it summarily rejected the logically compelled organics landfill ban. Instead, it cross-references its discussion in another docket where it responded to the Environmental Defense Fund's attempt to force the agency to strengthen its landfill air regulations after the group threatened to sue for the 8-year review that was legislatively mandated.

In that other docket, "EPA determined that a well designed and operated landfill GCCS [as substantially determined by the site operator] remains B[est] S[ystem of]E[mission] R[eductions]. ... *We are proposing to conclude that organics diversion and source separation are not part of a well-designed, installed and operated GCCS and, therefore, not part of BSER.*"

EPA reached this conclusion because "[o]ur review shows that a gas collection system comprising gas collection wells, horizontal or vertical piping, and blowers continues to be *the most common technology used to collect landfill gas...*"<sup>33</sup>

That explanation is *prima facie* absurd. Asking landfill operators how they run their landfills reveals nothing relevant to the charge that the Administration gave to EPA, which was to maximize methane reductions from landfills to help prevent a global climate crisis. Obviously, landfill owners, whose business model depends on increasing volumes of garbage, are not going to advocate or practice diverting trash elsewhere unless EPA or state regulators require that.

In the supporting documents for the rule, the RIS suggests a bias against diversion and for landfills. It states "studies have shown that diverting waste from landfills may not always result in a comparative reduction in GHG emissions when efficient LFG collection systems and lifecycle emissions are taken into account,"<sup>34</sup> even though those studies are predicated on discredited claims of very high gas capture.

EPA improperly ignores the fact, in addition to collection being cap dependent, that most of the landfill gas is generated in active cells without a seal on top when gas collection is dysfunctional.<sup>35</sup> Indeed, those expressions of preference for landfills are too reminiscent of the landfill industry's opinion that "recycling has long been the enemy of the solid waste industry, stealing volumes otherwise headed for landfills."<sup>36</sup>

But, the views of the landfill units in OSWER and OAR may be an aberration in the Agency. Of note, the EPA's official Integrated Waste Management Hierarchy places composting above landfilling.<sup>37</sup> Also, all of EPA's Regional Offices, in parts of the country where the waste industry lobbied aggressively to repeal state yard trimming landfill bans, concluded that ““due to the documented inefficiencies in landfilling yard trimmings to generate methane for energy...the EPA supports the continuation of landfill bans for yard trimmings...”<sup>38</sup>

[Footnote 33] 79 FED. REG. 137, at p. 41801-2 (July 17, 2014) (emphasis added).

[Footnote 34] RIS, at PDF p. 57.

[Footnote 35] IPCC Report, at p. 600.

[Footnote 36] Mogan Stanley Dean Witter, U.S. Investment Research: Environmental Services, April 28, 1999, at p. 1.

[Footnote 37] On-line at: <http://www2.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-wastemanagement-hierarchy> (accessed October 22, 2015).

[Footnote 38] See, e.g., Letter from EPA Region 4 to Georgia Department of Natural Resources, February 25, 2010.

#### **Comment Response:**

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 24

**Sort Order:** 113

**Comment Excerpt:**

Organics diversion and management programs are developing throughout the country. Delaware has multiple stakeholder workgroups reviewing organic management options that would best fit Delaware. Delaware agrees with EPA that mandatory organics diversion should not be included in this rule.

**Comment Response:**

EPA appreciates the commenter's support of its decision not to include mandatory organics diversion in the final rule. EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 9

**Comment Excerpt:**

While EPA imposes on WTE facilities and their communities various requirements for organics diversion and other recycling-materials separation measures, the proposed Emission Guidelines have no comparable requirements for landfills.

As EPA notes in the August 27 preamble, landfill methane is a by-product of the decomposition of organic material in MSW. Organic materials such as food waste, yard debris, and other organics are the largest component of MSW, 80 Fed. Reg. at 52115/3, and decreasing the volume of organic waste disposed in landfills would significantly reduce the volume of landfill methane and other landfill gases. *See id.* at 52116/1-2 (modest diversion programs can reduce landfill gas by 9% and more aggressive programs yield reductions of up to 18.5%). In addition, diversion of organics from landfills has been very successful in Europe and instrumental in the EU waste sector having the largest GHG reduction (34%) compared to all other economic sectors in the



EU. See European Environment Agency, *Greenhouse Gas Emission Trends and Projections in Europe 2009: Tracking Progress Toward Kyoto Targets*, [http://www.eea.europa.eu/publications/eea\\_report\\_2009\\_9](http://www.eea.europa.eu/publications/eea_report_2009_9).

EPA nevertheless decided not to include organics diversion and source separation as components of the BSER (best system of emission reduction) the Agency is proposing for landfills, *id.* at 52115/3, even as the Agency recognizes that the limited nature of its proposed revisions to the Emission Guidelines is such that the proposal is “not expected to have an “appreciable effect” on landfill disposal. See *id.* at 52142/1; see also *id.* at 52143/1 (“EPA does not believe the proposal would lead to substantial changes in . . . the amount of waste disposed in landfills”). To explain that paradox EPA suggests that “[t]here are significant barriers” to federal requirements with respect to organics diversion. *Id.* at 52116/1-2. These “includ[e] lack of regulations and incentives at the state and local level; limited processing and transfer capacity for organic wastes; low cost to dispose of waste in landfills relative to other waste treatment technologies; multifaceted and regional nature of the solid waste management industry; and behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills.” *Id.* It should be noted that none of these matters were barriers to the “Materials Separation Plan” requirements the Agency has applied to WTE facilities for 20 years. See 40 C.F.R. § 60.75b. In addition, none of the suggested barriers were noted in the *Clean Power Plan* that EPA finalized just prior to the proposed landfill Emission Guidelines, which advises states and WTE facilities as follows:

[S]tates planning to use waste-to-energy as an option for the adjustment of a CO<sub>2</sub> emission rate should assess both their capacity to strengthen existing or implement new waste reduction, reuse, recycling and composting programs, and measures to minimize any potential negative impacts of waste-to-energy operations on such programs. States must include that information in their plan submissions. The EPA will reject as qualified biomass any proposed waste-to-energy component of state plans if states do not include information on their efforts to *strengthen existing or implement new waste reduction as well as reuse, recycling and composting programs, and measures to minimize any potential negative impacts of waste-to-energy operations on such programs.*

*Clean Power Plan*, 80 Fed. Reg. at 64900/1. The disparity between the Agency’s treatment of landfills versus WTE in this matter is confusing given the fact that WTE communities’ recycling and composting rates regularly outperform communities that rely on landfilling. See <http://www.energyrecoverycouncil.org/userfiles/files/2014-Berenyi-recycling-study.pdf>; see also n.8, *infra*. In addition, most of the CO<sub>2</sub> emitted from WTE facilities is biogenic and, as EPA recognizes, processing of mixed organics by WTE and composting each have the same carbon footprint. See *Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model* (March 2015), [http://www3.epa.gov/epawaste/conserve/tools/warm/pdfs/-\\_WARM\\_Documentation.pdf](http://www3.epa.gov/epawaste/conserve/tools/warm/pdfs/-_WARM_Documentation.pdf), Exhibit 18-10. In short, the proposed Emission Guidelines reflect a significant and unexplained difference in treatment of WTE facilities compared to landfills.

### **Comment Response:**

We appreciate the comment and information regarding the benefits of organics diversion and source separation. EPA has recognized those benefits and encouraged organics diversion and source separation in the rule. Commenters highlight EPA’s requirement of a “Materials

Separation Plan” for new municipal waste combustors in 40 CFR 60.57b and the treatment of waste-to-energy facilities in the recently promulgated *Clean Power Plan* as precedents to argue that organics diversion and source separation should be considered components of the best system of emission reduction (BSER). However, commenters do not provide any critique of the “significant barriers” to including organics diversion as a component of BSER identified by EPA in the preamble at 80 Fed. Reg. 52116 and have not demonstrated that these barriers would not prevent organics diversion and source separation from being considered part of BSER. EPA continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers that Commenters have not addressed: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. Furthermore, it should be noted that the Materials Separation Plan requirement identified by the Commenters applies to newly constructed waste-to-energy facilities rather than existing sources and is defined in 40 CFR 60.51b to permit such a plan to “include different goals or approaches for different subareas in the service area, and *may include no materials separation activities for certain subareas or, if warranted, an entire service area.*” Additionally, the treatment of waste-to-energy in the Clean Power Plan cited by the Commenters does not support their position. The Clean Power Plan language discusses requirements necessary for waste-to-energy to be used as a compliance option, and, in that case, only requires that states “include information of their efforts” regarding waste reduction, recycling, and composting programs. 80 Fed. Reg. at 64900. The Clean Power Plan did not rely on waste-to-energy or source separation when establishing BSER, as Commenters suggest EPA should in this matter. These requirements are not analogous to the inclusion of organics diversion and source separation as a component of BSER.

See the response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 8 under comment code EG5 regarding incorporating diversion components as BSER.

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**Commenter Name:** Ted Michaels, President  
**Commenter Affiliation:** Energy Recovery Council (ERC)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0175  
**Comment Excerpt Number:** 6  
**Sort Order:** 500

**Comment Excerpt:**

The Clean Power Plan provides an outstanding analogous framework for the inclusion of organics diversion as BSER:

1. Landfills are regulated under Section 111(d) of the Clean Air Act, the same section of the Act which provides the EPA the regulatory authority for the Clean Power Plan.
2. Emissions reductions at landfills can be achieved by a. reducing the GHG intensity through better source controls and implementation of best management practices, and b. varying their utilization levels, consistent with the basic construct of regulating electric generating units (EGUs) under the CPP.<sup>20</sup>

3. Electricity generation and waste management are both necessary public services, requiring adequate capacity to meet the needs of society. As the EPA notes in the preamble to the Clean Power Plan, "compliance with CAA section 111(d) standards may be set sometime in the future,"<sup>21</sup> which allows for a glidepath toward lower carbon intensity for electric generation, or in the case of landfills, waste management.

4. Alternatives to landfilling, including recycling, composting, anaerobic digestion, and energy recovery are "adequately demonstrated." The D.C. Circuit has held that a system is adequately demonstrated if it "has been shown to be reasonably reliable, reasonably efficient, and which can be reasonably expected to serve the interests of pollution control without becoming exorbitantly costly in an economic or environmental way."<sup>22</sup> The existence of high performing integrated waste management systems in localities across the country attest to the efficacy and reasonableness of landfill diversion. The fact that these systems are not universal is not an issue: in the preamble to the Clean Power Plan, the EPA notes that "adequately demonstrated" does not mean "routine."<sup>23</sup>

[Footnote 20] See FR 79, 117

[Footnote 21] See V.A.1.c.(2) of Clean Power Plan

[Footnote 22] *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), *cert. denied*, 416 U.S. 969 (1974).

[Footnote 23] *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973) as cited by U.S. EPA (2015) Clean Power Plan preamble, pre-publication version, Section V.A.1.

#### **Comment Response:**

We appreciate the comment and information regarding the benefits of organics diversion. EPA has recognized those benefits and encouraged organics diversion and source separation in the rule. Commenters argue that the *Clean Power Plan* serves as precedent to consider organics diversion as a component of the best system of emission reduction (BSER). However, commenters do not provide any critique of the "significant barriers" to including organics diversion as a component of BSER identified by EPA in the preamble at 80 Fed. Reg. 52116 and have not demonstrated that these barriers would not prevent organics diversion from being considered part of BSER. EPA continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers that Commenters have not addressed: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. Finally, the Commenters have not demonstrated that the landfill industry also possesses the unique criteria present in the electric generation and distribution industry which provides the framework for the determination of BSER for that industry in the Clean Power Plan. See 80 FR 64677-8.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 6

**Sort Order:** 501

**Comment Excerpt:**

The Clean Power Plan provides a clear analogous framework for the inclusion of landfill diversion as BSER:

1. Landfills are regulated under Section 111(d) of the Clean Air Act, the same section of the Act which provides the EPA the regulatory authority for the Clean Power Plan.
2. Emissions reductions at landfills can be achieved by a. reducing the GHG intensity through better source controls and implementation of best management practices, and b. varying their utilization levels, consistent with the basic construct of regulating electric generating units (EGUs) under the Clean Power Plan.<sup>21</sup>
3. Electricity generation and waste management are both necessary public services, requiring adequate capacity to meet the needs of society. As the EPA notes in the preamble to the Clean Power Plan, “compliance with CAA section 111(d) standards may be set sometime in the future,”<sup>22</sup> which allows for a glidepath toward lower carbon intensity for electricity generation, or in the case of landfills, waste management.
4. Alternatives to landfilling, including recycling, composting, anaerobic digestion, and energy recovery are “adequately demonstrated.” The D.C. Circuit has held that a system is adequately demonstrated if it “has been shown to be reasonably reliable, reasonably efficient, and which can be reasonably expected to serve the interests of pollution control without becoming exorbitantly costly in an economic or environmental way.”<sup>23</sup> The existence of high performing integrated waste management systems in localities across the country attest to the efficacy and reasonableness of landfill diversion. The fact that these systems are not universal is not an issue: in the preamble to the Clean Power Plan, the EPA notes that “adequately demonstrated” does not mean “routine.”<sup>24</sup>

[Footnote 21] EPA, *Federal Register* **79**:, 117, 34836 (June 18, 2014)

[Footnote 22] See V.A.1.c.(2) of Clean Power Plan

[Footnote 23] *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), *cert. denied*, 416 U.S. 969 (1974).

[Footnote 24] *Portland Cement Ass’n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973) as cited by EPA (2015) Clean Power Plan preamble, pre-publication version, Section V.A.1.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0175, excerpt number 6, under comment code EG5.

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**Commenter Name:** Ted Michaels, President

**Commenter Affiliation:** Energy Recovery Council (ERC)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0175

**Comment Excerpt Number: 3**

**Sort Order: 502**

**Comment Excerpt:**

End-of pipe landfill gas collection and treatment practices and standards are only a small part of the solution. When assessing how to best reduce GHG emissions from fossil fuel fired electrical generation, the EPA wisely considered how we can best avoid our dependence on that sector altogether. The most significant GHG reductions come not just from improving the efficiency of coal fired power plants, but by changing how we generate electricity. The same applies to reducing emissions from landfills. While meaningful reductions can occur at landfills, the most significant emissions reductions can be achieved through a combination of source controls and, more importantly, diversion of waste from landfills. In order to achieve these reductions, diversion of organics from landfills must be included as part of the Best System of Emissions Reductions (BSER). Landfill diversion through recycling, composting, anaerobic digestion, and energy recovery is the most effective means of reducing landfill methane emissions.

It is clear that we have reached the limits of what we can do with source controls. We need an alternative approach focused on landfill diversion and waste avoidance. The success of such an approach has already been proven. Diversion from landfills has been very effective in the European Union, where the direction to divert 65% of organics from landfills<sup>14</sup> has been a cornerstone in the waste sector's achievement of the largest relative GHG reduction (34%) of any sector in the EU.<sup>15</sup> The European Environment Agency (EEA) attributes these considerable reductions in waste management GHG emissions to increased levels of diversion from landfills to recycling and waste-to-energy.<sup>16</sup> In fact, the European Commission has embarked on a plan to expand its efforts, with a goal of achieving only 5% landfilling by 2030.<sup>17</sup> The EPA itself notes successes from across the county in increasing landfill diversion.<sup>18</sup> Landfill diversion is recognized in the EPA's own waste hierarchy. Including landfill organics diversion in BSER can drive progress here in the U.S.

[Footnote 14] EU (European Union) (1999) Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste. *Official Journal of the European Communities*. L182, 42, 1–19.

[Footnote 15] European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2009: Tracking progress towards Kyoto targets*  
[http://www.eea.europa.eu/publications/eea\\_report\\_2009\\_9](http://www.eea.europa.eu/publications/eea_report_2009_9)

[Footnote 16] European Environmental Agency (2008) Better management of municipal waste will reduce greenhouse gas emissions. Available at:  
[http://www.eea.europa.eu/publications/briefing\\_2008\\_1/EN\\_Briefing\\_01-2008.pdf](http://www.eea.europa.eu/publications/briefing_2008_1/EN_Briefing_01-2008.pdf)

[Footnote 17] EU (European Union) (1999) Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste. *Official Journal of the European Communities*. L182, 42, 1–19.

[Footnote 18] U.S. EPA, *Federal Register* **79**: 137, 41787 (July 17, 2014)

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0175, excerpt number 6, under comment code EG5.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 4

**Sort Order:** 503

**Comment Excerpt:**

End-of pipe practices and standards are only a small part of the solution. When assessing how to best reduce GHG emissions from fossil fuel fired electrical generation, the EPA wisely considered how we can best avoid our dependence on that sector altogether. The most significant GHG reductions come not just from improving the efficiency of coal fired power plants, but by changing how we generate electricity. The same applies to reducing emissions from landfills. Yes, meaningful reductions can occur through better landfill gas control, but the most significant emissions reductions can be achieved through a combination of source controls and, more importantly, diversion of waste from landfills. In order to achieve these reductions, diversion of organics e.g. paper, food, yard waste) from landfills must be included as part of the Best System of Emissions Reductions (BSER).

Landfill diversion through recycling, composting, anaerobic digestion, and energy recovery is the most effective means of reducing landfill methane emissions. Landfills are imperfect systems, and even the most effective gas collection systems still emit significant amounts of methane over their lifetime. Over the life of waste in a landfill, the lifetime collection efficiency at landfills that collect gas is estimated to be only **35 – 70%**, leaving a significant amount of methane uncollected.<sup>8-12</sup> Furthermore, landfills don't measure their emissions, they model them: One study found the typical landfill emissions model used underestimated emissions.<sup>13</sup>

It is clear that we have reached the limits of what we can do with source controls. The California Air Resources Board, having implemented far more stringent regulations than those in the Proposed Rule, has determined that they can achieve an instantaneous gas collection efficiency of 83%, after final cap and cover.<sup>14</sup> Measured methane emissions from Puente Hills landfill, a well-managed landfill with a 6 foot thick clay cap located in a dry climate, fully in compliance with the CARB requirements, were indicative of a 73% collection efficiency.<sup>15</sup> If such a well-controlled landfill operating under the most stringent landfill gas control regulations in the country can only achieve 73% efficiency, why is the EPA focused on a set of tail pipe controls that are *less* stringent?

We need an alternative approach focused on landfill diversion and waste avoidance. The success of such an approach has already been proven. Diversion from landfills has been very effective in the European Union, where the direction to divert 65% of organics from landfills<sup>16</sup> has been a cornerstone in the waste sector's achievement of the largest relative GHG reduction (34%) of any sector in the EU.<sup>17</sup> The European Environment Agency attributes these considerable reductions in waste management GHG emissions to increased levels of diversion from landfills to recycling and EfW.<sup>18</sup> The EPA itself notes successes from across the country in increasing landfill diversion.<sup>19</sup> Landfill diversion is recognized in the EPA's own waste hierarchy. Including landfill diversion in BSER can drive progress here in the U.S.

In the absence of real substantive change from the Proposed Rule, the EPA will continue to send the message to the states that emissions from landfills, and the significant reductions achievable through more sustainable waste and materials management, are not a priority. These emissions guidelines represent a big opportunity for the EPA, one that will not likely reemerge for a decade or more, to establish sustainable waste and materials management as a priority and help the country achieve meaningful reductions of GHG emissions at a cheaper cost than the Clean Power Plan.

[Footnote 8] Environmental Commissioner of Ontario, *EcoIssues: GHG11 Landfill Methane* Webpage, [http://ecoissues.ca/GHG11\\_Landfill\\_Methane](http://ecoissues.ca/GHG11_Landfill_Methane), accessed October 20, 2015.

[Footnote 9] Fishedick M. *et al.* (2014) *Industry*. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., *et al.* (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.  
[https://www.ipcc.ch/pdf/assessmentreport/ar5/wg3/ipcc\\_wg3\\_ar5\\_chapter10.pdf](https://www.ipcc.ch/pdf/assessmentreport/ar5/wg3/ipcc_wg3_ar5_chapter10.pdf)

[Footnote 10] Levis, J., M.A. Barlaz (2014) *Landfill Gas Monte Carlo Model Documentation and Results*, Available at:  
[http://www3.epa.gov/epawaste/conserva/tools/warm/pdfs/lanfl\\_gas\\_mont\\_carlo\\_modl.pdf](http://www3.epa.gov/epawaste/conserva/tools/warm/pdfs/lanfl_gas_mont_carlo_modl.pdf)

[Footnote 11] CalRecycle (2012) CalRecycle Review of Waste-to-Energy and Avoided Landfill Methane Emissions. Available at:  
<http://www.calrecycle.ca.gov/Actions/Documents%5c116%5c2012%5c689%5cCalRecycle%20Review%20of%20WtE%20Avoided%20Emissions%2007032012.pdf>

[Footnote 12] See Exhibit 7-9 of EPA (2015) *Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM)*,  
[http://www3.epa.gov/epawaste/conserva/tools/warm/pdfs/WARM\\_Documentation.pdf](http://www3.epa.gov/epawaste/conserva/tools/warm/pdfs/WARM_Documentation.pdf)

[Footnote 13] Amini, H.R., D. Reinhart, A. Niskanen (2013) Comparison of first-order-decay modeled and actual field measured municipal solid waste landfill methane data, *Waste Management* **33**: 12 (December 2013), 2720 – 2728.

[Footnote 14] California Air Resources Board (CARB 2009), *Staff Report: Initial Statement of Reasons for the Proposed Regulation to Reduce Methane Emissions from Municipal Solid Waste Landfills, Appendix D: Evaluation of Landfill Gas Collection Efficiency*, May 2009. Available at:  
<http://www.arb.ca.gov/regact/2009/landfills09/isor.pdf>

[Footnote 15] Peischl *et al.* estimated emissions from the Puente Hills Landfill to be 34 Gg / yr, comparable to the 2008 CARB inventory value of 38.8 Gg / yr. When the measured emissions of the Puente Hills landfill are compared against published data on landfill gas collection at the site [Shan *et al.* (2012) *Estimation of Landfill Gas Emissions and Collection System Efficiency Using Surface Flux Chamber Technology – A Case Study of Puente Hills Landfill, SWANA 35th Annual Landfill Gas Symposium Proceedings.*], the overall abatement efficiency inclusive of the effects of soil oxidation is 74.7%. Assuming soil oxidation of 10%, the resultant collection efficiency is 73%.

[Footnote 16] EU (European Union) (1999) Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste. *Official Journal of the European Communities*. L182, 42, 1–19.

[Footnote 17] European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2009: Tracking progress towards Kyoto targets*  
[http://www.eea.europa.eu/publications/eea\\_report\\_2009\\_9](http://www.eea.europa.eu/publications/eea_report_2009_9)

[Footnote 18] European Environmental Agency (2008) Better management of municipal waste will reduce greenhouse gas emissions. Available at:  
[http://www.eea.europa.eu/publications/briefing\\_2008\\_1/EN\\_Briefing\\_01-2008.pdf](http://www.eea.europa.eu/publications/briefing_2008_1/EN_Briefing_01-2008.pdf)

[Footnote 19] EPA, *Federal Register* **79**: 137, 41787 (July 17, 2014)

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0175, excerpt number 6, under comment code EG5.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 3

**Sort Order:** 504

**Comment Excerpt:**

The most effective tool for reducing landfill methane is to divert non-recycled waste from landfills to modern WTE facilities. Accordingly, the proposed Emission Guidelines should follow the approach that underlies the Agency’s Clean Power Plan by encouraging alternative technology – in this case WTE – for significantly enhanced environmental protection.

Much more is needed to protect the environment, and an important analogy is EPA’s *Clean Power Plan, Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Final Rule*, 80 Fed. Reg. 64662 (October 23, 2015). More specifically, the federal policy objective that underlies the *Clean Power Plan* (i.e., the goal of reversing the adverse environmental impact of the emissions source at issue – coal-fired electric generating units) is not confined to narrow, source-focused mitigation but rather proactive measures that reexamine technology choices and provide incentives for displacing high emitters with zero and low-emitting sources. *See id.* at 64667/1, 64722/2-3. The facts pertinent to landfill methane are quite similar. Thus, in addition to requiring further reductions of methane and other landfill emissions, an even more effective tool would be to divert non-recycled waste from landfills to WTE. The case for doing so is all the more compelling given EPA’s recognition that “one of the best” near-term measures for mitigating global climate change is to reduce methane emissions. 79 Fed. Reg. at 41774/1.<sup>2</sup>

[Footnote 2] President Obama’s *Climate Action Plan* addresses the need for quick action to address short-lived climate pollutants (SLCPs), with methane being one of the most potent SLCPs. *See*

<https://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>. Major efforts of the U.S.-launched international coalition to address SLCPs – the “Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollution” – are focused on “reducing methane and black carbon from waste and landfills.” *Id.*



**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0175, excerpt number 6, under comment code EG5.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 75

**Sort Order:** 600

**Comment Excerpt:**

Organics diversion and source separation are outside the scope of 111(d) emission guidelines or 111(b) new source performance standards. Waste Management is a strong supporter of organics diversion and source separation. We have a strong and ongoing commitment expanding organics diversion and source separation in the many communities we serve across the US. We do not believe, however, that Section 111 of the Clean Air Act is the proper mechanism for achieving these objectives. In our experience, the development of such policies is best implemented by solid waste, not air, officials at the local, state and Federal levels. At the Federal level, we have worked closely with EPA's Office of Resource Conservation and Recovery for many years, and it is our view that ORCR should be the ones to request this type of input, evaluate the information received, and ultimately determine whether and what types of Federal policies would best incentivize the greater use of these technologies. In addition, significant progress has been achieved working at the state and local levels on these issues, and we are very concerned at the possibility that EPA's Office of Air and Radiation might enact rules that are duplicative of, inconsistent with, or otherwise undermine current and potential future state and local programs.

As EPA states in the ANPRM, 79 Fed. Reg. at 41787, the Agency at the time the initial Landfill NSPS/EG was promulgated "decided not to include materials separation requirements within the final rule because EPA continues to believe RCRA and local regulations are the most appropriate vehicle to address wide-ranging issues associated with solid waste management for landfills." Yet EPA goes on to "request input and ideas for encouraging organic waste diversion under the revised emissions guidelines." 79 Fed. Reg. at 41788.

The ANPRM is not clear with respect to how EPA may evaluate organics diversion in the context of the EG, and we have found no support or explanation for this new approach in either the ANPRM or its supporting documents. EPA has provided no explanation and no justification for using the Clean Air Act - instead of the solid waste regulations under the purview of ORCR, states and localities - to implement an approach that would regulate organics diversion and/or source separation. There is no role for the Air Office or state air officials in these matters, and EPA has not concluded that solid waste authorities are incapable or unwilling to encourage and incentivize organics diversion and source separation. Based on our own experience, and confirmed by EPA's discussion of the status of these policies (cite FR), it is clear that support for organics diversion and source separation is growing and that solid waste officials at all levels are doing their jobs. 79 Fed. Reg. at 41787.

**Comment Response:**

EPA reiterates its position from the 1996 Landfill NSPS that the Resource Conservation and Regulatory Act (RCRA) and local and state regulations are the most appropriate vehicle to address the wide ranging issues associated with solid waste management for landfills. It is our experience materials separation, including diversion of organics, is primarily a solid waste issue that is best left to state and local solid waste agencies. We appreciate the comparisons to organics bans in other places, such as Europe's Landfill Directive but note the Directive is primarily a solid waste (not air) regulation. We have already provided examples of how states and municipalities in the U.S. are moving toward the diversion of organic wastes from landfills to composting and anaerobic digesters. We have noted that 21 states have already mandated organics diversion and/or banned disposal of at least some organics from landfills, and five of those states (including California, Connecticut, Massachusetts, Rhode Island, and Vermont) have enacted legislation governing organics disposal specific to food waste. In addition, state initiatives to recycle organic waste have contributed to the growth of local residential organics collections with 198 communities in 19 states reporting curbside collection of food scraps. Between 2009 and 2014, the number of municipalities with source separated food waste collection more than double (from 90 to 198) and the number of affected landfills grew by 50 percent. In addition, separate collection and treatment of organics in the commercial and institutional sectors has also risen. These examples highlight the fact states and local government are taking the leadership in mandating and diverting organics, a positive trend, which is expected to continue. These trends emphasize that states and local governments have made much progress on this issue, and regulations enacted by EPA's OAR may be inconsistent with regulations enacted by state and local governments. Also, while EPA has recognized the emission reduction benefit of organics diversions from landfills, citing studies that organics diversion programs could achieve 9-18.5 percent reduction in LFG generation rates, we still maintain that organics diversion is not considered a Best Emission Reduction Technology (BSER) under Section 111. The EPA conducted a rigorous analysis to determine what is consider BSER. The EPA first undertook a review to determine whether a well-designed and well operated landfill gas control and collection system (GCCS), which the EPA previously defined as BSER for controlling landfill gas remains a BSER for that purpose. The EPA considered GCCS, as well as other emission control reduction technologies that are currently at place at landfill, be considered a BSER. Based on this analysis, the EPA developed and applied a model program to revisit the design capacity cutoff, the NMOC emission rate cutoff, and the time allowed for installing and expanding a gas collection system. In addition to reviewing the thresholds that determine the schedule for installing and expanding the GCCS system, the EPA also reviewed whether the schedule for removing the GCCS needed adjustment. For the above analyses, the EPA compared the environmental benefits and corresponding costs that are expected to be achieved under various control options to the environmental benefits and corresponding costs that are expected to be achieved under the baseline.

Based on extensive review and analysis of data sources, the EPA determined that a well-designed and well-operated landfill GCCS and a control device capable of reducing NMOC in the controlled gas by 98 percent is considered a BSER. Using the same line of reasoning, the EPA also determined that organics diversion, while a worthwhile practice that reduces methane emissions, is not a BSER. There are significant barriers with regard to organics diversion, including: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and

industries) to divert their organic wastes from landfills. It is therefore EPA's conclusion that organic diversion and source separation are not a part of a well-designed, installed and operated GCCS system, and therefore not a part of BSER.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 41

**Sort Order:** 601

**Comment Excerpt:**

Organics diversion and source separation is a complex issue. In order to properly address it, consideration must be given to implementation, coordination and logistics details. These issues are best managed at the local level by solid waste, not air, officials. This has already begun in many localities across the country. While DSWA does not think that the Landfill NSPS or EG is the appropriate vehicle to regulate organics diversion or source separation, we wish to point out that these regulations will need to be flexible to accommodate declining gas generation that facilities will experience as a result of local initiatives. Gas production expectations will need to be adjusted in terms of when gas will be generated and the duration of gas production.

**Comment Response:**

EPA appreciates commenter's support regarding our BSER determination. EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so.

Regarding flexibilities in the final rules, the EPA has finalized a variety of flexible compliance strategies in the final rule to address areas with lower gas quantities.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 57

**Sort Order:** 602

**Comment Excerpt:**

We support EPA's conclusion that organics diversion and source separation are not BSER and agree that beneficial use of organics is desirable. Our members have been active in organics management in many different ways including yard waste, food waste segregation and collection for both commercial and residential customers diverting millions of tons of yard and food waste for beneficial use as compost, soil amendments and energy. However, landfills provide a critical function to protect the environment by safely managing and disposing of the material it receives. Landfills do not provide collection services for source separated organics nor do they develop policies associated with such practices. These are the responsibilities of state or local governments. The policies fall outside of a landfill's responsibilities and, as such, should not be considered in this rulemaking.

**Comment Response:**

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 7

**Sort Order:** 603

**Comment Excerpt:**

**EPA's emission** guidelines should not require organics diversion or source separation.

Republic is a strong supporter of organics diversion and source separation. We have made an ongoing commitment to expanding organics diversion and source separation in the many communities we serve across the United States. Nevertheless, we agree that such programs are not well-suited as part of the BSER for EPA's emission guidelines program. As noted previously, EPA has "decided not to include materials separation requirements within the final rule because EPA continues to believe RCRA and local regulations are the most appropriate vehicle to address wide-ranging issues associated with solid waste management for landfills." 79 Fed. Reg. 41787-88. Section 111 of the Clean Air Act is simply not the proper mechanism for supporting organics diversion initiatives.

**Comment Response:**

EPA appreciates the commenter's commitment to organics diversion and source separation. While we continue to believe that the issue of mandated materials separation is best addressed in the context of RCRA and local waste management regulations, we believe that we have the authority to address the issue under the Clean Air Act should circumstances so dictate.

EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following

barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 39

**Comment Excerpt:**

Under the Act's §112(h)(1),<sup>28</sup> the Agency also clearly has the authority to require work practice changes, such as diversion, when the emissions are hazardous air pollutants and it is not feasible to enforce a traditional end-of-pipe requirement. EPA has repeatedly recognized that landfill gas is a hazardous air pollutant,<sup>29</sup> and, the IPCC has concluded that it is not feasible to capture most landfill gas when the cell is active, which is also when most of the gases are generated.<sup>30</sup>

[Footnote 28] 42 USC §7412(h)(1):

For purposes of this section, if it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard for control of a hazardous air pollutant or pollutants, the Administrator may, in lieu thereof, promulgate a design, equipment, work practice, or operational standard, or combination thereof, which in the Administrator's judgment is consistent with the provisions of subsection (d) or (f) of this section. In the event the Administrator promulgates a design or equipment standard under this subsection, the Administrator shall include as part of such standard such requirements as will assure the proper operation and maintenance of any such element of design or equipment.

[Footnote 29] 56 FED. REG. 104 (May 30, 1991), at p. 22474.

[Footnote 30] IPCC Report, at p. 600.

**Comment Response:**

EPA agrees with commenter that it has the authority under CAA section 111, including perhaps section 111(h), to address issues concerning organics diversion, waste separation and other practices designed to reduce the amount of LFG generated and strongly encourages landfill owners/operators to adopt such practices when it is practical to do so. However, EPA

continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion, waste separation and other practices for reducing the amount of LFG when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include organics diversion, source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Comment submitted by Peter Anderson, Executive Director

**Commenter Affiliation:** Center for a Competitive Waste Industry

**Document Control Number:** EPA-HQ-OAR-2003-0215-0098.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

We draw especial attention to the legal requirement for EPA to include in that survey the more than 183 local programs that divert food scraps, soiled paper, grass clippings, leaves and brush from landfills,<sup>9</sup> which are of the type specifically contemplated for the 12% survey under the Act. That section's contemplation specifically includes, in addition to traditional smoke stack limits, programs that "reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications." [See 42 U.S.C. §7412(d)(2)(A).]

Therefore, EPA is without power today to continue acting under §111. Whatever validity once attached to EPA's 2003 unsupported declaration that BACT is MACT, that is no longer germane. Now that EPA has embarked, 10 years late, on its 8-year review of the original landfill air rule [See 2 U.S.C. §7411(b)(1)(B).], the issue of whether to act under §111 or §112 is now again before the agency effectively as a matter of law *de novo*. Having waived its dubious insufficient-information defense in 2003, which is the only ostensible justification it ever provided for violating the law, now it must properly undertake the §112 review to determine a standard that is equal to or better than the average of the best 12% of the sources within 18 months of July 17th [See 42 U.S.C. §7412(d)(3)(A).], including the 183 diversion programs.

[Footnote: Rhodes Yepsen, "Residential Food Waste Collection in the U.S." 54 *BioCycle* 3 (March 2013), at p. 23.]

**Comment Response:**

EPA believes that it continues to have the authority to regulate emissions of LFG under both CAA section 111 and CAA section 112: however, the current rulemaking only concerns the exercise of that authority under CAA section 111. As such, CAA section 112's mandate to establish floors is not relevant.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 40

**Comment Excerpt:**

It is not the case that EPA has never before declared that certain types of material cannot be safely managed in MSW landfills and banned them. Under the Hazardous and Solid Waste Amendments of 1984, hazardous wastes were largely banned from MSW landfills, because practice showed that they could not be safely isolated in these facilities.<sup>31</sup>

Similar to that hazwaste example, the Intergovernmental Panel on Climate Change's (IPCC) finding that lifetime gas capture rates are "as low as 20%"<sup>32</sup> amply demonstrates that, in a world facing climate catastrophe and about to cross irreversible points of no return, neither can organics be safely buried in landfills.

[Footnote 31] 40 CFR §258.20.

[Footnote 32] IPCC Report, at p. 600. In response to the anticipated rebuttal, the landfill industry has attempted to distinguish the IPCC's conclusions about gas capture being "as low as 20%" from the U.S. experience by claiming that figure was an average of the developed and undeveloped world, with the U.S. experience being magnitudes greater.

Not only has industry provided no basis for its claim, but the record of the IPCC's underlying documents, which is a matter of public record, shows the opposite.

The IPCC Report cites Hans Oonk and Oonk's comments to the IPCC are on file. They make clear that the underlying analysis is of landfills in the Netherlands, not the Third World. The work papers also establish that the averaging that did get incorporated into the integrated 20% estimate was between very poor performance when the northern European landfill is open, and most gases are generated, and excellent performance when closed, but when little gas is produced – just as is the case in the U.S. Peer review comments by Prof. Hans Oonk, Expert Review of First Order Draft of Waste Chapter to IPCC's Fourth Assessment Report (2006).

**Comment Response:**

While EPA has the authority to address issues regarding the input of raw materials under CAA section 111 in appropriate circumstances, we do not believe that such circumstances are present here. EPA continues to believe that source separation and other approaches to reducing the volume of organic materials landfilled can be effective in reducing emissions of landfill gas and strongly encourages their use. However, EPA also continues to believe that there are significant barriers to including organics diversion as a component of BSER. In particular, EPA notes the following barriers: the complexity and local nature of waste management; limited processing and

transfer capacity for organic wastes; the multifaceted and regional nature of the solid waste management industry; and, behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills. In theory, an effective organics diversion program could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. We believe that this provides a strong incentive for landfill owners/operators to employ organics diversion when it is practicable to do so. In addition, states are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a well designed and operated GCCS and requires the same or a more stringent level of control of NMOC emissions as the emission guidelines. EPA will evaluate the approvability of any revised state plans which do include source separation or other organics reduction strategies on a case-by-case basis.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 7

**Sort Order:** 1000

**Comment Excerpt:**

The EPA defends its decision to exclude landfill diversion from BSER in this proposal on the basis of significant barriers to implementation and a belief that “RCRA and local regulations are the most appropriate vehicle to address wide-ranging issues associated with solid waste management for landfills.” However, the data clearly show these regulations are not working. According to the EPA’s own figures, our recycling rate continued to drop in 2013, the second consecutive annual drop reported.<sup>25</sup>

With commodity prices dropping significantly in 2015, it is reasonable to expect this drop will continue. In contrast, landfilling remains the dominant method of waste management in the U.S. As recently demonstrated by a team of Yale and University of Florida scientists using the EPA’s own data, we landfilled 262 million metric tonnes of MSW in 2012, over twice as much as estimated and reported by the EPA.<sup>26</sup>

We agree that there are barriers to implementing landfill diversion. In fact, these barriers are precisely why our recycling rates are stagnant, why we continue to rely heavily on landfills and why its inclusion in BSER is necessary. The EPA has cited these barriers as to why they are not including diversion as a part of BSER.<sup>27</sup> We believe that these barriers are not insurmountable and that an effective regulation can help overcome these barriers.

First, the EPA cites the lack of regulations as a barrier for inclusion of diversion as BSER. This is not particularly true. Recycling requirements are widespread across the country. As noted in the preamble, there is substantial state precedent for specifically regulating the diversion of organic wastes. The preamble cites 21 states with some form of organics diversion requirements, 5 states with legislation specifically regarding food waste diversion, and 198 communities in 19 states with curb-side food waste diversion programs.<sup>28</sup>



Second, the EPA cites a lack of processing capacity for organic waste. There is a well-developed and functioning system for many forms of organic wastes, including yard wastes, paper and cardboard. In 2014, over 50 million tons of paper products were recycled and over 24 million tons of organic waste components in MSW were composted.<sup>29,30</sup> Food waste diversion anaerobic digestion capacity is growing.

As recently reported in *Biocycle*, there are around 20 stand-alone anaerobic digester plants in the U.S. with an estimated annual capacity of approximately 1 million tons, and another 30 plants in permitting or under construction.<sup>31</sup>

Third, the EPA cites the low cost of disposal of waste in landfills relative to other waste treatment technologies. We couldn't agree more. Europe's success in reducing landfilling, and increasing recycling, composting, and energy recovery has been in large part due to raising the cost of landfilling relative to other technologies. Unfortunately, landfills will remain a low cost option, and these rules as proposed, will not change the amount of waste managed in landfills. Inclusion of landfill diversion in BSER could change that dynamic and result in significant GHG reductions well beyond what is achievable through the modest adjustments to the gas collection requirements proposed.

[Footnote 25] See Table 2 of EPA (2015) *Advancing Sustainable Materials Management: Facts and Figures 2013*, EPA530-R-15-002  
[http://www3.epa.gov/epawaste/nonhaz/municipal/pubs/2013\\_advncng\\_smm\\_rpt.pdf](http://www3.epa.gov/epawaste/nonhaz/municipal/pubs/2013_advncng_smm_rpt.pdf)

[Footnote 26] Powell, J.T., T.G. Townsend, J.B. Zimmerman (2015) Estimates of solid waste disposal rates and reduction targets for landfill gas emissions, *Nature Climate Change*, 2015/09/21/online, <http://dx.doi.org/10.1038/nclimate2804>

[Footnote 27] EPA, *Federal Register*, **80**: 166, 52116 (August 27, 2015)

[Footnote 28] *Ibid.*

[Footnote 29] American Forest & Paper Association, Paper recycles website, Statistics: Paper Recovery & Landfill, accessed October 23, 2015 <http://www.paperrecycles.org/statistics/paper-recovery-landfill>

[Footnote 30] Themelis, N.J., D. Shin (2015) Survey of MSW Generation and Disposition in the US, *MSW Management*, November/December 2015

[Footnote 31] Themelis, N.J., L. Arsova (2015) Calculating Tons to Composting in the U.S., *BioCycle*, **56**, 2, 27, <http://www.biocycle.net/2015/02/13/calculating-tons-to-composting-in-the-u-s/>

### **Comment Response:**

EPA agrees that the cited barriers are not insurmountable; however, they do continue to exist and EPA believes that they are best dealt with through a combination of possible action under RCRA, continued efforts by the state and local authorities and changes in the marketplace, and not action under the Clean Air Act. EPA strongly encourages landfill owners/operators to adopt organics diversion, source separation and other practices that reduce the amount of organic materials landfilled, and thus, the amount of LFG generated, and believes that subparts XXX and Cf act as an incentive to do so. In theory, an effective organics diversion program or other

practices to reduce the amount of LFG generated could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS, thus providing a strong incentive for landfill owners/operators to employ such practices when it is practicable to do so.

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**Commenter Name:** Ted Michaels, President

**Commenter Affiliation:** Energy Recovery Council (ERC)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0175

**Comment Excerpt Number:** 7

**Sort Order:** 1001

**Comment Excerpt:**

The EPA defends its decision to exclude landfill diversion from BSER in this proposal on the basis of significant barriers to implementation and a belief that "RCRA and local regulations are the most appropriate vehicle to address wide-ranging issues associated with solid waste management for landfills." However, the data clearly show these regulations are not working. According to the EPA's own figures, our recycling rate continued to drop in 2013, the second consecutive annual drop reported.<sup>24</sup> With commodity prices dropping significantly in 2015, it is reasonable to expect this drop will continue. In contrast, landfilling remains the dominant method of waste management in the U.S. As recently demonstrated by a team of Yale and University of Florida scientists using the EPA's own data, we landfilled 262 million metric tonnes of MSW in 2012, over twice as much as estimated and reported by the U.S. EPA.<sup>25</sup>

We agree that there are barriers to implementing organics diversion. In fact, these barriers are precisely why our recycling rates are stagnant, why we continue to rely heavily on landfills and why its inclusion in BSER is necessary. The EPA has cited these barriers as to why they are not including organics diversion as a part of BSER.<sup>26</sup> We believe that these barriers are not insurmountable and that an effective regulation can help overcome these barriers.

[Footnote 24] See Table 2 of U.S. EPA (2015) *Advancing Sustainable Materials Management: Facts and Figures 2013*, EPA530-R-15-002

[http://www3.epa.gov/epawaste/nonhaz/municipal/pubs/2013\\_advncng\\_smm\\_rpt.pdf](http://www3.epa.gov/epawaste/nonhaz/municipal/pubs/2013_advncng_smm_rpt.pdf)

[Footnote 25] Powell, J.T., T.G. Townsend, J.B. Zimmerman (2015) Estimates of solid waste disposal rates and reduction targets for landfill gas emissions, *Nature Climate Change*, 2015/09/21/online, <http://dx.doi.org/10.1038/nclimate2804>

[Footnote 26] FR **80**, 166, 52116

**Comment Response:**

EPA agrees that the cited barriers are not insurmountable; however, they do continue to exist and EPA believes that they are best dealt with through a combination of possible action under RCRA, continued efforts by the state and local authorities and changes in the marketplace, and not action under the Clean Air Act. EPA strongly encourages landfill owners/operators to adopt organics diversion, source separation and other practices that reduce the amount of organic materials landfilled, and thus, the amount of LFG generated, and believes that subparts XXX and Cf act as an incentive to do so. In theory, an effective organics diversion program or other

practices to reduce the amount of LFG generated could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS, thus providing a strong incentive for landfill owners/operators to employ such practices when it is practicable to do so.

## 1.9 Encouraging Organics Diversion

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 35

**Sort Order:** 100

### Comment Excerpt:

The diversion and composting or recycling of organic wastes is an economical and environmentally effective approach to mitigating landfill emissions, and we urge EPA to explicitly encourage organics diversion through the revisions to the NSPS and EG. As EDF discussed in its White Paper, although LFG collection effectively mitigates most landfill GHG emissions occurring while the collection system is installed, no collection system is capable of *eliminating* LFG emissions. Composting organic waste, by contrast, avoids generation of landfill methane altogether, results in relatively little process-related emissions of methane and CO<sub>2</sub>, and yields important ancillary benefits such as enhanced storage of carbon in the soil and avoided use of synthetic fertilizer.

### Comment Response:

The EPA agrees with the commenter on the benefits of diverting organic waste from MSW landfills, but the final rule provisions do not directly encourage organic waste diversion as they are focused on the landfill as the emission source instead of the entire waste management system. In the final rules, several provisions may help indirectly encourage organic waste diversion. The EPA is promulgating an NMOC emission threshold of 34 Mg/yr, which may encourage landfill owners or operators to minimize the amount of organic waste that enters the landfill and thus the amount of landfill gas generated. In addition, the EPA maintains that the Tier 4 emission threshold determination could encourage owners or operators to minimize the amount of organics that enter the landfill as one landfill operating practice to keep surface emissions low.

In the 2015 proposed Emission Guidelines (80 FR 52116), the EPA identified potential ways to encourage organic waste diversion. The EPA, through its various voluntary programs, intends to explore opportunities to support organic waste diversion from landfills.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 16

**Sort Order:** 101

**Comment Excerpt:**

We note that even if the agency rejects organics diversion as BSER (or an element thereof) for new landfills, we encourage the agency to incentivize organics diversion to the maximum extent.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 35, under [comment code EG11].

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 5

**Sort Order:** 102

**Comment Excerpt:**

It would be wise for EPA to design the landfill methane rules to be structured in a way that incentivizes further secondary reductions, as by diversion of wastes to management strategies with lower life-cycle carbon impacts.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 35, under [comment code EG11].

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 42

**Sort Order:** 200

**Comment Excerpt:**

**EPA's proposals to incentivize organics diversion are flawed.** EPA seeks comment on organics diversion incentives for programs that achieve "diverting 100 percent of organic wastes." Achieving diversion to such an exacting standard, however, is not practically possible. The best levels of practicable separation generally reduce the baseline organic fraction by about 75%, from approximately 60%-65% of organics as a fraction of total waste to perhaps 15% of landfilled waste by wet weight. Until organics diversion programs reach late stage development where incoming separated wastes are further pretreated at the landfill with mechanical-biological systems to stabilize the organic residues remaining in the discards, none could qualify for the EPA's 100% prerequisite.

In addition, even if the qualification standard were lowered, gas collection systems would remain necessary in large landfills to prevent gas pressure buildup stemming from remaining organics from blowing out the final cover or to prevent noxious odors.

Lastly, while biological decomposition caused by organic discards is a major mechanism for the mobilization of some 30 hazardous air pollutants (HAPs) in landfills (such as benzene, toluene and vinyl chloride), there are other transfer mechanisms for these HAPs that work regardless of biological decomposition, including precipitation, sorption and volatilization. Thus, while dimethyl mercury problems should abate when decomposables are diverted, many other fugitive HAPs could continue to be a concern and would continue to require gas collection systems.

**Comment Response:**

In the ANPRM (79 FR 41788), the EPA stated that one method to encourage organic waste diversion under the revised Emission Guidelines could be to provide rule exemptions for landfills diverting 100 percent of organic wastes. Although the EPA recognizes the benefits of diverting organic waste from MSW landfills, the final rules do not include any exemptions for landfills diverting 100 percent of organic waste. The EPA recognizes that 100 percent organic waste diversion may be difficult to achieve.

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 35, under [comment code EG11] for encouraging organic waste diversion.

To address HAPs in MSW landfills, the EPA promulgated the Landfills NESHAP in 2003, which also adopt a gas collection and control system.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 76

**Sort Order:** 201

**Comment Excerpt:**

We believe that any such policies that could be included in EG are likely to be less effective and more difficult to implement than the policies that Federal, state and local solid waste officials are developing. EPA's idea that landfills that divert 100% of organics could be exempted from the existing guidelines appears at the current time to be unlikely. EPA's general discussion does not provide sufficient information to understand the possible approaches in even a general way. As EPA notes, the current emissions guidelines allow nondegradable waste to be excluded from the total waste mass when computing the NMOC emission rate. 79 Fed. Reg. at 41788. Thus, existing landfills that currently practice source separation and organics diversion are already incentivized to divert organic waste - even without achieving 100% diversion - because they have decreased the fraction of organic waste and increased the fraction of non-degradable waste, and that change will be reflected in the NMOC equation. Thus, even under the current rule, an existing landfill not yet covered by the rule that diverted 100% of its organic waste, would "be exempted," because it would not exceed the NMOC threshold.

The more complicated issue is how EPA's general approach would apply to existing landfills that have already exceeded the NMOC threshold. These landfills would have installed GCCS and are required, under the current EG, to continue operating the GCCS until NMOC emissions fall below the threshold, provided the GCCS has operated for at least 15 years. In this scenario, it is unclear how the exemption would work, and it would almost certainly require significant changes to other parts of the emission guidelines. Unfortunately, we cannot offer more specific input, because EPA has not clearly explained what it is thinking or acknowledged the potential implications of this change on the structure of the entire rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121, excerpt number 42, under [comment code EG11].

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 31

**Sort Order:** 203

**Comment Excerpt:**

Instead of actually requiring diversion, the only ostensible nod that EPA offers to diversion is an ersatz claim to encourage it.

Unfortunately, again, encouragement in EPA's mind consists of allowing those landfills that prohibit organics to delay installation of a GCS by plugging the lower achieved fraction of decomposables into the equation for estimating NMOCs. But, to eliminate, as oppose to just delay, the legal requirement for a GCS in this way, it would be necessary to have almost no organics remaining in the wastes, and perfection is not a part of a dispersed voluntary program. As noted, good organic diversion programs are generally likely to divert about 75%, but not 100%, of decomposables, and since landfills are regional and will be accepting wastes from well run, and, if there is not a major national commitment, also poorly run programs, with real world results possibly around 50% effectiveness.

Thus, EPA's putative encouragement will actually, as before and at most, slightly delay, but not avoid the need for a GCS. And, at recirculating mega-fills, where most of the methane is generated, there is not likely to even be a small delay.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121, excerpt number 42, under [comment code EG11].

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121  
**Comment Excerpt Number:** 43  
**Sort Order:** 300

**Comment Excerpt:**

**An alternative potential strategy to incentivize organics diversion.** A different option to provide incentives may lie in well-designed requirements to ease some of the long-term care obligations<sup>49</sup> for landfills that do not accept organics or limit organics intake because these landfills do not create the same risks of post-closure events.

[Footnote]

<sup>49</sup> See 40 C.F.R. 258.61.

**Comment Response:**

The EPA thanks the commenter for their suggestion. Post-closure care is addressed under the RCRA regulations and is outside the scope of the MSW landfill regulations being finalized today.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader  
**Commenter Affiliation:** Sierra Club, et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0178  
**Comment Excerpt Number:** 32  
**Sort Order:** 301

**Comment Excerpt:**

That is not to say that encouragement of organics diversion in lieu of an organics ban cannot be done meaningfully. It could. One way would be to eliminate key subsidies in existing financial assurance rules (repealing captive insurance and corporate IOUs, requiring postclosure funds for at least periodic replacement of covers not longer than warrantees, and hopefully possible corrective actions in amount as a function of size, non-conforming compliance, proximity of drinking supplies and surrounding population density). Exceptions could be had by those landfills which independently conduct randomly sampled testing establishes contains less than 25% yard trimmings, food scraps, disposable diapers and pet wastes.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121, excerpt number 43, under [comment code EG11].

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**Commenter Name:** Anonymous public comment  
**Commenter Affiliation:** Private Citizen  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0076  
**Comment Excerpt Number:** 2  
**Sort Order:** 400

**Comment Excerpt:**

I think everyone would agree it is a wonderful idea to compost food waste instead of sending it to the landfills. I have researched outdoor composting and have also learned a lot from the public hearings regarding Brausch Farms. I don't believe that you are going to control or minimize the STINK in an outdoor facility. Not until we can CONTROL THE WEATHER. Maryland has opened one of the largest indoor composting facilities in the country and wisely built it in a large industrial area to minimize the complaints, because even in an indoor composting facility there is still a small amount of odor. The EPA should be talking with the Walmart's and Kroger's etc... about building indoor composting facilities for all of their food wastes. It would eventually be a money making business for them. Would you want the STINK in your neighborhood/backyard?

**Comment Response:**

The EPA thanks the commenter for their input. The location of composting facilities is outside the scope of this rulemaking.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 55

**Comment Excerpt:**

In the ANPRM, EPA solicited input on methods to encourage organics diversion, and even suggested an example whereby use of the proposed Tier 4 emission threshold determination and flexible wellhead operating parameters might encourage landfills to adopt organics diversion.

We feel it necessary to point out a critical flaw in that premise. While landfills may serve as excellent locations for siting organics management units, such as composting facilities or anaerobic digestion units, landfills cannot "adopt" organics diversion or source separation programs. Establishment of such programs is solely within the purview of state or local government, which must develop voluntary or mandatory means for households and businesses to segregate select organic materials for collection and delivery to the organics management facility. If a landfill were to host a composting facility or anaerobic digester, it would need to receive source-separated organics of sufficient quality to use as a feedstock. To achieve the quality of feedstock material necessary to produce quality compost or biogas, organic materials must be segregated by the generator, separately collected, and separately managed apart from the MSW stream. The infrastructure and regulatory program requirements to support such a program fall completely outside the purview of landfills and therefore, outside the scope of this rulemaking. **We therefore urge the Agency to avoid tying regulatory flexibility provisions in the final NSPS or EG to the expectation that a landfill could on its own establish an organics diversion or source separation program.**

WM remains a champion of sustainable materials management and hopes to extract the highest and best value possible from the materials we handle. As of the beginning of 2014, WM was



providing food waste collection services to more than 700,000 residential and commercial customers and yard waste collection to even more. In 2013, we diverted 2.4 million tons of yard trimmings and food waste for beneficial use as compost, soil amendments and energy. As of the end of 2014, WM operated or partnered in the operation of 39 organics processing facilities across the country.

To achieve sustainable and protective management of these materials, we support a regulatory framework to ensure that management of organics is protective of human health and the environment. This includes strict regulatory controls such as those MSW landfills operate under, including strong environmental permitting requirements, facility siting criteria, opportunity for public participation, operating standards to control emissions and financial assurance requirements. **Before any governmental entity considers instituting an organics diversion program, it should ensure the development of a protective regulatory framework and the physical and logistical infrastructure necessary to manage safely organic materials outside highly regulated landfill facilities.**

**Comment Response:**

The EPA recognizes that landfill owners or operators do not typically develop or facilitate organics diversion programs and that such programs are more likely within the purview of state or local government. In the 2015 proposed Emission Guidelines (80 FR 52116), the EPA recognized that there are significant barriers to issuing a federal mandate for diversion under the Emission Guidelines, including: Lack of regulations and incentives at the state and local level; limited processing and transfer capacity for organic wastes; low cost to dispose of waste in landfills relative to other waste treatment technologies; multifaceted and regional nature of the solid waste management industry; and behavioral changes needed among waste generators (individuals, businesses, and industries) to divert their organic wastes from landfills.<sup>1</sup> The EPA also recognizes its position from the 1996 Landfill NSPS that the Resource Conservation and Regulatory Act (RCRA) and local and state regulations are the most appropriate vehicle to address the wide ranging issues associated with solid waste management for landfills. It is our experience materials separation, including diversion of organics, is primarily a solid waste issue that is best left to state and local solid waste agencies.

[Footnote 1: Stege, Alex. The Effects of Organic Waste Diversion on LFG Generation and Recovery from U.S. Landfills. SWANA's 37th Annual Landfill Gas Symposium. 2014.]

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 30

**Comment Excerpt:**

We support EPA's proposal to issue technical guidance on these GCCS BMPs measures to facilitate their implementation, though emphasize that such materials should not serve as a substitute for strong standards. Moreover, we note that a performance-based approach to encouraging early gas collection – such as the LMR requirement that landfills maintain the surface concentration limits at all times and in all areas of the landfill – would provide operators

the flexibility to use whatever BMPs they prefer (including alternatives to early gas collection, such as waste diversion).

**Comment Response:**

Technical guidance on the use of BMPs may be issued at a later date and is not included as part of these final rules. The EPA has finalized an alternative Tier 4 approach with a surface emission concentration to determine when a GCCS must be installed, as discussed in the preambles in section VI.B.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 9

**Sort Order:** 800

**Comment Excerpt:**

**WTE Avoids Landfill Methane, Helps Mitigate Climate Change, and Provides Outstanding Environmental Protection; EPA Should Encourage Recycling, Organics Diversion, AND Conversion to Energy in WTE Plants of the Unavoidable Post Recycle and Non Recyclable MSW**

Municipal Solid Waste (MSW) landfills receive non-hazardous wastes from homes, businesses, and institutions. As the organic waste in a landfill<sup>2</sup> decomposes, it produces landfill gas (LFG), which includes methane<sup>1</sup>, a potent short-lived greenhouse gas with a global warming potential 28 to 36 times greater than carbon dioxide over a 100-year period and 85 to 87 times greater than carbon dioxide over a 20-year period.<sup>2</sup> Also emitted by MSW landfills are volatile organic compounds and air toxics such as benzene, toluene, ethyl benzene, and vinyl chloride.<sup>3</sup> Although sound waste management commences with waste minimization and recycling, even after maximum efforts have been made to reduce waste and to recycle, very large amounts of MSW remain which, as a practical matter, must either be landfilled or used to produce energy in Waste-to-Energy (WTE) facilities.<sup>4</sup> WTE plants avoid production of methane from organic waste decay in landfills<sup>5</sup> and destroy conventional and hazardous air and water (leachate) pollutants. Recognizing this, in its 2030 Climate Commitment, the State of California recommends that organic waste be diverted from landfills and converted to energy and compost.<sup>6</sup>

[FOOTNOTES]

(1) According to EPA, in addition to being a short-lived climate forcer that contributes to global warming, methane is a precursor to ground-level ozone, a health harmful air pollutant. Moreover, in remote areas, methane is a dominant precursor to tropospheric ozone formation. Approximately 50 percent of the global annual mean ozone increase since preindustrial times is believed to be due to anthropogenic methane. Projections of future emissions indicate that methane is likely to be a key contributor to ozone concentrations in the future. Emission Guidelines and Compliance Times for Municipal Solid Waste Lands, 80 Fed. Reg. 52100 (August 27, 2015). Id. at 52109, 52143.

(2) IPCC Working Group I, Fifth Assessment Report, Climate Change 2013: The Physical Science Basis, Chapter 8: Anthropogenic and Natural Radiative Forcing (2014) at 633, 711– 712, 714 (Table 8.7), available at [http://www.ipcc.ch/pdf/assessmentreport/ar5/wg1/WG1AR5\\_Chapter08\\_FINAL.pdf](http://www.ipcc.ch/pdf/assessmentreport/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf) (see the adjustment identified in note B for fossil methane).

(3) Nearly 30 organic Hazardous Air Pollutants have been identified in uncontrolled LFG, one of which, benzene, is a known human carcinogen. U.S. EPA, Quantifying Methane Abatement Efficiency at Three Municipal Solid Waste Landfills, at 3 – 9 (Jan. 2012)

(4) Waste-to-Energy (WTE) plants thermally treat the biogenic portion of MSW, eliminating the potential for methane production. Is It Better to Burn or Bury for Clean Electricity Generation, at 1714 – 16, February 2009 (available at <http://pubs.acs.org/doi/pdf/10.1021/es802395e>) (Better to Burn or Bury).

(5) EPA’s website explains that for every ton of MSW that is directed to a WTE facility rather than landfilled, one ton of greenhouse gas emissions is avoided; <http://www.epa.gov/epawaste/nonhaz/municipal/wte/airem.htm> (scroll to “Greenhouse Gases.”) Actually, more than one ton of CO<sub>2</sub>e is avoided given the global warming potential of methane increased 36% in the Intergovernmental Panel on Climate Change Fifth Assessment Report.

(6) California’s 2030 Climate Commitment, Reducing Emissions of Short-Lived Climate Pollutants. Pursuant to Senate Bill 605 (Lara, Statutes of 2014, Chapter 523), California is developing by January 1, 2016, a comprehensive strategy to reduce short-lived climate pollutant (SLCP) emissions, citing the views of many scientists that immediate reductions of methane and other SLCPs is the only way to immediately slow global warming. A draft strategy was released in September 2015. Draft Short-Lived Climate Pollutant Reduction Strategy, September 2015, CalEPA Air Resources Board. (Draft Short-Lived Climate Pollutant Reduction Strategy). Starting in 2016, businesses will have to divert organic waste. See <http://www.actionnewsnow.com/news/carb-looks-to-halt-disposal-of-nearlyall-organic-waste-by-2025/>

### **Comment Response:**

The EPA does not disagree with the potential benefits of WTE as an alternative to disposing waste in MSW landfills. However, the decision of whether to handle waste in a WTE or MSW landfill is outside the purview of this rulemaking. The EPA maintains that managing MSW in an MSW landfill that complies with the federal landfills regulations is a practical and viable waste management alternative and achieves significant reductions in landfill gas emissions and its components.

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 35, under [comment code EG11] for encouraging organic waste diversion.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 17  
**Sort Order:** 801

**Comment Excerpt:**

**In Addition to Excellent GHG Reduction, the Other Aspects of WTE Facilities' Environmental Protection Record Are Also Outstanding**

Aside from significant GHG reduction benefits, WTE's status as a very clean, environmentally protective energy source is also evident on many other bases. In that regard, WTE facilities operate under stringent federal (and state) standards based on the most advanced emissions control technology. As the Agency itself has emphasized, the level of emissions control achieved by modern WTE facilities "has been outstanding," with emission reductions for various pollutants in the 96-99% range subsequent to implementation of MACT (Maximum Achievable Control Technology) standards in the early 1990's, together with subsequent increases in the stringency of those MACT standards. *See* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2005-0117-0164>. In fact, a recent report by the National Renewable Energy Laboratory describes those WTE standards as "the most stringent in the world." *Waste Not, Want Not: Analyzing the Economic and Environmental Viability of Waste-to-Energy (WTE) Technology for Site-Specific Optimization of Renewable Energy Options*, NREL/TP-6A50-52829, p. 2, February 2013, <http://www.nrel.gov/docs/fy13osti/52829.pdf>.

In addition, EPA's analysis shows that WTE yields the best results (compared to landfills and landfill-gas-to-energy facilities) in terms of lowest criteria pollutant emissions and maximum energy recovery. *See Burn or Bury* at 1711-14, 1716-17. WTE's efficiency and reliability are clear as well: (i) WTE facilities recover more than 10 times the electric energy recoverable from a ton of landfilled waste (*id.*, pp. 1714-16); (ii) WTE is the paradigm example of "distributed generation" that serves nearby load without the need for new long-distance transmission lines; and (iii) WTE is also baseload generation, available 24/7 and unaffected by days that are cloudy or calm.<sup>7</sup> Given these facts, it is not surprising that EPA has recognized WTE as a renewable energy source that "produce[s] 2800 megawatts of electricity with less environmental impact than almost any other source of electricity." *See* <http://www.energyrecoverycouncil.org/userfiles/file/epaletter.pdf>. Similarly, The Nature Conservancy ranks WTE as one of the most environmentally protective alternative energy sources. *Climate Change and Renewable Energy*, p. 24, February 2009, [http://www.wiwm.org/documents/-Climate\\_Change\\_and\\_Renewable\\_Energy.pdf](http://www.wiwm.org/documents/-Climate_Change_and_Renewable_Energy.pdf); *see also Ask the Conservationist: Can Trash Solve Our Energy Problems?*, August 2011, <http://www.nature.org/science-in-action/science-features/askthe-conservationist-august-2011.xml>.<sup>8</sup>

One disadvantage of WTE is its higher cost compared to landfilling (see the Appendix to this letter). That reality should be considered together with the fact that the adverse environmental impact of landfill methane is a social cost or "externality," and as President Obama's All-Of-The-Above Energy Strategy emphasizes, policies to encourage renewable energy are particularly important when a competing alternative is not required to "internalize" the costs of its carbon emissions. *See The All-Of-The-Above Energy Strategy As a Path to Sustainable Economic Growth*, pp. 2 and 5, May 2014, [http://www.whitehouse.gov/sites/default/files/-docs/aota\\_energy\\_strategy\\_as\\_a\\_path\\_to\\_sustainable\\_economic\\_growth.pdf](http://www.whitehouse.gov/sites/default/files/-docs/aota_energy_strategy_as_a_path_to_sustainable_economic_growth.pdf). The President's

strategy document aptly describes the situation WTE confronts with landfills, and this rulemaking provides an important opportunity to initiate a change in the policies that have allowed the environmental impact of landfill methane emissions to be externalized as a societal cost.

[Footnote 7] WTE-produced electricity is also highly reliable, with availability factors typically above 90%. If the MSW that is currently landfilled were instead diverted to WTE, the electricity generated could supply 13.8 million households, roughly 12% of the U.S. total. *See Energy and Economic Value of Municipal Solid Waste*, Executive Summary p. 3, July 2014, <http://www.americanchemistry.com/Policy/Energy/Energy-Recovery/2014-Update-of-Potential-for-Energy-Recovery-from-Municipal-Solid-Waste-and-Non-Recycled-Plastics.pdf>.

[Footnote 8] WTE is also entirely compatible with recycling, as repeatedly confirmed by national surveys. *See, e.g., A Compatibility Study: Recycling and Waste-to-Energy Work in Concert*, May 2014, <http://www.energyrecoverycouncil.org/userfiles/files/2014-Berenyi-recycling-study.pdf>. Although recycling rates are driven by state policies that apply equally to WTE and non-WTE communities, WTE communities' recycling rates are higher than the national average and typically higher than the overall recycling rates for their respective states. *Id.*, pp. 5, 9-11.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0157, excerpt number 9, under [comment code EG11] regarding encouraging WTE under this rule.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 1

**Sort Order:** 802

**Comment Excerpt:**

While cognizant of the cost, the Coalition members nevertheless urge EPA to adopt measures more protective than those in the Agency's August 27 proposal. The context for our position is the serious adverse environmental impact of landfill methane, one of the most potent greenhouse gases, and the fact, stated on EPA's website, that for every ton of municipal solid waste (MSW) directed to a WTE facility rather than landfilled, one ton of greenhouse gas (GHG) emissions is avoided.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0157, excerpt number 9, under [comment code EG11] regarding encouraging WTE under this rule.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 13

**Sort Order:** 803

**Comment Excerpt:**

**WTE Avoids Landfill Methane, Helps Mitigate Climate Change and Provides Outstanding Environmental Protection**

Although sound waste management begins with waste minimization and recycling, even after maximum efforts have been made to reduce waste and recycle, an enormous amount of material remains which, as a practical matter, can either be buried in landfills or used to produce energy at WTE facilities. Aside from the environmental problems it presents, including vast quantities of methane, landfilling contributes very little to our energy supply. In contrast, WTE facilities emit no methane (and, in fact, serve as net reducers of carbon emissions) and provide overall outstanding environmental protection (as EPA has noted, WTE has “less environmental impact than almost any other source of electricity”).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0157, excerpt number 9, under [comment code EG11] regarding encouraging WTE under this rule.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 14

**Sort Order:** 805

**Comment Excerpt:**

Thus, as already noted, EPA has determined that one ton of GHGs is avoided for every ton of MSW that is directed to WTE rather than landfilled.  
<http://www3.epa.gov/epawaste/nonhaz/municipal/wte/airem.htm> (scroll to “Greenhouse Gases”). As the Agency explains, WTE facilities “actually reduce the amount of GHGs in the atmosphere compared to landfilling,” and “[t]he savings are estimated to be about 1.0 ton of GHGs saved per ton of MSW combusted.” *Id.* The one-ton-avoided metric is based on life-cycle analysis, which shows that WTE reduces GHG emissions in three ways by: (i) generating electricity (or producing steam for process use), which reduces use of fossil fuels and the resulting GHG emissions; (ii) avoiding the methane emissions that would result if the same waste is landfilled; and (iii) recovering ferrous and nonferrous metals which, in turn, avoids the additional energy consumption that would be required if the same metals were produced from virgin ores. *Is it Better to Burn or Bury for Clean Electricity Generation?*, pp. 1711-14, February 2009, <http://pubs.acs.org/doi/pdf/10.1021/es802395e> (hereafter “*Better to Burn or Bury*”); *see also Life After Fresh Kills*, Part B, Summary and pp. B-23 to B-32, December 2011, <http://www.seas.columbia.edu/earth/EEC-SIPA-report-NYC-Dec11.pdf>. Moreover, while the one-ton-avoided metric is quite significant, it actually understates WTE’s avoidance of GHG emissions. That is because the metric has not yet been adjusted by EPA to reflect methane’s increased GWP under the IPCC’s AR5.

WTE's role in GHG mitigation is widely recognized. For example, the IPCC's analysis of the waste sector's GHG impacts emphasizes WTE's dual benefits of displacing fossil fuel combustion and avoiding landfill methane emissions. *Mitigation of Climate Change*, p. 601, December 2007, <http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter10.pdf>. Similarly, the Kyoto Protocol's Clean Development Mechanism approves WTE as a source of tradeable GHG emission reduction credits that displaces electricity from fossil fuels and avoids landfill methane emissions. See *Approved Baseline and Monitoring Methodology AM0025*, pp. 1-3, July 2010, <https://cdm.unfccc.int/UserManagement/FileStorage/9WVIN7Z06A8UGLFPO4Y51BDMJ-23QXT>. Another example is the World Economic Forum's January 2009 report, *Green Investing – Towards a Clean Energy Infrastructure*, which recognizes WTE as one of eight “key renewable energy sectors” that is “particularly promising in terms of . . . abatement potential” for carbon emissions. *Green Investing – Towards a Clean Energy Infrastructure*, p. 27, January 2009, [http://www3.weforum.org/docs/WEF\\_IV\\_GreenInvesting\\_Report\\_2009.pdf](http://www3.weforum.org/docs/WEF_IV_GreenInvesting_Report_2009.pdf). We should also note the February 20, 2007 joint statement of Columbia University's Earth Institute Global Roundtable on Climate Change (GROCC), which identifies WTE as an important means to reduce carbon emissions from fossil fuel-based electricity and landfill methane. See *The Path to Climate Sustainability*, pp. 6, 9 and 11, February 2007, [http://energyrecoverycouncil.org/userfiles/file/-GROCC\\_statement.pdf](http://energyrecoverycouncil.org/userfiles/file/-GROCC_statement.pdf) (the signatories to GROCC's joint statement range from Dr. James Hansen, NASA Goddard Institute for Space Studies, to Environmental Defense). Consistent with these as well as other reports and analyses, the United Nations' November 2011 report, *Bridging the Emissions Gap*, concludes that waste sector GHG emissions can be reduced 80% if there is significant diversion of currently landfilled waste to WTE, see *Bridging the Emissions Gap*, pp. 37-38, November 2011, [http://www.unep.org/pdf/UNEP\\_bridging\\_gap.pdf](http://www.unep.org/pdf/UNEP_bridging_gap.pdf), and the World Economic Forum recommends expanded use of WTE by phasing out use of landfills, emphasizing that burying waste in landfills is “increasingly considered environmentally unacceptable.” *Policy Mechanisms to Bridge the Financing Gap*, January 2010, [http://www3.weforum.org/docs/WEF\\_IV\\_GreenInvesting\\_Report\\_2010.pdf](http://www3.weforum.org/docs/WEF_IV_GreenInvesting_Report_2010.pdf). Finally, the importance of comparing the GHG impact of different disposal options, that is, the “alternate fate of disposal,” has recently been noted by Acting Assistant Administrator McCabe. See *Memorandum re Addressing Biogenic Carbon Dioxide Emissions from Stationary Sources*, p. 2, November 19, 2014, <http://www.epa.gov/climatechange/downloads/Biogenic-CO2-Emissions-Memo-111914.pdf>. That comparison has particular resonance in the waste management context given the significant opportunity to reduce waste sector GHG emissions by diverting currently landfilled waste to WTE. To put these points in context, the Administration's Methane Strategy (*Climate Action Plan – Strategy to Reduce Methane Emissions*, [https://www.whitehouse.gov/sites/default/files/strategy\\_to\\_reduce\\_methane\\_emissions\\_2014-03-28\\_final.pdf](https://www.whitehouse.gov/sites/default/files/strategy_to_reduce_methane_emissions_2014-03-28_final.pdf)) has the goal of reducing the nation's methane emissions (measured as CO<sub>2</sub> equivalents) by 90 million tons. That is almost the same reduction the U.S. would achieve (87 million tons) if we used WTE at a rate comparable to the European Union (24 percent versus the U.S.'s 7.6 percent). The 87 million tons would also be equivalent to removing nearly 18.2 million cars from the nation's roads.<sup>6</sup>

Footnote:

[6] This calculation is based on: (i) 1.36 tons of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) emissions avoided for each ton of MSW diverted from landfills to WTE; (ii) U.S Department of Transportation data for annual CO<sub>2</sub>e emissions per passenger car (4.78 metric tons) (see <http://www.epa.gov/OMS/climate/420f05004.htm> – scroll to Step 6, DOT fuel economy, passenger cars); and (iii) the approximately 389 million tons of MSW generated in the U.S. in 2011 (see Generation and Disposition of Municipal Solid Waste (MSW) in the United States – A National Survey, p. 19, January 2014, [http://www.seas.columbia.edu/earth/wtert/sofos/Dolly\\_Shin\\_Thesis.pdf](http://www.seas.columbia.edu/earth/wtert/sofos/Dolly_Shin_Thesis.pdf)). In addition, the calculation excludes the 7.6 percent of MSW already being diverted to WTE.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0157, excerpt number 9, under [comment code EG11] regarding encouraging WTE under this rule.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 10

**Sort Order:** 806

**Comment Excerpt:**

**EPA Needs to Acknowledge in its Final Rule the Key Role of WTE in Waste Management**

EPA needs to recognize the key role of WTE plants in the avoidance of methane production in landfills and in recycling metals and minerals that would otherwise be buried in the ground. There is already a huge stock of existing products that are contaminated or contain pollutants. These products, when they become waste, should not be reintroduced into the economy or the environment through recycling or landfilling. Current and future products are likely to contain polluting substances for some time. WTE plants serve as a necessary pollutant destruction mechanism for unrecyclable products and as a remediation technology for retrieving metals and minerals from MSW. The only alternative to WTE is landfilling.

Recycling in US is in Transition

EPA's analysis shows that MSW production is increasing in step with US population increases. Thus, on an absolute basis, MSW amounts are increasing. Additionally, over the last five years, the recycling growth rate has leveled off. Complicating the situation, the cost of recycling has increased with the decrease in recycle markets worldwide.<sup>31</sup> Newsprint and paper production is in decline in the US, thanks in part to computers and other electronic devices. While per capita production of MSW is flat and not increasing with Gross Domestic Product, this may be due to the recession.

[See submittal for graphs of "Recycling in Transition" and "Recycling Rates for WTE Communities and States"]

Resilience



Given the length of time between EPA rulemakings, EPA needs to look to the future. WTE plants play a key role in resilience/disaster recovery. In West Palm Beach, the new plant is used to remediate storm damage and assist in the recovery from hurricanes. Former three-term New York City Mayor; UN Special Envoy for Cities and Climate Change Michael R. Bloomberg believes that “[o]ne of the most encouraging developments in the battle against climate change is that people around the world are moving to cities.”<sup>32</sup> Mayor Bloomberg states that “[b]y the time this year’s college graduates reach retirement age, 3 out of every 4 people on the planet will live in metropolitan areas.”<sup>33</sup> Naoko Ishii, CEO of the Global Environment Facility notes that “[i]f planned and managed well, compact, resilient, inclusive and resource-efficient cities can drive development, growth, and the creation of jobs while also contributing to a healthier, better quality of life for residents and the long-term protection of the global environment.”<sup>34</sup> EPA needs to recognize this trend and regulate landfills accordingly.

### West Palm Beach, Florida Renewable Energy Facility #2

The Solid Waste Authority of Palm Beach County, Florida has built the first WTE plant in the US in the last 20 years. This advanced plant is a key part of the county’s recycling, composting, and clean energy program, generating electricity for 40,000+ homes. It will recover 33,000 tons of metal annually and reduce MSW sent to the landfill by 90%. Reducing landfilling in the county protects the water table. The plant features a LEED-certified visitors center for community education and provides on-site electric vehicle charging. The plant has better than zero discharge of water. The plant is also a key component of the county’s emergency preparedness plan.

West Palm Beach County estimates that 30,000 students visit the facility every year, learning about the environmental impact of MSW and the importance of MSW reduction, reuse, and energy recovery. The county manages six hazardous waste transfer stations allowing residents to keep hazardous materials out of the trash. More than 70 full-time, highly skilled workers operate the plant.

The Palm Beach plant has the lowest emissions of any WTE plant in the world. It is equipped with advanced combustion controls and an SCR, thus controlling NOX and destroying dioxin and other furans<sup>35</sup>; a dry scrubber with a membrane-coated fabric filter that controls sulfur dioxide, hydrochloric acid, and other acid gases; a fabric filter that catches particulate matter and heavy metals; and employs activated carbon injection with the fabric filter to reduce mercury. Thus, the plant has ultralow air pollutant emissions, well below permitted levels. Its advanced design and combustion system destroy carbon monoxide, VOCs, dioxins and furans, and sulfuric acid. The plant also has an advanced continuous emissions monitoring. The tipping floor of the facility is kept under constant negative pressure by using the air of the tipping floor for WTE combustion. In doing so, any odor, dust, or vapors generated by the decomposed waste are collected and oxidized in the plant; this means that any harmful fugitive emissions (common in a landfill) are eliminated. The biogenic portion of the MSW, typically 55 – 70% of the total MSW combusted, is used to make electricity, giving the plant lower net carbon dioxide emissions than coal, oil, or natural gas plants.

The West Palm Beach plant recovers 2190 tons a month of post combustion ferrous metals, amounting to a 56% savings in energy in recycle of steel versus use of virgin ore. Each ton of steel recycle saves 1400 pounds of coal and 120 pounds of limestone. This amounts to a yearly

savings of 18.4 tons of coal and 15.8 tons of limestone. The plant has demonstrated 97.2% ferrous capture rate post combustion.

Similarly, the West Palm Beach plant recovers 157 tons a month of post combustion non-ferrous metals, amounting to a 92% savings in energy in recycle of aluminum versus virgin ore. Each ton of non-ferrous recycle conserves the energy equivalent of 1234 gallons of gasoline and yearly energy savings are approximately 2.324 million gallons. The plant has demonstrated 88.6% non-ferrous capture rate post combustion.

#### Copenhill, Copenhagen, Denmark

In 2017, Copenhageners and visitors will witness a WTE plant that will not only be one of the best performing European plants in terms of energy efficiency, waste treatment capacity, and environmental performance but also in terms of visual rendition and local acceptance. Copenhill will treat approximately 400,000 metric tons of MSW annually (produced by 500,000 – 700,000 citizens and at least 46,000 companies). The plant will supply a minimum of 50,000 households with electricity and 120,000 households with district heating. In addition to its technological merits, the plant’s architecture includes a roof-wide artificial ski slope open to the public.

[See submittal for photos of Copenhill plant]

#### [FOOTNOTES]

(31) Because of falling oil prices, a strong US dollar, and a weakened economy in China, prices for American recyclables have plummeted, resulting in a three-year trend of shrinking profits and rising costs for US municipalities. Demand for recycled paper and cardboard is at a near-decade low. Washington, DC’s process price for recyclables is almost \$63/ton – 24% higher than if it trucked all of its recycled material, along with its trash, to the two Northern Virginia WTE facilities. “Why the US Recycling Industry is Feeling Down in the Dumps,” [www.theguardian.com/environment/2015/jun/27/recycling-unprofitable-oilchina-dollar#img-1](http://www.theguardian.com/environment/2015/jun/27/recycling-unprofitable-oilchina-dollar#img-1). “Broward’s Recycling Success Declines,” Sun Sentinel (August 2, 2015).

(32) “*Revitalizing Our Cities*,” Supplement by Mediaplanet to USA Today (September 2015).

(33) Id.

(34) “*Sustainable Cities*,” Supplement by Mediaplanet to USA Today (September 2015).

(35) The catalyst in the SCR destroys 50 – 70% of the small amount of dioxins and furans that remain in the flue gas after combustion. The results of nine tests of actual performance were 0.23 – 0.36 nano grams per dry standard cubic meter. This amount is so small that testing of its toxicity is not required.

#### **Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0157, excerpt number 9, under [comment code EG11] regarding encouraging WTE under this rule.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 10

**Comment Excerpt:**

As required in the DEP's "Best Available Technology and Other Permitting Criteria for Municipal Solid Waste Landfills" guidance document<sup>2</sup>, the following conditions are set forth on pages 2 & 3 of the document:

*(1) The owner or operator of the landfill should install an active landfill gas collection system as described in 40 C.F.R. Section 60. 752(b)(2)(ii)(A) and collect the landfill gas in accordance with 25 Pa. Code Section 273.292 so as to prevent off-site migration. The gas collection system shall be designed to:*

*a. Collect gas from the entire MSW landfill that warrants control over the intended use period of the gas control or treatment system, and be operated to collect gas at a sufficient extraction rate (40 C.F.R. Section 60. 752(b)(2)(ii)(A)); and,*

*b. Accommodate the maximum proposed gas flow rate of the landfill.*

*(2) The collected landfill gas should be treated in accordance with 40 C.F.R. Part 60, Subpart WWW for subsequent use or sale, or controlled by one of the following technologies:*

*a. A horizontal incinerator;*

*b. A boiler;*

*c. An enclosed flare;*

*d. An internal combustion engine;*

*e. Combustion turbine;*

*f. Carbon adsorption system; or*

*g. Other technologies approved by DEP.*

*Please note that open or candlestick flares are appropriate only when installed and operated within the limitations set forth in this document.*

*(3) The control system will be designed to achieve and maintain the less stringent of:*

*a. A destruction/removal efficiency of at least 98%, by weight, of nonmethane organic compounds (NMOC); or*

*b. An outlet NMOC concentration of less than 20 parts per million, by volume, dry basis, as hexane, corrected to 3% oxygen.*

Pennsylvania's Best Available Technology (BAT) Program requires that emissions of air contaminants from new sources be reduced to the maximum extent. This BAQ Program assures that BSER is being met and therefore organics diversion is not an issue in Pennsylvania.

[Footnote]

<http://www.e-library.dep.state.pa.us/dsweb/Get/Document-75264/7.I0%20Best%20Available%20Technology%20and%20Other%20Permitting%20Criteria%20for%20Municipal%20Solid%20Waste%20Landfills.pdf>

**Comment Response:**

The EPA appreciates the information submitted by the commenter. The criteria set forth in Pennsylvania's Best Available Technology document parallels and reinforces the EPA's determination that a well-designed and well-operated GCCS is BSER for MSW landfills.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 27

**Sort Order:** 1000

**Comment Excerpt:**

Delaware does not support any reduction in monitoring as an incentive for organic waste diversion or the development of beneficial use projects.

**Comment Response:**

Although the EPA recognizes the benefits of diverting organic waste from MSW landfills, the final rules do not include any exemptions or reductions in monitoring for landfills diverting organic waste.

## **1.10 Role of Organics Diversion in State Plan**

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**Commenter Name:** Ted Michaels, President

**Commenter Affiliation:** Energy Recovery Council (ERC)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0175

**Comment Excerpt Number:** 5

**Comment Excerpt:**

*Potential mechanism for inclusion of landfill diversion as a form of BSER.*

Similar to how the EPA is regulating existing electric generating units under the Clean Power Plan, the EPA should provide states the flexibility to incorporate both source control requirements and landfill diversion programs into their state implementation plans ("SIPs").

In addition to specifying a list of specific landfill gas control measures that states must incorporate into their SIPs, the EPA should establish a broader best system of emissions reductions ("BSER") consisting of two major building blocks:

1. Direct reduction of GHG emissions from landfill directly through better landfill gas control (e.g. lowered applicability thresholds, shorter lag times, more efficient collection, extend collection at end of life, direct measurement of emissions); and
2. Reduction of GHG emissions achieved through diversion of waste from landfills by implementing the U.S. EPA's waste management hierarchy, considering in order of preference:
  - Waste reduction & reuse;
  - Recycling, inclusive of composting, and anaerobic digestion with residuals reuse; and
  - Energy recovery, inclusive of combustion, anaerobic digestion without residuals reuse, pyrolysis, gasification, and fuels conversion.

The EPA should establish state specific methane goals that would be required to be met over a reasonable timeframe, but without prescribing how a state should meet its goal. Each state would have the flexibility to design its own program in consideration of the state's own set of circumstances. For example, in addition to source controls, states could drive landfill diversion through landfill levies and taxes,<sup>19</sup> restrictions on landfill throughput or permitted capacity, and commercial food waste diversion to local composting or anaerobic digestion facilities.

The necessary numeric targets could be set in terms of landfill NMOC or GHG emissions per capita based on in-state waste generation or could be set based on mass emissions from in-state landfills. Individual state targets can ensure the setting of attainable goals, taking into account differences in waste generation rate and regional practices, much like the Clean Power Plan accounts for differences in the electrical generation system from state to state.

[Footnote 19] On average, EU countries impose a landfill tax of 80 € / metric tonne (See CEWEP, 2014, Landfill taxes & bans, [http://www.cewep.eu/media/www.cewep.eu/org/med\\_557/1200\\_2014-02-06\\_cewep\\_-\\_landfill\\_inctaxesbans.pdf](http://www.cewep.eu/media/www.cewep.eu/org/med_557/1200_2014-02-06_cewep_-_landfill_inctaxesbans.pdf)) The European Environment Agency found that "to be effective landfill tax rates should be relatively high." (See European Environment Agency, 2009, *Diverting waste from landfill: Effectiveness of waste-management policies in the European Union*. <http://www.eea.europa.eu/publications/diverting-waste-from-landfill-effectiveness-of-waste-management-policies-in-the-european-union>)

### **Comment Response:**

While EPA agrees that there may be other potential approaches to controlling emissions of landfill gas, EPA believes that BSER for MSW landfills remains the installation of a well designed and operated GCCS by each landfill. Maintaining the installation of a well designed and operated GCCS as BSER ensures a straight forward approach to controlling emissions of landfill gas. State plans requiring each landfill to install a well designed and operated GCCS are easily implemented and enforced and are consistent with EPA's traditional approach under emission guidelines. As discussed in detail in both the proposed and final Clean Power Plan, the control of carbon dioxide emission from electric generating units presents a unique set of circumstances (**citations**) which are not present in the context of MSW landfills.

While EPA agrees that there may be other potential approaches to controlling emissions of landfill gas, EPA believes that BSER for MSW landfills remains the installation of a well designed and operated GCCS by each landfill. See response to DCN EPA-HQ-OAR-2003-0215-

0204, comment excerpt number 10 [under code 5t] and EPA-HQ-OAR-2014-0451-0157 excerpt number 2 [under code EG5].

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 5

**Comment Excerpt:**

Similar to how the EPA is regulating existing electric generating units under the Clean Power Plan, the EPA should provide states the flexibility to incorporate both source control requirements and landfill diversion programs into their state implementation plans (“SIPs”).

In addition to specifying a list of specific landfill gas control measures that states must incorporate into their SIPs, the EPA should establish a broader best system of emissions reductions (“BSER”) consisting of two major building blocks:

1. Direct reduction of GHG emissions from landfill directly through better landfill gas control (e.g. lowered applicability thresholds, shorter lag times, more efficient collection, extend collection at end of life, direct measurement of emissions); and
2. Reduction of GHG emissions achieved through diversion of waste from landfills by implementing the EPA’s waste management hierarchy, considering in order of preference:
  - Waste reduction & reuse;
  - Recycling, inclusive of composting, and anaerobic digestion with residuals reuse; and
  - Energy recovery, inclusive of combustion, anaerobic digestion without residuals reuse, pyrolysis, gasification, and fuels conversion.

The EPA should establish state specific methane goals that would be required to be met over a reasonable timeframe, but without prescribing how a state should meet its goal. Each state would have the flexibility to design its own program in consideration of the state’s own set of circumstances. For example, in addition to source controls, states could drive landfill diversion through landfill levies and taxes,<sup>20</sup> restrictions on landfill throughput or permitted capacity, and commercial food waste diversion to local composting or anaerobic digestion facilities. The necessary numeric targets could be set in terms of landfill NMOC or GHG emissions per capita based on in-state waste generation or could be set based on mass emissions from in-state landfills. Individual state targets can ensure the setting of attainable goals, taking into account differences in waste generation rate and regional practices, much like the Clean Power Plan accounts for differences in the electrical generation system from state to state.

[Footnote 20] On average, EU countries impose a landfill tax of 80 € / metric tonne (See CEWEP, 2014, Landfill taxes & bans,

[http://www.cewep.eu/media/www.cewep.eu/org/med\\_557/1200\\_2014-02-06\\_cewep\\_-\\_landfill\\_inctaxesbans.pdf](http://www.cewep.eu/media/www.cewep.eu/org/med_557/1200_2014-02-06_cewep_-_landfill_inctaxesbans.pdf)) The European Environment Agency found that “to be effective landfill tax rates should be relatively high.” (See European Environment Agency, 2009,

*Diverting waste from landfill: Effectiveness of waste-management policies in the European Union.* <http://www.eea.europa.eu/publications/diverting-waste-from-landfill-effectiveness-of-waste-management-policies-in-the-european-union>)

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0175, comment excerpt number 5 under comment code 5t.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 72

**Comment Excerpt:**

In the existing *power plant* NPRM, EPA goes to great –and correct – lengths to demonstrate that its authority to regulate emissions from affected sources includes the authority to *avoid the creation* of those emissions, and – correctly – proposes the use of renewable energy and energy efficiency measures outside of the plants’ fence line to prevent the need to combust fossil fuels and create source emission in the first place as two “building block” among other BSER measures.<sup>43</sup> EPA’s failure to use the same insight here is inconsistent and capricious, and we urge EPA to adopt mandatory organic separation measures as one element of BSER for the landfill NSPS and as a mandatory requirement in the emission guidelines.

[Footnote]

<sup>43</sup> 79 Fed. Reg. 34830, 34851-53 and *passim* (June 18, 2014).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0175, comment excerpt number 5 under comment code 5t regarding the use of building blocks in the MSW landfills regulations.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 10

**Comment Excerpt:**

EPA considered a number of alternative measures for BSER, including certain Best Management Practices (BMPs) and organics diversion. The Agency declined to mandate organics diversion, but recognized that, because organics diversion avoids methane generation, it can result in

substantial reductions. Indeed, as EPA recognized, these programs have achieved reductions of anywhere from 9 to 18.5% of landfill gas emissions.<sup>46</sup> As a result, EPA indicated that it hoped to incentivize organics diversion at individual landfills through design changes allowing more direct measurement of landfill emissions and relaxing wellhead monitoring requirements.<sup>47</sup> EPA provides examples of states and municipalities that are pursuing organics diversion programs and requests comment on how states may incorporate these programs into approvable state plans:

We are, therefore, interested in how states might demonstrate that a state plan that contains organics diversion policies and measures is at least as stringent as the Emission Guidelines. The EPA is interested in supporting state organics diversion initiatives and one way of doing this may be to provide flexibility to include such initiatives as a component of an approvable state plan.<sup>48</sup>

We also believe leading states and municipalities should be afforded the opportunity to incorporate waste diversion programs into their state plans, if those plans demonstrate emission reductions equivalent or greater than those reflected in the EG. Indeed, in September, California announced the development of regulations that would divert nearly all organic waste by 2025.<sup>49</sup> California's proposal builds on existing regulations, which, beginning in April 2016, require each jurisdiction to implement an organic waste diversion program, with businesses that reach a threshold of organic waste generation required to participate.<sup>50</sup>

We respectfully urge EPA to develop guidance that allows states to incorporate rigorous alternative waste management programs into their state plans. Among other things, this guidance should include a robust lifecycle assessment analyzing greenhouse gas emissions associated with different waste diversion practices. It should also include tools that would allow states to determine emissions avoided due to waste diversion. In developing such a tool, EPA could draw from its own Waste Reduction Model (WARM) as well as the models California has developed to quantify emissions reduction due to composting.<sup>51</sup>

[Footnote 46] 80 Fed. Reg. at 52,116.

[Footnote 47] *Id.*

[Footnote 48] *Id.*

[Footnote 49] California Air Resources Board, Draft Short-Lived Climate Pollutant Reduction Strategy (September 30, 2015), *available at* <http://www.arb.ca.gov/cc/shortlived/shortlived.htm>.

[Footnote 50] California Assembly Bill No. 1826, *available at* [http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201320140AB1826&search\\_keywords](http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140AB1826&search_keywords). *See also* CalRecycle, Mandatory Commercial Organics Recycling, <http://www.calrecycle.ca.gov/recycle/commercial/organics/> (last visited Oct. 26, 2015).

[Footnote 51] California Air Resources Board, Method for Estimating Greenhouse Gas Emission Reductions from Compost from Commercial Organic Waste (Nov. 14, 2011), *available at* [http://www.arb.ca.gov/cc/protocols/localgov/pubs/compost\\_method.pdf](http://www.arb.ca.gov/cc/protocols/localgov/pubs/compost_method.pdf).

## **Comment Response:**



EPA continues to believe that organics diversion and other BMP can be an effective approach to reducing emissions of landfill gas. EPA also continues to believe, however, that such approaches are not properly considered a part of BSER. In theory, an effective organics diversion plan could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. This provides significant incentives for landfill owners/operators to engage in organics diversion where it is feasible to do so. States are free to adopt any effective approach to implementing the revised emission guidelines through a revised state plan they wish so long as the plan contains the same, or a more stringent, i.e., lower, threshold for installing a GCCS and requires the same level of control of NMOC emissions as the emission guidelines. EPA does not have any plans to develop guidance on how a state might incorporate organics diversion or other BMPs into a revised state plan as it believes that individual states are best situated to determine how to do this. EPA would evaluate the approvability of any revised state plans which do include organics diversion or other BMP on a case-by-case basis.

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**Commenter Name:** Ted Michaels, President

**Commenter Affiliation:** Energy Recovery Council (ERC)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0175

**Comment Excerpt Number:** 9

**Comment Excerpt:**

Many communities have achieved significant progress in cutting their reliance on landfills through exemplary recycling rates and using energy recovery for what's left over; however, as a country, our progress has largely stagnated. Existing policies have not been nearly as effective as they could be. In contrast, the European Union has demonstrated that significant reductions of GHG emissions from waste management are possible, and they continue to make progress. Maintaining the status quo with minor tweaks to landfill gas control and regulation will not achieve the kind of meaningful reductions we need to reduce the risk of catastrophic and irreversible climate change and reduce NMOC emissions. We do not believe an organics mandate is appropriate; however, instead, we encourage the EPA to provide the needed flexibility, guidance and encouragement for states through 111(d) State Implementation Plans to address both source control *and* landfill diversion. By allowing and encouraging the inclusion of landfill diversion strategies, the EPA can provide states the tools they need to achieve real and significant reductions in GHG and NMOC emissions from landfills, save energy, and make better use of our natural and waste resources.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0204, comment excerpt number 10 under code 5t for flexibility and guidance on incorporating organics diversion into approvable state plans under 111(d).

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 15

**Comment Excerpt:**

Many communities have achieved significant progress in cutting their reliance on landfills through exemplary recycling rates and using energy recovery for what's left over; however, as a country, our progress has largely stagnated. Existing policies have not been nearly as effective as they could be. In contrast, the European Union has demonstrated that significant reductions of GHG emissions from waste management are possible, and they continue to make progress. Maintaining the status quo with minor tweaks to landfill gas control and regulation will not achieve the kind of meaningful reductions we need to reduce the risk of catastrophic and irreversible climate change and reduce NMOC emissions. We do not believe an organics mandate is appropriate; however, instead, we encourage the EPA to provide the needed flexibility, guidance and encouragement for states through 111(d) State Implementation Plans to address both source control *and* landfill diversion. By allowing and encouraging the inclusion of landfill diversion strategies, the EPA can provide states the tools they need to achieve real and significant reductions in GHG and NMOC emissions from landfills, save energy, and make better use of our natural and waste resources.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0204, comment excerpt number 10 under comment code 5t for flexibility and guidance on incorporating organics diversion into approvable state plans under 111(d).

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator

**Commenter Affiliation:** Californians Against Waste, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0191

**Comment Excerpt Number:** 18

**Comment Excerpt:**

At the same time that it acknowledges the importance of organics diversion, the EPA declines to use its authority to include organics diversion as a part of the best system of emission reduction ("BSER") for MSW landfills. The Proposed Rule cites concerns related to complicated logistics and state and local jurisdiction issues.<sup>18</sup> Contrary to the EPA's claims, section 111(d) emission guidelines are the appropriate forum for including organics diversion as part of BSER for MSW landfills. Emission guidelines are one example of federal-state cooperation under the Clean Air Act. Unlike some provisions that are directly mandated and implemented by the federal EPA, emission guidelines provide a minimum requirement based on which each state creates an individualized plan, taking into account the state's unique circumstances and regulatory structure. Furthermore, each state is responsible for implementation. This means that unlike NSPS, which are less flexible, emission guidelines allow the states to craft a system to accommodate individual state differences. The increased level of state involvement in controlling

emissions from existing sources (as opposed to new or modified sources) thus alleviates the concerns expressed in the Proposed Rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, comment excerpt number 8 under comment code EG5 regarding EPA's selection of BSER. See response to DCN EPA-HQ-OAR-2003-0215-0204, comment excerpt number 10 under comment code 5t for flexibility and guidance on incorporating organics diversion into approvable state plans under 111(d).

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 8

**Comment Excerpt:**

We also disagree with EPA's suggestion that such programs should be a relevant factor in the approval process for state plans. Instead, Republic urges EPA to maintain its current approach to organics diversion. EPA should not alter that policy until it has formulated a reasonably justification for doing so.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0204, comment excerpt number 10 under comment code 5t for guidance on organics diversion into approvable state plans under 111(d).

## 1.11 Legal Issues-Other

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 11

**Sort Order:** 100

**Comment Excerpt:**

EPA's rulemaking requests comments on many options and invites suggestions on additional ways to reduce emissions. EPA states that it will "consider all the information it receives in response to the ANPRM in the context of its review of the NSPS and will respond to that information accordingly." The industry is very concerned that we will not have the opportunity to comment on options EPA elects to promulgate in the final rule because EPA will go directly from data collection to final rule language. We request that prior to implementing any option or requirement that would result in increased cost or effort, EPA issue a revised proposal so that the industry will have the opportunity to review and respond.

**Comment Response:**

Following publication of the ANPRM, EPA on July 17, 2015 published in separate notices both a proposed NSPS and proposed EG. All potential changes that EPA considered in response to information received from the ANPRM was presented for public comment in these two notices. As a result, EPA sees no need to issue a revised proposal.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 82

**Sort Order:** 101

**Comment Excerpt:**

We are therefore extremely concerned that EPA has not provided an adequate basis on which to provide comment. WM cannot adequately assess the costs, benefits, or feasibility of implementing provisions that might be issued in the final rules. We are even more concerned that the Agency may select one or more of these ill-defined options for promulgation without granting the regulated community additional notice and opportunity for comment. WM strongly recommends that EPA develop a supplemental proposal explaining any approach it seeks to finalize that was not fully described in Subpart XXX as proposed, so that the regulated community and other stakeholders can meaningfully comment on the implications of Agency decisions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 11, under comment code 1z.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 77

**Sort Order:** 200

**Comment Excerpt:**

In addition, both publications request comment on a number of issues that EPA has not proposed to address through revisions to the rule at this time, raising the concern that EPA may decide to take action on those issues in its final rule without first accepting comment on any additional revisions. To the extent EPA seeks to include within its final rule any further revisions to the regulations, in addition to those it has already proposed, Republic asks EPA to re-open the docket to accept additional comment on those revisions before finalizing them.

**Comment Response:**

EPA believes that any revisions in the final rules which were not directly proposed are, nevertheless, a logical outgrowth of what was proposed or discussed in the preambles to the two proposed rules and, therefore, sees no need to re-open the docket.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 2

**Sort Order:** 201

**Comment Excerpt:**

We also request that if EPA wants to include options in the proposed rule (only discussed in the preamble) that the revisions be proposed again to allow the industry to comment prior to implementation of the final rule. The preamble for Subpart XXX contains many requests for comment on various options that were not incorporated into the proposed rule.

**Comment Response:**

EPA believes that any revisions in the final rules which were not directly proposed are, nevertheless, a logical outgrowth of what was proposed or discussed in the preambles to the two proposed rules.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 2

**Sort Order:** 300

**Comment Excerpt:**

TXSWANA notes that much of the NSPS docket and almost all of the ANPRM EG docket request comments on issues that are not (yet) incorporated into the proposed rule. TXSWANA requests that the EPA afford the stakeholders the opportunity to comment upon any version of those issues EPA may ultimately elect to incorporate in the final rule that increase the costs or effort required to comply. We suggest a supplemental proposal or revised rule with a limited but reasonable time to commit.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 77, under comment code 1z.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 94

**Comment Excerpt:**

It is also difficult to anticipate how an alternative design capacity threshold such as the one promulgated by the State of California in its Landfill Methane Rule (LMR) could apply to new and modified landfills, given that (1) the Agency did not mention this issue in the context of Subpart XXX and (2) the language of the ANPRM specifically referred to "whether [EPA] should pursue an alternative set of thresholds to determine which landfills *are subject to the revised emissions guidelines.*" 79 Fed. Reg. at 41784. We understand, while respectfully disagreeing, that EPA believes as a general matter that it can adopt ideas provided in comments on the ANPRM when finalizing Subpart XXX. However, when the Agency states specifically that a request for input in the ANPRM refers to the revised emission guidelines, EPA cannot also take the position that such input is relevant to Subpart XXX. Should EPA decide to adopt the CA LMR design capacity threshold for new and modified sources, the Agency must issue and take public comment on a supplemental proposal.

**Comment Response:**

EPA has not adopted the CA LMR in either of the two final rules. EPA made it clear in the August 2015 supplemental proposal for the NSPS that it intended to consider all comments received in response to the ANPRM in conjunction with proposed Subpart XXX and believes this was sufficient to put interested parties on notice that they too should consider the ANPRM and responses thereto, in commenting on proposed Subpart XXX.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

EPA requests comment on the efficacy and costs of requiring LFG collection from the leachate collection and removal system (LCRS). 79 Fed. Reg. at 41803; 79 Fed. Reg. at 41785. <sup>16</sup>

[Footnote]

(16) EPA has not adequately demonstrated its authority to consider landfill gas collection from leachate removal systems in the context of the ANPRM. For example, EPA has not stated in the ANRPM that it is evaluating BSER for existing landfills.

**Comment Response:**

EPA is not requiring gas collection from leachate removal systems in either final Subpart XXX or final Subpart Cf. However, both the ANPRM and the preamble to the proposed EG discuss all the factors that EPA was considering for reviewing and revising the NSPS and EG, including the

effect of leachate collection on landfill gas generation and the cost and effectiveness of requiring LFG collection from leachate removal systems.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

EPA requests comment on whether the current combination of wellhead monitoring and surface emissions monitoring is sufficient for identifying inoperable or watered-in wells. 79 Fed. Reg. at 41804; 79 Fed. Reg. at 41786.<sup>17</sup>

[Footnote]

(17) EPA has not adequately demonstrated its authority to consider landfill gas collection from de-watering wells in the context of the ANPRM. For example, EPA has not stated in the ANRPM that it is evaluating BSER for existing landfills.

**Comment Response:**

Both the ANPRM and the preamble to the proposed EG discuss all the factors that EPA was considering for reviewing and revising the NSPS and EG, including the issue of whether the current combination of wellhead monitoring and surface emissions monitoring is sufficient for identifying inoperable or watered-in wells. EPA does not understand the relevance of commenter's comment regarding its authority to consider gas collection from de-watering well.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 20

**Comment Excerpt:**

EPA states in the preamble to Subpart XXX and the ANPRM that it is considering an alternative to automate the wellhead monthly monitoring provisions which would consist of remote wellhead sensors and a centralized data logger with continuous monitoring. 79 fed. Reg.at 41822; 79 Fed. Reg. at41789.<sup>19</sup>

[Footnote]

(19) EPA has not adequately demonstrated its authority to consider automated monitoring systems in the context of the ANPRM. For example, EPA has not stated in the ANRPM that it is evaluating BSER for existing landfills.

**Comment Response:**

EPA is not requiring automated monitoring of the wellhead monthly monitoring provisions in either final Subpart XXX or Subpart Cf.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 16

**Comment Excerpt:**

EPA requested comment in the proposed Subpart XXX and in the ANPRM on whether the use of advanced (well bore) seals to reduce emissions around cover penetrations should be a component of BSER. 79 Fed. Reg. at 41804; 79 Fed. Reg. at 41786.<sup>18</sup>

[Footnote]

(18) EPA has not adequately demonstrated its authority to consider redundant and advanced seals in the context of the ANPRM. For example, EPA has not stated in the ANRPM that it is evaluating BSER for existing landfills.

**Comment Response:**

EPA has determined that the use of advanced (well bore) seals to reduce emissions around cover penetrations is not a component of BSER.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 22

**Comment Excerpt:**

We commend EPA for recognizing the role that methane oxidation plays in mitigating methane and non-NMOC emissions from landfills and for soliciting information regarding the potential use of covers systems to achieve emissions reductions. 79 Fed. Reg. at 41804; 79 Fed. Reg. at 41784.<sup>20</sup>

[Footnote]

(20) EPA has not adequately demonstrated its authority to consider emerging technologies for methane oxidation in the context of the ANPRM. For example, EPA has not stated in the ANRPM that it is evaluating BSER for existing landfills.

**Comment Response:**

While EPA recognizes the role that methane oxidation plays in mitigating emissions and believes that the use of cover systems can, in appropriate circumstances, achieve emission reductions, it does not consider the use of such systems part of BSER.



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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 28

**Comment Excerpt:**

The EPA requested information on the potential to use alternative remote measuring and monitoring techniques for landfills. 79 Fed. Reg. at 41823; 79 Fed. Reg. at 41790.<sup>21</sup>

[Footnote]

(21) EPA has not adequately demonstrated its authority to consider remote measuring and monitoring techniques in the context of the ANPRM. For example, EPA has not stated in the ANRPM that it is evaluating BSER for existing landfills.

**Comment Response:**

EPA is not requiring the use of remote measuring and monitoring techniques.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 174

**Comment Excerpt:**

EPA also solicits comment on non-enclosed flares in the ANPRM. 79 Fed. Reg.at 41788<sup>15</sup>.

[Footnote]

(15) EPA has not adequately demonstrated its authority to revisit the effectiveness of non-enclosed flares in the context of the ANPRM, for example, EPA has not stated in the ANRPM that it is evaluating BSER for existing landfills.

**Comment Response:**

The use of non-enclosed flares continues to be a compliance option under both Subpart XXX and Subpart Cf.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 84

**Comment Excerpt:**

EPA proposes a broad range of changes to the existing regulatory regime, explaining in some cases that the changes are "clarifications" and in other cases that the changes are intended to address "implementation issues." However, these changes appear to go well beyond the administrative or clarification realm and would impose real and direct burdens and costs that are neither required by BSER, as determined by EPA, nor accounted for in EPA's analysis. Thus, as a general matter, we believe that there is a disconnect between EPA's statement of legal authority for the proposal and its scope.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 84, under comment code 3e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 40

**Comment Excerpt:**

Landfill Gas Treatment Systems are Not Emission Sources and Should not be Regulated as Such. WM conducts landfill gas treatment at many of its landfills that are subject to the Landfill NSPS. EPA identified the so-called "treatment option" under the Landfill NSPS in recognition that landfill gas may be used for energy recovery as an effective natural gas alternative. See e.g. 56 Fed. Reg. 24468-24528, 24477 (May 30, 1991) (discussing how feasibility of treatment systems depends on availability of customers to utilize the purified landfill gas). Likewise, when promulgating the Landfill NESHAP, EPA determined that the control alternatives identified under the Landfill NSPS are appropriate in the context of reducing hazardous air pollutants ("HAPs") associated with the operation of municipal solid waste landfills.

Unlike on-site flaring or combustion of landfill gas, the treatment of landfill gas does not itself control emissions of NMOCs or HAPs and does not produce emissions that are vented to the atmosphere. Instead, treatment is a physical process that filters particulate matter from the gas stream and knocks out moisture in preparation for combustion. In light of the physical properties of landfill gas, the treatment system may be equipped with emergency or safety vents for non-routine emissions. For any such vent, the Landfill NSPS requires 98% control of NMOC or an outlet concentration of less than 20 ppmvd at 3% oxygen, consistent with control device, emission standards established there under. *See* 40 CFR §60752(b)(2)(iii)(C). Under the currently effective regulations, EPA did not establish any emission limit or operating requirements that would apply to the treatment process itself, correctly reflecting that landfill gas treatment does not produce emissions that may be monitored or subjected to specific operating parameters.

In the case of the Landfill NSPS, emissions are controlled through the obligation to collect landfill gas, thereby preventing fugitive emissions of methane and NMOCs from escaping through the surface of the landfill. Once collected, the landfill gas may be combusted in a unit that meets the Landfill NSPS NMOC standard, or directed to a treatment system for subsequent sale or use. While the treatment system is an option for the handling of collected landfill gas, it is

not a control device, because it does not routinely vent landfill gas to the atmosphere, does not prevent or mitigate the emissions of pollutants, and functions in a manner akin to a production process in preparing fuel for combustion.<sup>22</sup> Because landfill gas treatment systems are not control devices from which emissions occur as a result of treatment, EPA's interest under Section 111 is limited relative to the operation of these units. Subpart A to Part 60, the general provisions, further reflects that EPA's authority under Sections 111 is limited to addressing emission points. Subpart A to Part 60 states that Part 60 applies to stationary sources that contain an "affected facility." An affected facility is "any apparatus to which a [standard of performance] is applicable." 40 CFR § 60.2 The CAA defines standard of performance to mean a "standard for *emission* of air pollutants." 42 U.S.C. § 7411(a)(1). Moreover, the central thrust of Part 60 is to require owners and operators to "maintain and operate any affected facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practice *for minimizing emissions*." 40 CFR § 60.11(d). Given that EPA has already determined that the routing of collected gas to a treatment system is an effective alternative to a control device, and since no emissions occur from the treatment process, no additional requirements for such treatment are warranted.

[Footnote]

(22) See, for example, the definition of "control device" in the Compliance Assurance Monitoring Rule, which states in pertinent part that a control device is "equipment, other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere." 40 CFR § 64.1.

**Comment Response:**

The LFG treatment requirements of §60.762(b)(2)(iii)(C) are necessary to ensure that all collected LFG is utilized in an emission control system that represents BSER. The rule provides three control options for BSER, route the collected LFG to either: (1) an enclosed flare meeting certain requirements, (2) a control system designed and operated reduce NMOC by 98 wt. percent or (if an enclosed combustion device is used) to 20 ppm by volume, or (3) a treatment system that processes the gas for subsequent sale or beneficial use as a fuel or a raw material for a chemical manufacturing process. The gas treatment option offers the landfill the opportunity to use the gas to generate revenues that can offset the cost of LFG collection. For a landfill that uses the beneficial use option, treatment of the gas is necessary as part of BSER to ensure when the gas is used that NMOC is reduced to a level equivalent to using an enclosed flare or a control device at 98 wt. percent control. However, the legal responsibility for achieving the BSER level of control cannot be transferred to another entity that is not the owner or operator of the affected landfill. The beneficial use of LFG with the potential for the highest emissions is use as a fuel in a stationary internal combustion engine. The LFG treatment provision of the rule is devised to ensure that the LFG is of sufficient quality that, if used in a stationary internal combustion engine, the gas will achieve good combustion at least to a level that achieves 98 wt. percent control of NMOC. Accordingly, the LFG treatment requirements of the rule are both technically necessary and legally warranted as part of BSER for landfills.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 55

**Comment Excerpt:**

Republic also recommends that EPA clarify that a treatment system is not a control device in the emission guidelines because treatment systems are not a source of emissions. Republic is aware of instances in the past in which regulatory authorities have required landfills to identify treatment systems as an emission source. To avoid such confusion in the future, Republic asks EPA to clarify that treatment systems are not a control device or a source of emissions.

**Comment Response:**

The treatment system specified as a compliance option in both Subpart XXX and Subpart Cf serves as a control device. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 79

**Comment Excerpt:**

The rationale for and scope of proposed subpart XXX and the ANPRM is unclear. When promulgating a rule, EPA must engage in reasoned decision making. *See Portland Cement Ass'n v. EPA*, 665 F.3d 177, 186-87 (D.C. Cir. 2011) (quoting *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29,43 (1983)); *Am. Farm Bureau Fedn. V. EPA*, 559 F.3d 512, 519-220 (D.C. Cir. 2009). Reasoned decisionmaking requires the Agency to consider all "relevant and significant aspects" of a rule and "articulate a satisfactory explanation for its action" such that an impacted party is given sufficient opportunity for notice and comment. *Am. Farm Bureau Fedn. V. EPA*, 559 F.3d at 520. When a party impacted by a rule "could not have reasonably anticipated" the scope or impact of a rule sufficient to comment on certain aspects of the Agency's proposal, then CAA § 307(d) requires EPA to reconsider that rule. *See Portland Cement Ass'n*, 665 F.3d at 186 (finding that EPA had obligation to reconsider a rule where the proposed rulemaking did not provide affected party enough information to reasonably anticipate certain aspects of the final rule). Though CAA § 307 requires parties to exercise "some degree of foresight" when considering a proposed rule and preparing comments, the CAA "do[es] **not require** telepathy." *Id.* Against this standard, WM urges the Agency to better define and clarify both its regulatory proposals and the bases on which they were chosen.

The inadequate time allowed for comment on the proposed Subpart XXX and the ANPRM is exacerbated by the manner in which these proposals have been presented by EPA. Although placed in separate dockets, it is very difficult to determine where the scope of one proposal ends and the other begins. The Agency requests comments and information on an extensive list of regulatory options and possible approaches in both notices, making it hard to ascertain which options might be chosen for promulgation in Subpart XXX, Subpart WWW or the EG. As a

result, it is extremely difficult to evaluate the probable implications of EPA's proposal for our operations. EPA's approach makes it challenging to comment on fundamental issues such as the determination of the Best System of Emissions Reduction ("BSER") for municipal solid waste landfills, as well as a wide range of implementation issues, including the possible imposition of costly new monitoring requirements. EPA also solicits comments on a range of issues and possible alternative regulatory approaches that are not well-defined, leaving us to surmise first what exactly EPA is proposing and then second, provide an appropriate comment. EPA has identified a number of "corrections and clarifications" in new Subpart XXX, based on its experiences in implementing Subpart WWW. It is not clear in every case how EPA's proposal to correct and clarify the regulatory language based on Subpart WWW would affect Subpart WWW itself, and importantly, compliance obligations for existing facilities.

**Comment Response:**

In the interest of transparency, the EPA in the ANPRM, proposed NSPS, and Proposed EG has provided for public comment an explanation of all the technical information considered and the interrelated issues that were deliberated during the review of the NSPS and EG. While we recognize the complexity of the issues involved, unfortunately we were unable to provide more time for public comment. At the time of the July 17, 2014 NSPS proposal and ANPRM, the EPA was under a court order to finalize the NSPS by March 30, 2015, which did not afford us the time to extend the comment period. While there was no court order related to the ANPRM for the Emission Guidelines, we have indicated that it was our intent to consider information submitted as part of the ANPRM and August 2015 Emission Guidelines proposal in the development of the final NSPS. Likewise, the EPA considered information submitted as part of the NSPS proposal in the development of the final Emission Guidelines. The EPA conducted a public hearing as well as other public outreach on this rulemaking. Information received was used to help inform the final rulemakings.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 59

**Comment Excerpt:**

EPA Failed to Satisfy the Procedural Requirements of the Clean Air Act EPA did not provide any information in support of its decision to exclude Method 25A, and therefore, its exclusion is unlawful. Specifically, § 307(d)(3) of the Clean Air Act requires the Agency to provide a statement of basis and purpose for any proposed rule. The statement of basis and purpose must include a summary of "(A) the factual data on which the proposed rule is based; (B) the methodology used in obtaining the data and in analyzing the data; and (C) the major legal interpretations and policy considerations underlying the proposed rule." *Id.*

In the proposed rule, EPA made no attempt to satisfy the procedural requirements of § 307(d)(3). EPA did not provide any factual data, methodology, or any legal or policy justification for its proposed exclusion of Method 25A. In fact, EPA did not make *any* reference to Method 25A in the proposed rule.<sup>30</sup> As such, interested parties have had no opportunity to examine and

comment on the studies, data, or other information (if any) underlying EPA's decision-making in this context. This violates the fundamental basis for notice-and-comment rulemaking.<sup>31</sup>

WM is an industry leader and has proactively worked with EPA and local regulators on emission testing issues for many years, and has been actively engaged with the agency in this rulemaking process. In fact, WM has recently worked with regulators specifically relating to issues of stack testing and Methods 25 and 25A. Notwithstanding this, EPA has not timely engaged WM and other industry leaders on testing methodology; these changes should not be made without the Agency providing any notice or opportunity to effectively comment.

[Footnotes]

(30) In an intra-Agency memorandum pertaining to voluntary consensus standards, the Measurement Technology Group concluded that ISO 14965:2000(E) was an impractical alternative to Method 25 or 25A. EPA Memorandum from Steffan Johnson, Acting Group Leader for the Measurement Technology Group, Voluntary Consensus Standard Results for Standards of Performance for Municipal Solid Waste Landfills 40 CFR Part 60, Subpart XXX, p. 5, Mar. 25, 2014. The memorandum is confusing because it raises a question as to why EPA would even compare Method 25A to a voluntary standard if EPA did not intend to include Method 25A in the proposed rule.

(31) Furthermore, EPA cannot remedy its procedural error by providing studies, data, or other information after the close of the comment period. Courts have consistently held that EPA violates the "structure and spirit of section 307" if it submits information "so late as to preclude any effective public comment [on] a document vital to EPA's support for its rule." *See, e.g., Ne. Md. Waste Disposal Auth. v. EPA*, 358 F.3d 936, 952 (D.C. Cir. 2004) (citation and internal quotation marks omitted).

#### **Comment Response:**

The final rule allows the use of Method 25A in some circumstances. The use of EPA Method 25A and Method 18 (on a limited basis, e.g., specific compounds like methane) are included in the final rule. Method 25A in conjunction with Method 18 (for methane) or Method 3C can be used to determine NMOC for the outlet concentrations less than 50 ppm NMOC as carbon.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 64

#### **Comment Excerpt:**

To avoid violating the notice-and-comment requirements under § 307(d)(3), and because Method 25A is a superior testing methodology where outlet NMOC concentrations are low, WM requests that EPA retain the authorization to use Method 25A consistent with Subpart WWW.

Alternatively, to the extent that EPA intends to proceed with the deletion of Method 25A as an acceptable testing methodology, EPA must provide a supplemental proposal, with supporting information and soliciting comment with respect to that proposed action. To the extent that EPA intends to proceed without providing a supplemental proposal, WM requests that EPA modify

proposed § 60.764(d) to provide the flexibility to use of Methods 25A, and SCAQMD 25.3 in appropriate, site-specific circumstances.

**Comment Response:**

The final rule allows the use of Method 25A in some circumstances. The use of EPA Method 25A and Method 18 (on a limited basis, e.g., specific compounds like methane) are included in the final rule. Method 25A in conjunction with Method 18 (for methane) or Method 3C can be used to determine NMOC for the outlet concentrations less than 50 ppm NMOC as carbon.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 45

**Comment Excerpt:**

**Further Stakeholder Involvement should Include the Recycling and Composting Industry and the Public Interest Sector.** Leading up to the ANPRM, EPA undertook a stakeholder process to solicit recommendations for changes in the existing rules from affected parties. Based on the description of the entities EPA states it involved, it appears that only landfill entities, their representative organizations and governmental bodies were approached. The recycling and composting industries, environmental and social justice organizations, and citizens living next to landfills also have significant interests in these proceedings and are relevant stakeholders. We therefore urge the agency to actively involve not only landfill operators and governmental entities, but also these other stakeholders as it completes this rulemaking process.

**Comment Response:**

In formulating the final rules, the EPA conducted a public hearing that was open to all interested parties and considered all of the written public comments on the proposed NSPS and EG.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 1

**Sort Order:** 1900

**Comment Excerpt:**

We appreciate that the agency has now undertaken this rulemaking, a key step to finally addressing landfill methane emissions from this source. Review of this New Source Performance Standard (NSPS) is a decade overdue, as the last review occurred some 18 years ago even though the agency is obligated to review NSPS every eight years.<sup>2</sup> This extraordinary delay is especially unfortunate since methane is a ubiquitous and extremely potent greenhouse

gas with a 100-year global warming potential (“GWP”) of 34<sup>3</sup> and a 20-year GWP of 86,<sup>4</sup> making its rapid reduction a critical element of any plan to avoid catastrophic climate change. Even more important than the finalization and implementation of this NSPS for new landfills is EPA’s completion of an NSPS for existing landfills, as they far outnumber the expected new landfills and are operated under poor conditions, resulting in the unnecessary leakage of enormous amounts of high GWP, short-lived greenhouse gas pollution. We urge EPA to issue a proposed rulemaking for existing landfills within 60 days after the comment period closes, and finalize it within six to nine months thereafter. We also ask the agency to complete the instant rulemaking for new, modified and reconstructed landfills earlier than the one-year timeframe the agency has announced.

[Footnotes]

<sup>2</sup> 42 U.S.C. § 7411(b)(2)(B).

<sup>3</sup> Intergovernmental Panel on Climate Change, *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (2013) (“IPCC AR5 WGI”) at 714, available at <http://www.climatechange2013.org/>.

<sup>4</sup> *Id.* at 714.

#### **Comment Response:**

The EPA has published these final rules as expeditiously as practicable given the diversity of issues involved and the need to seriously deliberate on all of the public comments received on the ANPRM and the notices of proposed rulemaking.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 40

**Sort Order:** 1901

#### **Comment Excerpt:**

We regret EPA’s choice to proceed by way of ANPRM rather than by means of a notice of proposed rulemaking, which would have speeded up the process. EPA has had ample time since 1996 to study the issue. The delay is particularly troublesome in light of the explicit Presidential order to proceed, which EPA quotes in the preamble, and the urgency of the climate crisis, which is exacerbated by landfills’ enormous methane emissions as well as their CO<sub>2</sub> emissions. EPA states that in 2012, landfill emissions represented 18.1 percent of total U.S. methane emissions, or 8.7 percent of all U.S. GHG emissions (in CO<sub>2</sub>e); these numbers would make landfills the third largest source of anthropogenic methane emissions in the U.S. Information from the Intergovernmental Panel on Climate Change, however, suggests that landfills’ contribution to anthropogenic greenhouse gas emissions is several times greater than estimated by EPA.<sup>4</sup> Because methane is a short-lived pollutant with an estimated atmospheric life of 12 years, EPA



itself acknowledges that “reducing methane emissions is one of the best ways to achieve a near-term beneficial impact in mitigating global climate change.”

[Footnote]

<sup>4</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: Mitigation of Climate Change. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Chapter 10, Waste Management and GHG Mitigation Technologies* (2007) (“IPCC AR4 WGIII”) at 600, available at [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg3/en/ch10.html](http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10.html).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121, excerpt number 1, under comment code 1z.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 44

**Sort Order:** 1902

**Comment Excerpt:**

**The Guidelines Should be Proposed Sooner.** We urge EPA to act much more quickly to complete the instant rulemaking process. We ask the agency to follow up this ANPRM with a proposed rulemaking no later than 60 days after the end of the comment period, and to complete the final rule within six to nine months thereafter.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121, excerpt number 1, under comment code 1z.

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**Commenter Name:** Comment submitted by William O'Sullivan, Director, Division of Air Quality

**Commenter Affiliation:** New Jersey Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0077.1

**Comment Excerpt Number:** 1

**Sort Order:** 2000

**Comment Excerpt:**

Please consider sulfur compound emissions when developing landfill standards for air contaminant emissions. Emissions of hydrogen sulfide (H<sub>2</sub>S) have caused air quality problems near landfills. H<sub>2</sub>S results from the decomposition of wallboard, especially wallboard fines commonly contained in Construction and Demolition Fines. Also, the combustion of H<sub>2</sub>S in a

landfill gas recovery and treatment system creates sulfur dioxide (SO<sub>2</sub>) emissions, which can result in exceedance of the 1 hour SO<sub>2</sub> National Ambient Air Quality Standard (NAAQS) near the landfill. To avoid SO<sub>2</sub> NAAQS violations, the installation of SO<sub>2</sub> scrubbers after combustion, or installation of sulfur recovery units before combustion, may be required if H<sub>2</sub>S generation in a landfill is high.

**Comment Response:**

The regulated/designated pollutant for the landfill final rules continues to be MSW landfill emissions. Further, the EPA maintains that NMOC should be measured as a surrogate. The landfill final rules focus on household waste. While C&D waste may, in some cases, be co-disposed, the final regulations do not focus on C&D landfills. C&D landfills are covered under RCRA subtitle C. Further, Section 111 of the Act specifies that EPA shall publish for purposes of NSPS regulation a list of source categories that may reasonable be anticipated to endanger public health or welfare. We are not aware of any information indicating that H<sub>2</sub>S emissions from municipal landfills poses a public health or welfare problem or that violations of the NAAQS for SO<sub>2</sub> are occurring in the vicinity of municipal landfills.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 26

**Sort Order:** 2001

**Comment Excerpt:**

The quantity of H<sub>2</sub>S present in LFG can vary considerably. H<sub>2</sub>S creates odor concerns as well as safety concerns. The level that causes immediate danger to life and health (IDLH) is only 100 ppm. Delaware encourages EPA to require annual site specific H<sub>2</sub>S testing at all NSPS/EG facilities. This will allow facilities to take precautions to protect the public and to accurately calculate sulfur dioxide emissions associated with flaring/beneficial use of the LFG. Delaware also recommends that facilities conduct ambient air testing for H<sub>2</sub>S. There is presently no national ambient air quality standard (NAAQS) for H<sub>2</sub>S. Delaware has established a State air quality standard, as shown below. These threshold levels can be used as alert levels for ambient air testing. Delaware recommends quarterly perimeter monitoring for H<sub>2</sub>S at facilities that have exceeded the 34 Mg threshold.

7 DE Admin. Code 1103 part 9

9.1 The average concentration of hydrogen sulfide taken over any consecutive three minutes shall not exceed 0.06 ppm.

9.2 The average concentration of hydrogen sulfide taken over any consecutive 60 minutes shall not exceed 0.03 ppm.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0077.1, excerpt number 1, comment code 1z.

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs  
**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0197  
**Comment Excerpt Number:** 22  
**Sort Order:** 2002

**Comment Excerpt:**

The NSPS rule regulates NMOC emissions directly and as a result also seeks to control methane and odors. The control of methane is an easily understood process and a product of LFG collection. The control of odors is not. The odor associated with LFG is primarily due to the anaerobic reduction of sulfur compounds to H<sub>2</sub>S gas. The source of sulfur in municipal solid waste is largely due to the presence of wall board/gypsum waste (CaSO<sub>4</sub>), ash, sludge and/or sulfur scrubber cake. LFG has been shown to contain H<sub>2</sub>S levels from non-detectable amounts up to 12,000 ppm<sup>1</sup>. The amount of H<sub>2</sub>S contained in the gas has a direct effect on the odor potential of fugitive emissions. H<sub>2</sub>S is also a safety concern because the Immediate Danger to Life and Health (IDLH) level is only 100 ppm. NACAA recommends that EPA specifically address H<sub>2</sub>S in the NSPS and EG rules by requiring site-specific annual H<sub>2</sub>S measurements to be taken and by producing guidance for facilities regarding how to minimize H<sub>2</sub>S content of LFG. Additionally, the combustion of H<sub>2</sub>S in landfill gas methane and volatile organic compound control systems creates sulfur dioxide, which may cause exceedances of the one-hour sulfur dioxide National Ambient Air Quality Standard (NAAQS), depending on the amount of H<sub>2</sub>S and the location of the property line. Odor, toxicity and potential for NAAQS violation are all good reasons for EPA’s air quality and solid waste programs to focus additional efforts on appropriate means to dispose of wallboard to avoid high amounts of H<sub>2</sub>S and sulfur dioxide in landfill gas.

[Footnote 1] Eun, Sangho, Debra R. Reinhart, C. David Cooper, Timothy G. Townsend, Ayman Faour. Hydrogen sulfide flux measurements from construction and demolition debris (C&D) landfills. *Waste Management* 27 (2007) 220-227. Available online: <http://www.sciencedirect.com>

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0077.1, excerpt number 1, comment code 1z.

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**Commenter Name:** Ali Mirzakhali, Director  
**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0191  
**Comment Excerpt Number:** 25  
**Sort Order:** 2003

**Comment Excerpt:**

The strongest incentive for beneficial use of LFG is reliability of investment in a project. Organics diversion can complicate this because it creates uncertainty regarding the presence of LFG generating waste in the landfill. In addition to reliable gas flow, a project also

benefits from reliable gas quality. This most often means low hydrogen sulfide (H<sub>2</sub>S) in the LFG. The removal of H<sub>2</sub>S is costly and renders many projects uneconomical. Also, high H<sub>2</sub>S results in more frequent odor problems which can negatively affect public perception and result in difficulty developing projects. Therefore, if EPA is seeking to incentivize something, the focus should be on the diversion of high sulfur waste away from municipal solid waste facilities. High H<sub>2</sub>S is often the result of accepting specific waste into the landfill. This includes construction and demolition (C&D) waste, ground C&D waste, coal ash, and sulfur scrubber cake. These types of waste are better managed through beneficial reuse or as mono-filled material, segregated from organic waste. When fugitive emissions contain high levels of H<sub>2</sub>S they are more likely to negatively affect the surrounding communities by plaguing them with odors.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0077.1, excerpt number 1, comment code 1z for handling of H<sub>2</sub>S emissions at MSW landfills.

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**Commenter Name:** Comment submitted by Paul Aud, Environmental Engineering Manager  
**Commenter Affiliation:** Louisville Metro Air Pollution Control District (APCD)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0091.1  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

APCD agrees that there have been changes in the landfill industry that indicate a need for EPA to reevaluate and revise the NSPS since it was promulgated in 1996, including a number of new monitoring techniques and now favorable opportunities for gas-to-energy development. APCD urges the EPA to harmonize the definitions, action timelines, and requirements in Subpart XXX to those in Subpart WWW to the greatest possible extent. This will ensure greater compliance and avoid any unnecessary confusion.

**Comment Response:**

While there are some differences in the definitions, action timelines and requirements in Subpart XXX, those differences were all dictated by facts EPA obtained through the rulemaking process. However, for ease of implementation, the structure of subparts WWW, and XXX are the same.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director  
**Commenter Affiliation:** NC Conservation Network  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1  
**Comment Excerpt Number:** 12

**Comment Excerpt:**

In North Carolina, virtually all funding for implementation of air programs comes from permit fees; and it is unclear whether the landfill methane capture requirements would be implemented

by our state Division of Air Quality (which oversees issuances and compliance with Clean Air Act permits) or our state Division of Waste Management (which already has the primary relationships with landfill operators, and hosts the inspectors who check leachate collection systems). Under pressure from the solid waste industry, North Carolina's state legislature has already attempted to reduce agency inspections of leachate collection systems, and is unlikely to look with excitement at the prospect of funding oversight of the methane capture rules by either division. Ease of implementation by state regulators will be critical in determining whether the rules for new and existing landfills successfully reduce methane emissions.

**Comment Response:**

EPA assumes that the revised regulations will generally be implemented by state air agencies since they are promulgated pursuant to section 111 of the Clean Air Act. However, a state can choose to have another state agency implement them if it so desires. The NSPS will be implemented by EPA Regional offices until such time as states take delegation of responsibility for implementation. The EG will be implemented through either a revised state plan or, in the event that a state either doesn't submit a revised plan or EPA disapproves a plan that is submitted, through a revised federal plan.

## **2.0 APPLICABILITY ISSUES**

### **2.1 Definition of Modification**

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 41

**Comment Excerpt:**

EPA's Current Treatment of Modified Landfills is Inconsistent with the Act. In the ANPR, EPA solicits comment on "whether it is reasonable to review the definition of modification for landfills." EDF believes that EPA's current definition of a "modified" landfill is inconsistent with the Clean Air Act, and that aligning the definition of "modification" with the statutory definition would ensure faster and more streamlined achievement of emission reductions than the current approach.

Unlike section 111 standards for other source categories, the current NSPS and EG for landfills contain a unique definition of "modification" which exempts expansions of existing landfills that do not result in a change in the facility's *permitted design capacity*. Only a project that results in an increase in the total capacity of a landfill will cause the landfill to be deemed "modified" (and therefore subject to the NSPS, rather than the EG). As a result of this definition, landfills can continue to add new waste cells — and increase emissions — over many years without ever being considered "modified."

This definition is clearly inconsistent with the Clean Air Act. Section 111 clearly defines a "modification" as:

...any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.<sup>74</sup>

The addition of significant amounts of new waste to a landfill over time, for example through expansion to new cells, clearly qualifies as a "physical change" or a "change in the method of operation" of the landfill. Further, the addition of new waste "increases the amount" of air pollution generated by the landfill. Thus, the Clean Air Act requires that an expanding landfill be considered a "modified" facility and subject to the relevant NSPS. For the same reasons, the addition of waste to a landfill would also be considered a "modification" under the General Provisions in Subpart A of EPA's NSPS regulations.<sup>75</sup>

EDF urges EPA to align the NSPS and EG with this clear statutory definition not merely to ensure compliance with the statute, but also to secure the benefits of subjecting modified landfills to the NSPS. In contrast to the EG, the NSPS is directly implemented and enforced by EPA and does not require the adoption of state plans in order to become effective. Thus, we expect that an expanded definition of "modifications" would ensure that landfills become subject to up-to-date emission standards sooner than if those landfills were to continue as "existing" facilities subject to the EG.

[Footnotes]

(74) 42 USC § 7411(a)(4).

(75) The General Provisions identify several exceptions to the broad definition of a "modification," none of which appear to apply to expansions of existing landfills. *See* 40 C.F.R. § 60.14(e).

### **Comment Response:**

The EPA maintains that the landfill-specific definition of modification is consistent with the CAA. In a 1998 Federal Register notice (63 FR 32743), the EPA recognized application of the NSPS General Provisions definition of modification (which is based on the CAA) was problematic when applied to landfills due to the fact that a landfill is not a typical production or manufacturing facility for which the General Provisions originally were written. To address this issue, the EPA developed a landfill-specific definition of modification in subpart WWW to be consistent with the intent of the General Provisions 60.18. The basis of the landfill-specific definition of modification and the resulting consistency with 60.18 is fully explained in the June 16, 1998 Federal Register notice.

The EPA disagrees that landfills can continue to add new waste cells — and increase emissions — over many years without ever being considered “modified.” The definition of modification in the proposed and final rules account for the addition of new waste cells the corresponding addition of solid waste over the life of the landfill because the definition is based on the design capacity. Design capacity means the maximum amount of solid waste a landfill can accept based on the most recent permit issued by the state, local, or tribal agency responsible for regulating the landfill, plus any in-place waste not accounted for in the most recent permit. The landfill may continue to add waste as long as it does not exceed the design capacity. For landfills, the only change which would constitute a modification is an increase in design capacity caused by an increase in the permitted horizontal or vertical dimensions of the landfill (63 FR 32744).

Multiple commenters on the MSW Landfills NSPS proposal stated that the EPA underestimated the cost impacts of the proposed NSPS because the EPA failed to consider the number of MSW landfills that are expected to become subject to the proposed NSPS through modification. Based on those public comments, the EPA adjusted its analysis to account for the emission reductions that would be achieved by “modified” landfills (i.e., those that increase in the permitted mass or volume design capacity of the landfill by either lateral or vertical expansion based on its permitted design capacity as of July 17, 2014). Through the adjusted analysis, the EPA secures the emission reduction benefits of subjecting modified landfills to the NSPS.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 55

**Sort Order:** 200

**Comment Excerpt:**

EPA Should Not Revise the Definition of "Modification." EPA's Subpart XXX proposal and its ANPRM solicitation of comment relating to the definition of "modification" are seemingly inconsistent and therefore are difficult to understand. On the one hand, the Subpart XXX "clarification" of the definition of "modification" would not appear to change the fundamental premise of triggering NSPS applicability, which is based on increases in design capacity in the context of horizontal or vertical expansion. WM agrees that this fundamental premise should not change. On the other hand, the premise of the ANPRM's solicitation of comment could signal a significant change to both the definition and overall concept of "modification" in the landfill context. Specifically, in ostensibly linking a revision to the definition of "modification" with "options to achieve additional reductions from existing landfills," it appears that EPA may be considering potential NSPS-triggering events other than changes in design capacity via horizontal or vertical expansion. If that is the case, EPA's Subpart XXX proposal and ANPRM objectives are entirely inconsistent and must be explained further.

WM does not support any revision of the definition of "modification" that would change the basis on which applicability of the standards are triggered for existing landfills. The definition of "modification" that is currently included in Subpart WWW was carefully developed by agreement among EPA and stakeholder groups to address the unique nature of landfills in recognition that "a landfill is not a typical production or manufacturing facility." *See* 62 Fed. Reg. 60898 (November 13, 1997), 63 Fed. Reg. 32743, 32744 (June 16, 1998). Further, EPA has determined that the general NSPS definition of modification, which is broadly based on physical or operational changes to an existing facility, does not apply in the landfill concept:

[W]ith respect to landfills, the concept of a physical or operational change leading to an increase in emission is of limited application, since unlike more traditional sources of air pollution, increased emissions at landfills are based on the amount and character of waste placed in the landfill, rather than through physical or operational changes to equipment or production methods.

63 Fed. Reg. at 32744. Accordingly, EPA determined that the definition of modification must be specifically tailored:

[E]missions over the total life of the facility depend on the amount of waste a landfill can accept pursuant to its permitted design capacity. Accordingly, for landfills, it makes sense to consider only those physical or operational changes that increase the size of the landfill beyond its permitted capacity as modifications subjecting an existing facility to the NSPS.

*Id.*

Any proposed revision to the definition of "modification" that is inconsistent with EPA's specific findings would be inappropriate. For example, EPA determined that "operational changes at landfills, such as increasing the moisture content of the waste, increasing the physical compaction on the surface, changing the cover material or thickness of daily cover, and changing bailing or compaction practices" should not be included within the definition of "modification." 63 Fed. Reg. at 32744. The considerations that formed the basis of EPA's category-specific definition of "modification" have not changed, and neither the promulgation of Subpart XXX nor the solicitation of comment through the ANRPM will affect the manner in which landfill design capacity and potential emissions are established. Accordingly, having determined that landfill emissions are directly related to design capacity, and not to a broad range of other possible physical or operational changes that may occur at a landfill as a matter of course, EPA has no basis on which to broaden the definition of modification. The physical operation of landfills has not changed significantly since the promulgation of Subpart WWW; a revised definition of "modification" in addition to the promulgation of Subpart XXX would serve only to insert ambiguity into landfills' compliance obligations under Subpart WWW, Subpart XXX and the EG. Indeed, a broadened definition of "modification" based on operational changes that are unconnected to permitted design capacity will create confusion with respect to the design capacity applicability thresholds established in the Landfill NSPS. *See* 40 C.F.R. §60.752(a).

#### **Comment Response:**

The EPA is not revising the definition of modification in such a way that would change the basis on which applicability of the standards are triggered for existing landfills. The EPA recognizes the definition of "modification" that is currently included in subpart WWW was carefully developed by EPA to address the unique nature of landfills in recognition that "a landfill is not a typical production or manufacturing facility" (62 FR 60898, November 13, 1997; 63 FR 32743, June 16, 1998). The basis of the landfill-specific definition of modification is fully explained in the June 16, 1998 Federal Register notice. The definition of modification in final subparts Cf and XXX is consistent with subpart WWW, other than minor clarifications that are discussed elsewhere in this section.

For additional discussion of the landfill-specific definition of modification and the emission reductions that would be achieved by landfills modifying based a change in the permitted design capacity, see the response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 41 under comment code 2a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1



**Comment Excerpt Number:** 56  
**Sort Order:** 201

**Comment Excerpt:**

EPA's apparent belief that a revised definition of "modification" could lead to reduced emissions is not correct; for example, EPA fails to explain in the ANPRM how a revised definition of "modification" would lead to "reducing the methane and NMOC components of LFG." EPA has not, and likely cannot, provide any clear basis for showing that a revised definition of modification would achieve meaningful reductions of emissions from existing sources, especially in the absence of a parallel revision to the Subpart *XXX* definition. Indeed, the confusion that would result from a revision to this long-standing and category-specific definition would outweigh any marginal reduction that may be achieved.

Finally, WM does not agree that any clarification of the existing Subpart WWW definition is needed in Subpart *XXX*, and we are concerned that any change in the definition could lead to confusion for existing sources.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 55, under comment code 2a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 67  
**Sort Order:** 202

**Comment Excerpt:**

EPA also needs to further explain its request for input on revising the definition of modification such that a change would be expected to achieve additional emission reductions. EPA has not provided any clear basis for showing that a revised definition of modification would achieve meaningful reductions of emissions. The confusion that would result from a revision to this long-standing and category-specific definition would outweigh any marginal reduction that may be achieved.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 55, under comment code 2a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 66  
**Sort Order:** 300

**Comment Excerpt:**

EPA has proposed to revise the definition of “Modification” in subpart XXX. Whereas the current definition only includes an increase in the permitted design capacity by *volume*. A landfill’s mass is highly dependent on the density of the waste received, which in turn depends on the types of waste received, waste compaction practices, the amount and type of cover soil used, and various other factors. As a result, these and other factors that can affect the density of the landfill can also affect the mass that can be accommodated within a given landfill design volume. The number of variables that can affect a landfill’s density, and therefore the mass that it can accommodate, also makes predetermination of a landfill’s future mass capacity extremely difficult. As a result, EPA’s proposed revision to the term “modification” would unnecessarily complicate the definition of that important term.

Republic encourages EPA to avoid unnecessarily complicating the definition of the term “modification” by adding mass, particularly given the importance of clarity in determining whether an existing landfill has triggered new landfill standards. Changes in design volume should be sufficient to determine when an existing landfill should become subject to the standards applicable to new landfills, and EPA should not seek to impose the new landfill standards on any landfill that begins accepting new types of waste or changes its compaction and cover practices in a way that may increase the density of the landfill. If EPA decides to finalize its proposal to add mass to the definition of “modification,” Republic asks that EPA clarify that the revision is not intended to apply to changes in a landfill’s density, but rather only those changes that reflect the type of activities that have been considered “modifications” in the past – i.e., expansions of landfills beyond their originally permitted size. Failure to take either of these steps could place landfills at risk for claims that an existing landfill unexpectedly triggered the NSPS simply through an increase in waste density.

**Comment Response:**

The EPA is finalizing the definition of modification consistent with the definition in subpart WWW, which is based on volume only. See Section VI.F.5 of the 2016 NSPS Final Preamble.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 10

**Sort Order:** 301

**Comment Excerpt:**

The current rule defines increases in design capacity only by increases in volume, such as by expanding the footprint of a landfill. The ANPRM proposes to also include increases in mass as a basis to trigger new Subpart XXX. TXSWANA is concerned, for example, that employing a best practices such as increasing the amount of compaction, could result in an increase in mass sufficient to trigger the proposed definition of modification and thus trigger NSPS even though no physical expansion of the landfill or the rate of inflow of waste to the landfill changed. Other factors such as a change in type of cover or amount of cover can also affect density or mass. No

additional methane will be generated by virtue of the additional compaction or the heavier cover material. No emission benefit will result but additional cost and paperwork for both the regulatory agency and the landfill will result.

TXSWANA is not aware of any instance where a landfill has not been fully regulated because mass was not a regulatory trigger. TXSW ANA believes this part of the regulations is not broken and no fix is required.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 66, under comment code 2a.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Modification. In the definition, change ‘horizontal’ to ‘lateral’ to be consistent with definitions. The revised definition would be:

*Modification* means an increase in the permitted mass or volume design capacity of the landfill by either lateral or vertical expansion based on its permitted design capacity as of July 17, 2014. Modification does not occur until the owner or operator commences construction on the horizontal or vertical expansion.

**Comment Response:**

The EPA is finalizing the definition of modification to change “horizontal” to “lateral” within the modification definition to be consistent with the defined term “lateral expansion.” See Section VI.F.5 of the 2016 NSPS Final Preamble.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 63

**Comment Excerpt:**

Republic supports EPA’s revision to the definition of "modification" to incorporate the July 17, 2014 trigger date for Subpart XXX to avoid confusion with the trigger date for Subpart WWW.

**Comment Response:**

The EPA appreciates the commenter’s support.

## 2.2 Expansions

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 57

**Sort Order:** 300

### **Comment Excerpt:**

In its preamble to Subpart *XXX*, EPA does not address the potential applicability of Subpart *XXX* to existing Subpart W<sub>WW</sub> or Emission Guidelines sites undergoing an expansion. However, since the definition of "modification" would apply to existing facilities that increase permitted design capacity via horizontal or vertical expansion, WM believes that EPA must address the compliance obligations that may result for sites that are subject to a transition from Subpart W<sub>WW</sub> to Subpart *XXX* applicability. For example, EPA must clarify whether and to what extent existing landfill areas that are not affected or integrated operationally with an expansion area would be subject to Subpart *XXX* standards. Likewise, EPA must clarify the compliance obligations for existing landfill areas that will be integrated operationally with an expansion area, such as via an integrated gas collection and control system. For example, if existing areas of a landfill will become subject to Subpart *XXX*, and to the extent those requirements differ from existing obligations under Subpart W<sub>WW</sub> or the Emissions Guidelines, EPA must clarify the timeframe for compliance with Subpart *XXX* requirements.

One example would be the proposed Subpart *XXX* treatment system operating requirements; if promulgated as proposed, these requirements will require significant capital expenditures, operational changes and equipment shakedown time. Chillers would need to be installed along with continuous monitoring and recording equipment. Also according to the proposed Subpart *XXX* Design Plan provisions, the facility would be required to update the Design Plan to include treatment system design specifications and obtain agency approval. EPA should provide a timeline for achieving compliance, in recognition that it will be infeasible for existing facilities to upgrade equipment and operations to a more costly and stringent set of requirements under Subpart *XXX* immediately upon "modification" of an existing facility. Although a "modification" would occur when the owner or operator commences construction of the horizontal or vertical expansion, the Subpart *XXX* collection and control requirements would not apply to the expansion area until waste has been in place for five years or more (if active) or two years or more (if closed or at final grade). *See* proposed 40 C.F.R. §60.762(b)(2). Accordingly, the expansion area gas collection system would be constructed over time, subject to waste placement schedules, and landfill gas would neither be generated nor collected from the expansion area until years after the date of modification. One option for compliance in existing landfill areas would be to achieve compliance with Subpart *XXX* collection and control system requirements on the same timeframes as required under Subpart *XXX* for the expansion areas and the collection and control of landfill gas generated therein. Alternatively, EPA could establish a definite period of time for existing areas to achieve compliance with Subpart *XXX* requirements, triggered by the date of modification. As an example, EPA's National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines provides a three-year time for compliance for area source facilities that become major facilities. *See* 40 C.F.R. §63.6595(b)(2).

**Comment Response:**

As explained at Section III.E of the 2015 proposed Emission Guidelines (80 FR 52110), any source for which construction, modification, or reconstruction commenced on or before July 17, 2014, the date of proposal of new subpart XXX, is an existing source. Sources currently subject to subpart WWW would need to continue to comply with the requirements in that rule unless and until they become subject to more stringent requirements in the revised Emission Guidelines as implemented through a revised state or federal plan.

However, any landfill that undergoes a modification, as defined in the final landfills rules, would become subject to subpart XXX upon commencing construction on the lateral or vertical expansion. Thus, the compliance obligations of a landfill that transitions from subpart WWW to subpart XXX applicability on the basis of modification are in subpart XXX.

Consistent with previous determinations (Municipal Solid Waste Landfill New Source Performance Standards (NSPS) and Emission Guidelines (EG)--Questions and Answers, pages 3 and 5, <https://www3.epa.gov/ttn/atw/landfill/landflpg.html>), the landfills regulations apply to the entire landfill. Thus, regarding the compliance timeframe for landfills that become subject to subpart XXX through modification, subpart XXX applies to each municipal solid waste landfill that commenced construction, reconstruction, or modification after July 17, 2014.

Regarding the compliance period for landfill gas treatment systems, see response to DCN EPA-HQ-OAR-2003-0215-100.1, excerpt number 36, under comment code 11i.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 111

**Sort Order:** 301

**Comment Excerpt:**

Since the definition of "modification" would apply to existing facilities that increase permitted design capacity via horizontal or vertical expansion, WM believes that EPA must address the compliance obligations that may result for sites that are subject to a transition from Subpart WWW to Subpart XXX applicability. For example, EPA must clarify whether and to what extent existing landfill areas that are not affected or integrated operationally with an expansion area would be subject to Subpart XXX standards. Likewise, EPA must clarify the compliance obligations for existing landfill areas that will be integrated operationally with an expansion area, such as via an integrated gas collection and control system. For example, if existing areas of a landfill will become subject to Subpart XXX, and to the extent those requirements differ from existing obligations under Subpart WWW or the Emissions Guidelines, EPA must clarify the timeframe for compliance with Subpart XXX requirements. As previously discussed, time is necessary to prepare treatment system monitoring plans for sites that operate existing GCCS that rely on an existing gas treatment system to comply with the rule requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-100.1, excerpt number 57, under comment code 2b.

Regarding the compliance period for landfill gas treatment systems, see response to DCN EPA-HQ-OAR-2003-0215-100.1, excerpt number 36, under comment code 11i.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 69

**Sort Order:** 302

**Comment Excerpt:**

Modified landfills need time to comply. Another aspect of EPA's proposed revisions that presents a potential concern is the lack of guidance on whether an existing landfill that conducts a modification will have sufficient time to comply with EPA's revised NSPS. Since EPA has proposed to lower the threshold for installing a gas collection and control system from 50 Mg/yr to 40 Mg/yr, many landfills seeking to conduct an expansion may have already crossed the 40 Mg/yr level several years prior to the expansion. If so, EPA's proposal could be viewed as requiring immediate compliance with the control system requirements because those requirements must be met within 30 months after the first annual report that indicates emissions have crossed the relevant threshold. EPA's proposal could also be viewed as eliminating the option to reevaluate emissions under Tier 2 or Tier 3. At the current threshold of 50 Mg/yr, there would have been no reason to conduct a Tier 2 or Tier 3 analysis if a Tier 1 analysis indicated only 40-50 Mg/yr, so many landfills may have reported annual emissions in that range in the past. But EPA's proposal could be interpreting as requiring those landfills to install a control system within 30 months of those past reports if they trigger the new NSPS.

EPA's promise to apply the new NSPS provisions directly to existing landfills, even if they do not conduct a modification, presents similar but much more significant concerns, given that the number of landfills facing this issue would include all landfills, not just those seeking to expand. Republic recognizes that EPA has not yet issued an official proposal to lower the control system threshold in the Subpart Cc emission guideline from 50 Mg/yr to 40 Mg/yr at this time. However, the likelihood that EPA will impose the revisions proposed for the NSPS to all landfills soon suggests that comment on the potential implications of doing so is relevant here.

To avoid the possibility that EPA's proposed revisions could be interpreted as requiring immediate compliance with the control system requirement upon modification of an existing landfill, Republic asks EPA to confirm that modified landfills will have sufficient time to install a control system. In doing so, EPA should revise the regulation language to make clear that modified sources will have 30 months from the *next* annual report following a modification that indicates emissions are over the threshold, rather than relying on any report filed before the modification that may have exceeded the new threshold of 40 Mg/yr.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-100.1, excerpt number 57, under comment code 2b.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 4

**Sort Order:** 303

**Comment Excerpt:**

A facility that is currently subject to the existing NSPS (Subpart WWW) or Emission Guidelines (Subpart Cc) that undergoes a modification would be subject to Subpart XXX. The proposed rule also does not contain any implementation timeline for a facility like this. If, for instance, the treatment standards (which we comment on later in this letter) are a part of the final rule, how would they affect a facility that has a beneficial use project that does not use the "required" treatment equipment?

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-100.1, excerpt number 57, under comment code 2b.

Regarding the compliance period for landfill gas treatment systems, see response to DCN EPA-HQ-OAR-2003-0215-100.1, excerpt number 36, under comment code 11i.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 4

**Sort Order:** 304

**Comment Excerpt:**

TXSWANA believes that each of these modified sites will need time to comply with the new requirements set forth by Subpart XXX. TXSWANA recommends that an implementation timeline be established to allow for the needed changes of up to 3 years which TXSWANA believes to be consistent with other NSPS rules that require new equipment or testing.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-100.1, excerpt number 57, under comment code 2b.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division  
**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1  
**Comment Excerpt Number:** 3  
**Sort Order:** 305

**Comment Excerpt:**

Subpart XXX does not specify a compliance timeline for landfills formerly subject to Subpart WWW that must transition into Subpart XXX. A clear timeline for transition would benefit both the regulated community and the delegated authority.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-100.1, excerpt number 57, under comment code 2b.

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 3  
**Sort Order:** 306

**Comment Excerpt:**

Landfills go through permit modification all of the time, and many times those modifications increase the design capacity of the facility. In some cases, this -- it is built into the permit review process. Our reading is, that would automatically subject those facilities to the new standards in subpart triple X, where many of those facilities are operating at triple W at this point in time.

Our concern is when existing facilities modify their permit and increase their capacity, they would be subject to these new standards as well, and we are -- our question is, all of these facilities are currently operating under the WWW, would they then have to operate under the new provisions of subpart XXX, and that -- if so, if that is the answer, the scope of this regulation is far greater than the proposal indicates.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-100.1, excerpt number 57, under comment code 2b.

## **2.3 1987 Cutoff Date**

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**Commenter Name:** Comment submitted by Michael Rice, Past President  
**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1  
**Comment Excerpt Number:** 12



**Comment Excerpt:**

With pending proposed changes to the Emissions Guideline (EG), TXSWANA requests that the EPA ensure that the currently approved Texas EG remains effective and unchanged. Texas currently has an approved date of October 9, 1993 as the trigger for when a site becomes subject to the EG. There would be a significant hardship placed on many landfills in the state of Texas if this date were altered as part of any future change to the EG rules. A large number of landfills in Texas relied upon this date as the date they could remain active until, without being subject to the new RCRA requirements or the NSPS requirements. This date was the result of negotiations between the State of Texas and EPA and both the State and the industry have relied upon it for 21 years. With as yet unknown potential changes to the EG, TXSWANA wants to make sure that Texas' specifically approved EG date is not revised or made ineffective.

**Comment Response:**

The revised emission guidelines will not change the effective date of Texas' currently approved state plan under federal law. Texas will, however, need to revise its existing state plan to incorporate the changes to the emission guidelines. Any such revised state plan will become effective as a matter of federal law upon approval by EPA. In the event that either Texas does not timely submit a revised state plan or EPA disapproves a revised state plan which is submitted, existing MSW landfills, as defined in the revised emission guidelines, will be subject to the revised federal plan until such time as EPA does approve a revised state plan. EPA has not determined a precise timeframe for revising the federal plan, but will do so in conformance with the requirements in subpart B of 40 CFR part 60 (40 CFR 60.20 - 60.29).

### 3.0 THRESHOLDS AND TIMING OF CONTROLS

#### 3.1 Design Capacity Threshold

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 21

**Comment Excerpt:**

EPA's decision to retain the current design capacity threshold, on the other hand, demonstrates exactly how a review of an existing NSPS should occur. In reviewing the current design capacity threshold of 2.5 million Mg or 2.5 million cubic meters, EPA recognized that the current standard remains appropriate because there has been no change in the circumstances underlying EPA's original standard. EPA also recognized that a change in that threshold will not result in significant additional emission reductions and thus could impose an unnecessary burden for little or no benefit. As such, EPA decided not to alter the design capacity threshold, and Republic supports that decision.

The change in the NMOC threshold discussed above will be even more significant for landfills once they are closed and seeking to shutdown the controls system and exit the NSPS program. At the lower 40 Mg threshold, landfill owner/operators will need to use increasing amounts of fossil

fuel to maintain flare operation. This increases GHG emissions, which is highly counterproductive. Because EPA does not plan to change the criteria for determining when a GCCS may be capped or removed, and those criteria currently require emissions to drop below the same threshold that triggers the need for the system, EPA's decision to lower that threshold from 50 Mg/yr to 40 Mg/yr will have significant implications for the closure of landfills.

Even under the current threshold of 50 Mg/yr, many closed landfills struggle to maintain sufficient gas flow to continue operating their control systems. At a lower threshold of 40 Mg/yr, operation of a control system will become even more difficult and likely much more expensive, as landfills will be forced to make even more costly modifications to the system just to keep it running on such a low flow of gas. Compliance with the wellhead operating standard becomes increasingly difficult under these conditions. To address these situations Republic provides recommendations under the following sections herein: Closed Areas and Site-Specific Measurements. The proposed rule needs to consider the significant effort required to continue operating controls on a closed landfill between 50 Mg/yr and 40 Mg/yr are not justified in light of the minimal emission reductions that will result.

**Comment Response:**

The EPA has created a subcategory for closed landfills in its final Emission Guidelines and has extended the universe of closed landfills that qualify. The EPA also recognizes that the universe of existing landfills is significantly larger than those that will be covered under the NSPS. In response to implementation concerns expressed by multiple stakeholders, the EPA has maintained consistent size and emission thresholds across the NSPS and Emission Guidelines.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 90

**Comment Excerpt:**

WM supports the agency's decision to maintain the current design capacity threshold. WM reviewed the Agency's Economic Impact Analysis (AEIA") (docket ID Number EPA-HQ-OAR-2003-0215-0045), the preamble discussion and the *Air Emissions from Municipal Solid Waste Landfills - Background Information for Final Standards and Guidelines*, EPA-453/R-94-021 (IBID") for the 1996 NSPS. Taken together, these analyses support EPA's decision to maintain the current design capacity of 2.5 million megagrams (Mg) and 2.5 million cubic meters (m<sup>3</sup>). This threshold continues to ensure that the rule will achieve the maximum level of potential emissions reductions cost-effectively. EPA noted in its EIA, "Based on the characteristics of recently constructed landfills, it is likely that most new landfills will be larger sites and therefore reducing the design capacity threshold is not likely to have any impact." (See BID at p. 3-7) In the 1996 BID EPA estimated that the 2.5 million Mg/m<sup>3</sup> threshold would capture 85 percent of NMOC emissions potential, while exempting 90 percent of existing landfills, which at the time were relatively small. EPA noted in 1996 the trend towards development of a smaller number of

large, new landfills, and today WM can confirm that this trend has become more pronounced in the last two decades.

In developing these comments, WM evaluated our statistics associated with new landfill development after promulgation of the 1996 NSPS. From 1996 to the present, WM has permitted and constructed a total of 11 greenfield sites; each with a permitted design capacity greater than 9 million Mg. Each of the 4 greenfield sites WM has constructed since 2000 has a permitted design capacity greater than 21 million Mg. Based on this analysis, we conclude that the existing design capacity is already capturing the vast majority of potential emissions from new landfills, or existing landfills that undergo modification.

If EPA were to lower the design capacity for either the NSPS or the EG, the additional sites brought into the program would be smaller, older, and predominantly closed landfills with far less capacity for LFG generation and far less potential for achieving emissions reductions, particularly if they are unable to support an active gas collection system. Closed landfills have no revenue stream to support new regulatory requirements beyond those anticipated in the closure plan. Furthermore, regulating that universe of sites would disproportionately affect municipal owners, which own the largest share of smaller and closed landfills and which have greater impediments to raising the capital needed for regulatory expenditures.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 21, under comment code 3a.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 4

**Comment Excerpt:**

WM Supports the Agency's Decision to Maintain the Current Design Capacity Threshold.

Based upon our previous review of the Agency's Economic Impact Analysis ("EIA") (docket ID Number EPA-HQ-OAR-2003-0215-0045), the preamble discussions of the NSPS and EG proposals, and the *Air Emissions from Municipal Solid Waste Landfills – Background Information for Final Standards and Guidelines*, EPA-453/R-94-021 ("BID") for the 1996 NSPS, we support the Agency's decision to maintain the current design capacity of 2.5 million Mg and 2.5 million m<sup>3</sup>. This threshold continues to ensure that the new NSPS and EG rules will achieve the maximum level of potential emissions reductions cost-effectively.

In developing our comments on the proposed Subpart XXX, WM evaluated our statistics associated with new landfill development after promulgation of the 1996 NSPS. From 1996 to the present, WM has permitted and constructed a total of 11 greenfield sites; each with a permitted design capacity greater than 9 million Mg. Each of the four greenfield sites WM has constructed since 2000 has a permitted design capacity greater than 21 million Mg. Based on this

analysis, we conclude that the existing design capacity is already capturing the vast majority of potential emissions from new landfills, or existing landfills that undergo modification.

EPA also analyzed the impacts of lowering the design capacity and found that the great majority of additional sites brought into the EG program would be smaller, older, and predominantly closed landfills with far less capacity for LFG generation and far less potential for achieving emissions reductions, particularly if they are unable to support an active gas collection system. EPA further noted that regulating additional landfills between 2.0 million Mg and 2.5 million Mg would disproportionately affect municipal owners, which own the largest share of smaller and closed landfills (71%). WM agrees with the Agency's conclusion that the additional burden on small entities and the disproportionate impact on publicly-owned landfills cannot be justified in light of the limited additional reduction in overall emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 21, under comment code 3a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0176  
**Comment Excerpt Number:** 9

**Comment Excerpt:**

EPA should retain the current design capacity threshold.

Republic supports EPA's proposal to retain the current design capacity threshold of 2.5 million megagrams (Mg) and 2.5 million cubic meters (m<sup>3</sup>). As the conclusions provided in EPA's Regulatory Impact Analysis (RIA) reveal, very little if any benefit would be gained by reducing that threshold. Republic agrees that the 2.5 million threshold is an appropriate means of identifying which landfills are of sufficient size to justify the cost of installing a GCCS if they have sufficient emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 21, under comment code 3a.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy  
**Commenter Affiliation:** SBA Office of Advocacy  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1  
**Comment Excerpt Number:** 35

**Comment Excerpt:**

Advocacy recommends that EPA consider adopting policy recommendation to maintain existing numerical thresholds and timeframes for GCCS installation and operation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 21, under comment code 3a.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 7

**Comment Excerpt:**

Design Capacity – The design capacity threshold determines which facilities must measure or calculate NMOC emissions for purposes of ultimately installing a gas collection and capture system (GCCS). We strongly support the agency’s conclusion that raising the current design capacity threshold is inappropriate, given the high percentage of sources above the current thresholds that are effectively capturing and mitigating landfill gas emissions.<sup>17</sup> We disagree, however, with the agency’s statement that lowering the design capacity threshold will simply require additional reporting with little or no environmental benefit. In fact, EPA projects very modest costs associated with additional reporting (over 99% of costs are associated with installation and operation of a GCCS) and lowering the thresholds will help to ensure all sources exceeding NMOC emissions levels are in fact required to install GCCS. Moreover, when paired with lower NMOC thresholds, a lower design capacity threshold of 2.0 million Mg achieves additional methane mitigation and actually *enhances* cost-effectiveness.<sup>19</sup> Accordingly we urge EPA to lower the design capacity threshold to 2.0 million Mg, though we believe that EPA can secure important environmental benefits without entirely eliminating the threshold.

[Footnotes]

(17) *See* 79 Fed. Reg. at 41,807 ("Further installation of GCCS at landfills with design capacities between 2.5 and 3.0 million Mg are well demonstrated. According to the LMOP database, there are more than 50 landfills out of 70 in this size range that have installed GCCS.")

(19) Appendix B-2, Summary of Preliminary Emission Impacts of Regulatory Options for EG Review, Average 2014-2023, Document ID No. EPA-HQ-OAR-2014-0451-0010.

**Comment Response:**

In response to implementation concerns expressed by multiple stakeholders, the EPA has maintained consistent size and emission thresholds across the NSPS and Emission Guidelines. The EPA has provided impacts associated with lowering the emission threshold in the record and believes its finalized options achieve significant reductions beyond the current rules.

**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1  
**Comment Excerpt Number:** 6

**Comment Excerpt:**

Smaller landfills are manifestly capable of mitigating landfill gas emissions. In particular, California requires landfills with 450,000 tons of waste-in-place, meeting other applicability thresholds, to control emissions.<sup>15</sup> Moreover, data from EPA's Landfill Methane Outreach Partnership shows that landfills with design capacities below 2.5 million Mg are capturing and beneficially using landfill gas.<sup>16</sup> We urge EPA to strengthen the design capacity and NMOC thresholds in both the NSPS and EG.

[Footnotes]

(15) California Air Resources Board, Final Statement of Reasons for Rulemaking: Public Hearing to Consider the Adoption of a Regulation to Reduce Methane Emissions from Municipal Solid Waste Landfills at 11 (June 25, 2009) ("The threshold of 450,000 tons of waste-in-place was selected because landfills with less waste-in-place are not expected to generate enough landfill gas to operate a gas collection and control system without supplemental fuel.").

(16) EPA, Modeling Database Containing Inputs and Preliminary Impacts for Review of the MSW Emission Guidelines (Background Data LMOP July 2012). Document ID No. EPA-HQ-OAR-2014-0451-0006

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 7, under comment code 3a.

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**Commenter Name:** Frank L. Kohlasch, Manager, Air Assessment Section Environmental Analysis and Outcome Division

**Commenter Affiliation:** Minnesota Pollution Control Agency (MPCA)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0197

**Comment Excerpt Number:** 3

**Comment Excerpt:**

It appears to the MPCA that EPA has shown that lowering the design capacity threshold from 2.4 million Mg to 2.0 million Mg in applying methane controls is as cost effective as the current proposal (2.5 million Mg/34 Mg NMOC) {80 FR 52122}. Because the driver for the revisions to this rule is the control of methane emissions, it is appropriate that EPA give considerable weight to the cost effectiveness of controls for that pollutant. Besides additional methane control, there are other benefits to a GCCS. Minnesota's experience is that operating landfills below 2.5 million Mg will install GCCS to address nuisance conditions. As noted above, the MPCA installed the GCCS at closed landfills well below EPA's threshold of 2.5 million Mg because it has been more

effective in minimizing voes in groundwater over groundwater pumping options. The list of closed landfills in included in the attachment to this letter. Lowering the threshold would reduce methane emission considerably over the long term from both closed and operating landfills. Given the life of methane and carbon dioxide in the atmosphere, actions that lead to reductions over the long term should be given greater consideration.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 7, under comment code 3a.

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator

**Commenter Affiliation:** Californians Against Waste, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0191

**Comment Excerpt Number:** 5

**Comment Excerpt:**

The Capacity Threshold for Application of the Rule Must be Reduced. The proposed emission guidelines retain the long-standing 2.5 million Mg designcapacity threshold for determining when landfills are subject to the guidelines, but this is a serious shortcoming that significantly undercuts the potential methane and VOC reductions that could be achieved by the Proposed Rule. The Proposed Rule presents an analysis for alternative thresholds of 2.0 or 2.5 million Mg design capacity. This modest adjustment to threshold – unsurprisingly – did not yield a large improvement in methane abatement.<sup>8</sup> To achieve meaningful methane reductions, the threshold for application of the standards must be significantly reduced.

We support a waste-in-place threshold as opposed to a design capacity formulation. The current threshold is formulated in terms of the ultimate capacity of the landfill to accept waste. An alternative format is a threshold that depends on actual volume of waste contained at the landfill. This formulation much more accurately reflects the current potential for the landfill to generate methane. This is the format that the state of California has adopted. The California threshold is 450,000 tons of waste-in-place,<sup>9</sup> and we urge the EPA to adopt a similar threshold. A lower threshold, and consequently inclusion of a greater number of landfills, is appropriate because regardless of size, once the threshold emissions rate is reached, the landfill represents a significant source that must be mitigated to avoid harm to public health and the environment.

The Proposed Rule emphasizes the potential burdens to small entities that operate lowercapacity MSW landfills should they be subject to landfill gas collection requirements.<sup>10</sup> As noted in the Proposed Rule, however, 17 percent of “small” landfills have already installed gas collection,<sup>11</sup> suggesting that cost is not prohibitive. Furthermore, the climate and public health benefits of reducing methane likely outweigh the costs to small landfill operators. At a minimum, EPA must support its decision not to regulate smaller landfills with a more comprehensive analysis of the potential costs and benefits of including them.

Footnote:

8 Proposed Rule at 52,120. One of the stated reasons for failing to analyze lower design-capacity thresholds was the concern that closed landfills would be subject to the proposed requirements. This could be avoided, however, through special designation for closed landfills and thus should not be a dispositive concern (Proposed Rule at 52,119).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 7, under comment code 3a.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 20

**Comment Excerpt:**

*Design capacity thresholds.* EPA should either lower or eliminate altogether the current design capacity thresholds because including all landfills for purposes of calculating and reporting their emissions will yield valuable data EPA currently lacks. Again, this data is crucial for EPA to understand overall landfill methane emissions, and the modest costs of compliance are fully justified to close EPA's debilitating data gap.

**Comment Response:**

The EPA has maintained its design capacity threshold for the final NSPS and Emission Guidelines. This approach is consistent with the rationale outlined in 80 FR 52119 and 79 FR 41782. The EPA continues to target large landfills for control as they contribute significantly to anthropogenic methane emissions.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 65

**Comment Excerpt:**

*Lowering or elimination of design capacity thresholds.* We not only support lowering the design capacity thresholds but urge EPA to consider eliminating them because capturing all landfills for purposes of calculating and reporting their emissions will yield valuable data EPA currently lacks. In other words, the collection of data is an independent and significant reason for eliminating the design capacity thresholds that well justifies the modest costs of compliance.

**Comment Response:**



See response to DCN EPA-HQ-OAR-2003-0215-0121, excerpt number 20, under comment code 3a.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 34

**Comment Excerpt:**

Wisconsin has issued air pollution control permits to about 17 MSW landfills that are not required to operate landfill gas collection and control systems under the NSPS for MSW landfills. Of those 17 landfills, 16 have air permits requiring the operation of landfill gas collection and control systems to meet the requirements in Wisconsin's hazardous air pollutant rule. Appendix B (original see submittal for table) lists the capacity and the estimated maximum non-methane organic compound (NMOC) generation rate for each of those 16 landfills. The gas collection and control requirements are very similar to NSPS requirements, and the main differences are the following:

1. Surface monitoring is required annually, instead of quarterly.
2. Supplemental and/or temporary odor and gas control system (STOCS) components are not subject to pressure, temperature, and oxygen/nitrogen content limits; but the landfill is required to monitor those parameters.

Wisconsin defines STOCS components to include leachate cleanouts, leachate recirculation, horizontal gas collectors located in areas where solid waste has been in place less than 5 years if active or less than 2 years if closed or at final grade, manholes, and other systems or components whose primary intended purpose is not gas collection and are used for supplemental control of fugitive gas and odors.

Section NR 506.08(6), Wis. Adm. Code requires all landfills with a design capacity greater than 500,000 cubic yards (0.38 million cubic meters), and that have accepted MSW, to install landfill gas collection and control systems.

Wisconsin operates landfill gas collection and control systems at MSW landfills with capacities as low as 0.6 million Mg and 0.4 million cubic meters, and estimated maximum NMOC generation rates as low as 8.1 Mg per year. This information may be helpful for EPA to consider in the context of the question.

**Comment Response:**

The EPA appreciates the commenter's information on landfills in Wisconsin and recognizes that states may have similar or overlapping requirements in state landfill regulations. The Wisconsin landfill data demonstrates that there is a wide range of landfill sizes and that the associated emissions can also vary depending on the parameters used to estimate emissions. The EPA included these landfills in its analysis of size-ranges and emissions. Regarding EPA's final

decision on the design capacity threshold, see DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt 21 under comment code 3a.

### 3.2 NMOC Emission Threshold

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 8

**Comment Excerpt:**

NMOC concentration – We support the agency’s proposal to lower the NMOC threshold and recommend that EPA adopt a more rigorous NMOC threshold of 34 Mg NMOC. Doing so will help maximize methane emissions consistent with the President’s methane strategy. If applied to existing landfills, strengthening the NMOC threshold from the proposed level of 40 Mg to the alternative level of 34 Mg will help to secure an additional 200,000 Mg of methane reductions (approximately 7.2 million metric tons CO<sub>2</sub>-equivalent, using a GWP of 36). EPA estimates that the average cost of these reductions would only be \$4.60/CO<sub>2</sub>e (or at a more appropriate GWP of 36, approximately \$3.20/CO<sub>2</sub>e). EPA cites no technical concerns with lowering the thresholds, instead identifying modestly higher costs as its reason for proposing a threshold of 40 Mg NMOC in the proposed Subpart XXX. Given the President’s clear commitment to reduce methane emission and the highly-cost effective nature of further lowering the thresholds to 34 Mg NMOC, we urge EPA to adopt this more protective threshold.

**Comment Response:**

The EPA thanks the commenter for their comment. The EPA has lowered the emission threshold to 34 Mg/yr. The EPA has provided technical justification for lowering the emission threshold in the final preambles, Regulatory Impact Analysis, and technical memos that support both final landfills rules and the EPA maintains that the analysis and documentation provide a clear justification for a lower standard. The EPA has a legal obligation to review, and if appropriate, revise NSPSs at least every 8 years. The EPA has also reviewed the Emission Guidelines.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 66

**Comment Excerpt:**

*Reducing the NMOC emission rate threshold.* The NMOC emission rate threshold should be significantly lowered so that more landfills must reduce their emissions. EPA should model the effect of reducing the threshold well below 40 Mg/year (in conjunction with eliminating the design capacity thresholds). Particularly in the context of using a 20-year GWP of 86 for methane, any associated costs will be reasonable in comparison to the damage prevented.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 3

**Comment Excerpt:**

We commend EPA for its decision to reduce the allowable nonmethane organic compound (“NMOC”) emissions threshold at which landfills must install emission controls. This threshold should be lowered further, and more must be done to increase the capture of methane from landfills than the NPRM currently provides.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under [comment code 3b.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

We recommend that the final NSPS apply to all facilities with capacity above 2.5 million Mg; require capture once non-methane gas emissions exceed 34 Mg/year; and limit the lag time to 2 years for both initial and expansion activities. Of all the options evaluated by EPA, this yields the greatest possible reductions in total landfill methane emissions: 9.3 million tons eliminated annually between now and 2023, compared to 8.5 million tons for the current standard and 9.1 million tons for the proposed standard.<sup>7</sup> The cost difference per ton of methane avoided between the proposed standard and the stronger option is just \$9. That cost can be readily absorbed through behavioral changes and should not be a barrier to adoption of the more aggressive standard.

[Footnote]

7. Eastern Research Group, Inc, Memo to Hillary Ward, *Preliminary Cost and Emissions Impacts for Review of the MSW Landfills Emission Guidelines*, April 2014, Appendix B-2.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Anonymous public comment  
**Commenter Affiliation:** Private Citizen  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0188  
**Comment Excerpt Number:** 1  
**Comment Excerpt:**

I believe it is appropriate to allow the emission limit to be lowered. All research has been done accordingly to support the potential for reductions in methane emissions. Over 60% of methane emissions come from human activities alone, so it is important that we make as many reductions as possible. While landfills are only the third most largest source of methane emissions, one megagram of methane is similar to over two thousand pounds in emissions. 40 mg/yr adds up to over eighty eight thousand pounds of emissions compared to seventy four thousand pounds at 34 mg/yr. Every improvement made will make a difference in our air quality, so I believe this proposal is appropriate.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Amanda B. (no surname provided)  
**Commenter Affiliation:** Private Citizen  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0189  
**Comment Excerpt Number:** 2  
**Comment Excerpt:**

This proposed rule is a suggested adaption to a rule that was passed on July 17, 2014. It aims to achieve lower emission rates of landfill gas (LFG) by lowering the threshold for which municipal solid waste (MSW) landfills will have to use a gas collection and control system. This proposed rule lays out a more protective threshold for the emission of non-methane organic compounds (NMOC). It suggests lowering the threshold for gaseous emission of NMOC from 40 megagrams per year to 34 megagrams per year. If passed, this new threshold would apply to landfills that are built or modified after July 17, 2014. If this proposed rule becomes law it will reduce the quantity of dangerous gas released from landfills and require implementation of more effective gas collection and control systems. After examining economic, environmental and social benefits that would follow the decrease in non-methane organic compound emissions, the EPA feels that the lowered threshold is reasonable and achievable.

This comment supports the proposed rule for the Standards of Performance for Municipal Solid Waste (MSW) Landfills. Details about LFG are reviewed, and human health benefits and environmental benefits of a lowered threshold are addressed. Landfills have various options as to reduce their landfill gas output and will be able to choose the mitigation technique that will best fit their needs and their budget. A lowered threshold for NMOCs will result in a safer, healthier, environment.

The dangers of landfill gas are too great to allow for emissions above the lowest reasonable threshold. Landfill gasses include gasses produced from biodegradation of waste, and gasses arising from chemical reactions in waste (Palmiotto et al., 2014). Landfill gas is mainly comprised of methane, secondarily carbon dioxide and less than one percent NMOCs (Wang et al., 2015, Albanna et al., 2010, Scheutz et al., 2008). NMOCs are typically produced by volatilization of improperly disposed household hazardous waste materials in anaerobic conditions (Wang et al., 2015, Scheutz et al., 2008). There are more than two hundred NMOC gasses that can exist in landfill gas (Scheutz et al., 2008). The NMOCs benzene, vinyl chloride, chloroform, ethylbenzene, and toluene are examined in this paper because multiple research articles have found them to be dangerous offenders in landfill gas (4, Palmiotto et al., 2014, Wang et al., 2015, Scheutz et al., 2008). Human health impacts of these chemicals is well studied.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Delaware supports the reduction in the applicability threshold in the NSPS and EG to 34 Mg per year of non-methane organic compounds (NMOC). The Eastern United States has experienced high LFG production at many facilities prior to NSPS applicability of 50 Mg per year of NMOC. This has resulted in many facilities experiencing odor problems or installing collection systems early to avoid odor issues. Lowering the applicability threshold will simplify the process for both the regulators and the regulated community in these States.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 2

**Comment Excerpt:**

NACAA supports the reduction of the applicability threshold to 34 megagrams per year (Mg/yr) of non-methane organic compounds (NMOC). Many landfill facilities have installed landfill gas (LFG) collection and control systems prior to triggering the 50 Mg threshold presently in the rule. When facilities install systems early it is typically due to monetary incentives or odor

problems. The monetary incentives that were available previously through the carbon market no longer exist and it is important to collect gas prior to subjecting communities to LFG odors. Including Tier 4 in the final rule will provide an alternative for facilities that do not have sufficient gas production for the operation of a gas collection and control system.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 11

**Comment Excerpt:**

We support EPA's proposal to lower applicability thresholds to 34 Mg/yr NMOC. EPA has provided evidence that landfills with emission rates as low as 8.1 Mg/yr are effectively capturing and controlling emissions,<sup>52</sup> and EDF's White Paper likewise presents information on controlled landfills operating below the proposed threshold. Moreover, this adjustment will yield substantial, and highly-cost effective emissions reductions. EPA projects that applying these thresholds to all landfills will reduce 640,000 tons of methane (440,000 tons if applied only at open landfills) at a cost-effectiveness of \$4.90 / ton CO<sub>2</sub> equivalent.<sup>53</sup>

[Footnote 52] 80 Fed. Reg. at 52,120.

[Footnote 53] *Id.* at 52,121.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Becky Tooley, Mayor, Office of City Commission

**Commenter Affiliation:** Coconut Creek, Florida

**Document Control Number:** EPA-HQ-OAR-2014-0451-0161

**Comment Excerpt Number:** 3

**Comment Excerpt:**

We strongly support the reduction of the emission threshold for the installation and removal of a gas collection and control system for landfills that are not closed. In fact, we suggest that such thresholds should depend on the number of persons in the surrounding area; the larger the surrounding population, the lower the threshold should be.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** John Quigley, Secretary  
**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0169  
**Comment Excerpt Number:** 11  
**Comment Excerpt:**

The DEP agrees with EPA's approach of lowering the NMOC threshold at which an affected MS.W landfill must install controls. The DEP's VOC threshold for existing MSW landfills is 1.0 tons per year (0.9 Mg/yr), which is substantially lower than EPA's proposed 34 Mg/yr threshold.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Andrew Campanella, Chief Executive Officer (CEO)  
**Commenter Affiliation:** Loci Controls, Inc.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0179  
**Comment Excerpt Number:** 5  
**Comment Excerpt:**

Subpart Cf “proposes to achieve additional reductions of landfill gas (LFG) and its components, including methane, by lowering the emissions threshold at which a landfill must install controls.” We support this goal and believe the reduction from 50 Mg/yr to 34 Mg/yr is an appropriate step towards reducing LFG emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Frank L. Kohlasch, Manager, Air Assessment Section Environmental Analysis and Outcome Division  
**Commenter Affiliation:** Minnesota Pollution Control Agency (MPCA)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0197  
**Comment Excerpt Number:** 2  
**Comment Excerpt:**

The MPCA supports EPA's efforts to improve the technical rigor of the standard for GCCS. The technical rigor introduced in this rule would improve the capture of both methane and nonmethane organic compounds (NMOC). The proposal to monitor specifically for methane and lowering the NMOC threshold to 34 Mg/yr (megagram per year) will result in methane capture occurring earlier in the life of the landfill, thereby decreasing total methane releases.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 2  
**Comment Excerpt:**

The reduction of the emissions threshold from 50 milligrams to 40 milligrams of NMOC is not unreasonable of a standard for new facilities.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 8, under comment code 3b.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 20  
**Comment Excerpt:**

EPA provides no technical or scientific justification for this downward adjustment other than a questionable cost/benefit analysis that indicates both minimal costs and benefits. In the absence of a clear justification for a lower standard, Republic recommends that EPA maintain the existing thresholds.

EPA has presented no evidence that the current standard, requiring a controls system for landfills above 50 Mg/yr, is no longer appropriate. Instead, EPA cites the President's new climate change policy to support the lower threshold, and explains that a new cost-benefit analysis indicates a 40 Mg/yr threshold would provide marginally greater emission reductions for marginally higher costs at three new landfills. 79 Fed. Reg. at 41811. However, the cost-benefit analysis prepared by EPA is both relatively inconclusive and also suffers from significant flaws. In addition, EPA should not consider a mere change in policy preferences under a new administration to present a sufficient demonstration that an existing standard is no longer appropriate. Therefore, since EPA has not demonstrated that the current threshold is no longer appropriate, no revisions are needed.

**Comment Response:**

The EPA has provided technical justification for lowering the emission threshold in the final preambles, Regulatory Impact Analysis, and technical memos that support both final landfills rules and the EPA maintains that the analysis and documentation provide a clear justification for a lower standard. The EPA has a legal obligation to review, and if appropriate, revise NSPSs at least every 8 years. The EPA has also reviewed the Emission Guidelines.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 21

**Comment Excerpt:**

The proposed rule lowers the threshold for triggering the requirement for installing and operating a GCCS from 50 megagrams per year (Mg/yr) NMOC down to 40 Mg/yr. However, EPA has presented no technical or scientific justification that the current standard requiring a control system for landfills above 50 Mg/yr is no longer appropriate. Instead, EPA cites the current administration's new climate change policy and its new cost analysis to support the lower threshold. Changed administrative policy alone should not be adequate cause to determine an existing standard is no longer appropriate. In the absence of scientific evidence, the standard should remain unchanged.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 20, under comment code 3b.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

There has been no scientific or technical study or analysis that suggests that 50 Mg/yr does not represent the appropriate standard - one that both balances the goal of reducing methane emissions against to cost of the attaining standard selected.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 20, under comment code 3b.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 2

**Comment Excerpt:**

TxSWANA is concerned about the proposed rule to lower the threshold for triggering the requirement to install a GCCS from 50 Mg/yr to 34 Mg/yr. There has been no scientific or

technical study or analysis that suggests that 50 Mg/yr does not represent the appropriate standard – one that both balances the goal of reducing methane emissions against the cost of attaining the standard. Given that this lowering of the threshold will significantly impact many of the small community landfills represented by our members, we urge the EPA to maintain the current 50 Mg/yr threshold.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 20, under comment code 3b.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 14

**Comment Excerpt:**

Because There Have Been No Changes In Technology to Warrant a More Stringent Standard, EPA Should Retain the Existing Mg/yr Trigger.

The related rulemaking actions that EPA has proposed for MSW landfills, both last year and this year, confirm that the "best system of emission reduction" (BSER) for MSW landfills remains the same as it has always been—a well-designed and well-operated GCCS with a control device (open flares or enclosed combustors) capable of achieving 98 percent NMOC emission reduction. *See, e.g.*, 80 Fed. Reg. at 52110 ("there is no change to the fundamental means of controlling LFG"). EPA has not asked for comment on that conclusion in its supplemental proposal, and so none is offered here. But that conclusion is relevant to the supplemental proposal because it draws into question the need for a more stringent standard. Given that the means of controlling MSW landfill emissions has not changed, there would appear to be little basis for changing the performance standards already based on those same means of control.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 20, under comment code 3b.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 5

**Comment Excerpt:**

Lowering the NMOC Emissions Threshold for Gas Collection and Control System ("GCCS") Installation to 34 Mg/year is not Cost-Effective.

After reviewing EPA's cost effectiveness analysis, WM is concerned that a 34 Mg/yr emission threshold is not cost effective, and fails to deliver emission reductions commensurate with the increased burden on the regulated community. In reaching this conclusion, we have carefully reviewed the Tables 1 and 3, respectively, of the NSPS supplemental proposal and the Proposed EG.

With respect to the proposed EG, EPA notes that the 2.5/34 scenario "*represents an approximately 16 percent increase in control costs compared to the baseline if the threshold were reduced for open landfills only.*" (80 Fed.Reg. at 52122) While this metric sounds reasonable, the actual cost-effectiveness values are over 3 times higher than the baseline values. This result becomes evident, given that the number of covered landfills is assumed to increase by 10.8 percent in the 2.5/40 scenario and by 18.5 percent in the 2.5/34 scenario, while the associated NMOC and CH<sub>4</sub> emission reductions only increase by 3 percent and 4.8 percent respectively.

EPA states "*these additional reductions can be achieved at very similar cost effectiveness to an NMOC threshold of 40 Mg/year, but a level of 34 Mg/yr would achieve almost 60% more reductions than a level of 40 Mg/yr.*" (80 Fed.Reg. at 52123) EPA is correct that the 2,770 Mg of annual NMOC emission reductions achieved under the 2.5/34 proposal is 60 percent larger than the 1,720 Mg of NMOC reductions under 2.5/40. However, this statistic does not provide a complete picture.

The most important and relevant metric is the incremental emission reductions achieved by lowering the emission threshold from 2.5/40 to 2.5/34, as compared to total emission reductions delivered at 2.5/50 plus the incremental reductions at 2.5/40. Comparing the proposed alternatives to the total reductions generated under each scenario reveals that the 2.5/40 option reduces emissions by only 3 percent and the 2.5/34 option reduces emissions by 4.8 percent, for a differential of only 1.8 percent of total emissions.

The incremental cost-effectiveness and emission reductions are even less compelling under the proposed NSPS. In this case, fewer landfills trigger the requirements (9.8% at 2.5/40 and 13.4% at 2.5/34), and the incremental emission reductions are only 2.4 percent at 2.5/40 and 2.8 percent at 2.5/34. This means the 2.5/34 option delivers only 0.4 percent more emission reductions than the baseline rule (2.5/50) plus EPA's 2014 proposal of 2.5/40. In addition, the cost-effectiveness of both the 2.5/40 and 2.5/34 scenarios is over 5 times larger than the existing NSPS. We also note that the cost-effectiveness values presented in Table 1 of the NSPS supplemental proposal are identical under the 2.5/40 and 2.5/34 scenarios, although the annual NMOC and CH<sub>4</sub> emission reductions are not the same.

#### **Comment Response:**

The EPA thanks the commenter for their comment. The preambles, RIA, and supporting memos for the final NSPS and emission guidelines outline the reductions and cost-effectiveness achieved by the finalized option, and highlight the finalized option as cost effective. The commenter did not provide a summary or analysis of what EPA should consider as cost effective. Further, the EPA believes it is inappropriate for the commenter to do so.

**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 99

**Comment Excerpt:**

We have also determined that EPA failed to assess the consequence of lowering the NMOC threshold for older and closed landfills with declining gas production. Reducing the emissions threshold from 50 to 40 Mg NMOC will further delay the point at which a closed landfill can petition to remove controls, exacerbating a situation that is already occurring at the higher threshold. As landfill gas declines over time, some wells will not produce sufficient levels of LFG to maintain the wellhead oxygen/nitrogen operational levels when subjected to continuous vacuum. This problem will be more pronounced if EPA finalizes a lower NMOC threshold. Many closed landfills struggle to maintain sufficient gas flow to operate their control systems under the 50 Mg/year threshold. At the lower 40 Mg threshold, landfill owner/operators will need to use increasing amounts of fossil fuel to maintain flare operation. This increases GHG emissions, which is highly counterproductive.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 , excerpt number 5, under comment code 3b.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The proposed rule lowers the threshold for triggering the requirement for installing and operating a GCCS from 50 megagrams per year (Mg/yr) NMOC down to 34 Mg/yr for all sites except designated closed subcategory landfills. The rule also includes operational flexibilities such as the proposed Tier 4 that utilizes site specific surface emissions monitoring (SEM) for installation of a GCCS; the removal of oxygen, nitrogen and temperature limitations for wellheads; and the use of surface emissions monitoring for intermittent operations of low-producing areas. While NWRA and SWANA maintain that 34 Mg/year is lower than necessary, we support the operational flexibilities in the rule because without them, this lower limit will be impossible to achieve.

With respect to the threshold reduction, we have reservations that the proposed lower threshold will provide benefits sufficient to warrant the additional costs. EPA's own analysis shows that the revision from 40 Mg/yr to 34 Mg/yr will not provide any reductions in NMOC, the pollutants the rule is designed to address. Yet the costs for installing a GCCS at 34 Mg/yr are expected to be 15% greater than for the 40 Mg/yr threshold and 20% greater than the current 50 Mg/yr threshold. EPA's analysis of methane emissions compares the 34 Mg/yr trigger to the current 50

Mg/yr trigger, rather than the original NSPS proposal of 40 Mg/yr. By doing so, EPA claims that its supplemental proposal will result in a reduction of 51,400 Mg/yr. However, the difference between 40 Mg/yr to 34 Mg/yr is only 7,000 Mg/yr, or a 0.3% reduction from the previously proposed standard. This reduction in methane emissions does not justify the additional costs associated with implementing the lower threshold.

EPA rejected the option of "lowering the design capacity threshold below 2.0 million Mg" because that revision "would add regulatory requirements with minimal environmental benefit" (80 FR 52119). By recognizing that regulatory burdens should not be increased when they result in minimal environmental benefits, this same reasoning should be applied to the 34 Mg/yr threshold proposal. As shown above, increasing the stringency of the GCCS trigger to 34 Mg/yr provides minimal environmental benefits beyond the previously proposed 40 Mg/yr. Therefore, we request that EPA reconsider this limit.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Kelly Dixon, Director

**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0195

**Comment Excerpt Number:** 8

**Comment Excerpt:**

EPA has not addressed increased financial assurance requirements for MSW landfills that will be affected by Subpart Cf. MSW landfills that are required to install GCCS may not remove the GCCS until the NMOC emission rate now falls below 34 Mg/yr instead of 50 Mg/yr. Currently, DEQ requires a 30-year post-closure monitoring period when a MSW landfill closes. Over a 30-year period, EPA estimated the post-closure care and maintenance can cost from \$64,000 to \$88,000 per acre. By lowering the emission rate threshold at which the GCCS may be removed, EPA is increasing the associated post closure care and maintenance costs.

EPA has not included the reasonable option for a MSW landfill to close without installing a GCCS if the MSW landfill finds it is not economically possible to install a GCCS. MSW landfills that currently have performed Tier 2 testing and report NMOC emissions between 34 Mg/yr and 50 Mg/yr will be affected upon publication of the NSPS. If a MSW landfill is not already closed, closure does not relieve the burden of performing Tier 4 testing or installing the GCCS.

MSW landfills are required to provide financial assurance to cover the cost of landfill closure and for 30 years of post-closure care. The MSW landfills that become subject to Subpart Cf and are required to install a GCCS must provide additional funds for post-closure maintenance and final closure and removal of the system. For MSW landfills that have a GCCS already, additional funds for post-closure maintenance of the system may be needed since the landfill may not remove the GCCS until the NMOC emission rate now falls below 34 Mg/yr instead of 50 Mg/yr.

MSW landfills owned and operated by municipal or county governments or public authorities and small independently owned landfills in Oklahoma will be most affected by lowering the NMOC emission rate to 34 Mg/yr. These landfills will see increased costs for testing and monitoring to justify there is no necessity for a GCCS. More MSW landfills will be required to install a GCCS with the lower NMOC emission rate. The costs of the design, construction, operation, maintenance, post-closure care and removal of the GCCS may be prohibitive for city and county governments and small independents. City and county governments and small independents will be required to extend planning and budgeting for operation and maintenance of the GCCS for greater than 30 years with the lower NMOC emission rate. Additional financial assurance obligations for post-closure maintenance and removal will be required for the GCCS. For most rural MSW landfills in Oklahoma, revenue projected by EPA from the GCCS will not be available as an offset to the costs of Subpart Cf. If a MSW landfill cannot sustain the additional financial obligations and closes without providing the additional financial assurance, the financial burden of post-closure care could fall to DEQ. Accordingly, DEQ does not support lowering the NMOC emission rate to 34 Mg/yr.

DEQ recommends the NSPS supplemental proposal be considered a re-proposal and that the July 17, 2014 applicability date be moved forward to the publication date of the proposed rule, August 27, 2015. The significant reduction from 50 Mg/yr to 34 Mg/yr represents a fundamental divergence by expanding the universe of affected MSW landfills.

A year has passed since the original NSPS proposal was published in the *Federal Register*, and some of the owners and operators of the newly affected landfills may have already made decisions on whether to install a GCCS based on the previously proposed 40 Mg/yr threshold. These decisions involved considerable time and resources which may now be lost.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Republic questions the need for the proposed revisions because EPA's own analysis suggests that the revisions will not provide any meaningful benefits to human health or the environment. Specifically, the preamble to the supplemental proposal and the Regulatory Impact Analysis (RIA) provided by EPA indicate that further reducing the GCCS trigger to 34 Mg/yr will not significantly reduce emissions of non-methane organic compounds (NMOC)—the primary health concern that the standard is designed to address. This result is not surprising, since EPA has not identified any new technologies or practices that would justify a more stringent trigger than the one EPA determined to be appropriate during its initial development of the standard (50 Mg/yr) or the one EPA proposed last year (40 Mg/yr).

EPA's own cost calculations suggest that the more stringent 34 Mg/yr option is projected to be 15 percent more expensive than the less expensive (but apparently equally effective) 40 Mg/yr

trigger proposed in July 2014. *See* RIA at 7-6. Unless EPA can better justify these additional costs associated with a 34 Mg/yr trigger, Republic asks EPA to reconsider whether those revisions are an appropriate exercise of its Clean Air Act authority.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 4

**Comment Excerpt:**

At the very beginning of its preamble to the supplemental proposal, EPA explains that its proposal is intended to "achieve additional reductions of landfill gas (LFG) and its components, including methane." EPA's theory appears to be that, by lowering the NMOC emission threshold for triggering the requirement to install a GCCS, more landfills will do so earlier than they otherwise would, leading to emission reductions that would, in turn, provide human health and environmental benefits. However, EPA's own analysis suggests that a lower NMOC emission rate trigger will not achieve any significant emission reductions other than methane, and the benefits of those reductions are dubious.

The Supplemental Proposal will not reduce NMOC emissions.

In both its supplemental proposal preamble and its RIA, EPA compares the NMOC emission reductions achievable through several different policy scenarios, including the current 50 Mg/yr NMOC emission rate trigger, the trigger proposed last year of 40 Mg/yr, and the newly proposed trigger of 34 Mg/yr. Then, comparing the newly proposed 34 Mg/yr trigger to the current trigger of 50 Mg/yr, EPA claims that its supplemental proposal will achieve NMOC emission reductions of 300 Mg/yr.

An emission reduction of only 300 Mg/yr is relatively small—just a few times higher than the trigger itself, below which landfills need not control their emissions at all. In fact, a reduction of 300 Mg/yr only represents an improvement over the current rule by a mere 3 percent. But more importantly, even the value of 300 Mg/yr overstates the benefit of EPA's supplemental proposal. EPA has only requested comment on the new lower trigger of 34 Mg/yr, not the 40 Mg/yr trigger proposed in 2014. Accordingly, the proper comparison in evaluating EPA's supplemental proposal is between the newly proposed 34 Mg/yr trigger and the 2014 proposal of 40 Mg/yr.

That comparison suggests that the supplemental proposal will not provide any additional benefits at all because the previously proposed 40 Mg/yr trigger will also reduce NMOC emission by the same amount of 300 Mg/yr. In other words, there appears to be no meaningful difference between the emission reductions achievable through either a 40 Mg/yr trigger or a 34 Mg/yr trigger. 80 Fed. Reg. at 52164. EPA notes in a footnote that the "unrounded" calculations suggest that the 34 Mg/yr trigger might achieve greater NMOC reductions, *id.* at n.2, but that explanation merely confirms that the incremental improvement with the newly proposed trigger would be nothing more than a rounding error.

The fact that both of the proposed triggers would achieve essentially the same level of emission reduction draws into question the need for EPA's supplemental proposal, particularly since the lower trigger would cost 15 percent more than the previously proposed trigger. *See id.* at Table 1 (indicating that a 40 Mg/yr trigger would cost \$7.4 million and the 34 Mg/yr trigger would cost \$8.5 million). Since the supplemental proposal will not further reduce NMOC emissions beyond the level achievable through the proposal issued last year, EPA cannot justify the cost of its supplemental proposal on that basis.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 6

**Comment Excerpt:**

Like its analysis of NMOC emissions, EPA's analysis of methane emissions focuses on the comparison of the 34 Mg/yr trigger to the current 50 Mg/yr trigger. In doing so, EPA claims that its supplemental proposal will result in a reduction of 51,400 Mg/yr. 80 Fed. Reg. 52164. But as noted above, the more relevant question raised by EPA's supplemental proposal is whether it will provide any additional benefits beyond the 40 Mg/yr trigger that EPA has already proposed. From that perspective, the supplemental proposal will only reduce methane emissions by 7,000 Mg/yr, which is only 0.3 percent of what the existing standard already requires. This miniscule incremental reduction in methane emissions does not justify the cost of EPA's supplemental proposal, particularly given that EPA has not shown how any reduction in methane emissions is expected to improve human health or the environment, as explained in more detail below.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 15

**Comment Excerpt:**

EPA Should Retain the Existing Trigger for the Same Reason It Has Proposed to Retain the Existing Design Capacity Threshold.

In its proposed revisions to the emission guidelines for existing MSW landfills, EPA rejected the option of "lowering the design capacity threshold below 2.0 million Mg" because that revision "would add regulatory requirements with minimal environmental benefit." 80 Fed. Reg. at 52119. Although EPA did not request comment on that conclusion in the supplemental proposal to revise the new source performance standards, and none is offered here, that conclusion



confirms that EPA recognizes that regulatory burdens should not be increased where only capable of providing minimal environmental benefits. EPA should apply that same reasoning to its supplemental proposal. As shown above, increasing the stringency of the GCCS trigger to 34 Mg/yr would only provide minimal (and in many cases, speculative) environmental benefits beyond those achievable through its less-stringent 2014 proposal. As such, EPA should reconsider the need for its supplemental proposal.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 16

**Comment Excerpt:**

Sufficient Incentive Already Exists to Install GCCS, Confirming that Lowering the Trigger Will Not Provide Any Benefits.

EPA's analysis indicates that numerous landfills have installed controls either voluntarily or to comply with existing state regulations. Specifically, EPA indicates that 330 landfills have installed a GCCS even though not required to do so by federal regulations. 80 Fed. Reg. at 52118. EPA recognizes that these landfills likely installed controls "even in the absence of federal regulation" for a variety of reasons, including site-specific circumstances such as gas quality and age of waste in the landfill or areas of the landfill, access to capital, and energy recovery opportunities. In addition, EPA recognizes that 76 percent of all landfills greater than 2.5 million Mg already have a GCCS, regardless of whether the federal regulations require one. 80 Fed. Reg. at 52120. Republic agrees generally with EPA's recognition of these facts, but questions EPA's decision to lower the trigger for federal regulation in spite of them. Precisely because so many landfills install GCCS voluntarily and/or already have a GCCS in place, Republic believes that EPA's proposed revisions are unlikely to generate meaningful emission reductions. Thus, Republic asks EPA to reconsider the need for its supplemental proposal.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 10

**Comment Excerpt:**

EPA should reconsider its decision to lower the NMOC trigger.

As EPA makes decisions regarding the existing design capacity and NMOC thresholds, it is important to recognize that potential landfill emissions are derived using conservative modeling assumptions because it is not technically feasible to measure the amount of gas available for collection. It was on this basis that EPA concluded that it was necessary to establish a design and operation standard for gas collection systems instead of a standard of performance. EPA even recognizes that the default values to determine when a landfill could exceed the threshold and be required to install controls are conservatively high. 79 Fed. Reg. at 41805

Republic is concerned that a 34 Mg/yr emission threshold is not cost effective, and fails to deliver emission reductions commensurate with the increased burden on the regulated community. EPA rejected the option of "lowering the design capacity threshold below 2.0 million Mg" because that revision "would add regulatory requirements with minimal environmental benefit" (80 FR 52119). By recognizing that regulatory burdens should not be increased when they result in minimal environmental benefits, this same reasoning should be applied to the 34 Mg/yr threshold proposal. Increasing the stringency of the GCCS trigger to 34 Mg/yr provides minimal environmental benefits beyond the existing 50 Mg/yr and even 40 Mg/yr. Therefore, we request that EPA reconsider this limit.

Given the lack of benefit for the additional cost of a new lower NMOC trigger for the GCCS requirement, EPA should reconsider its proposed 34 Mg/yr proposal.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 8

**Comment Excerpt:**

The reduction in the threshold for triggering the requirement for installing and operating a gas collection and control system (GCCS) is concerning. Lowering the GCCS threshold means that landfills would be required to install controls earlier and would have to operate and maintain the GCCS for a longer period than required under Subpart WWW, both of which add significant cost. In addition, we are concerned about how GCCS systems installed much earlier in the landfill life will function. There may not be as much gas to collect and there may still be significant construction/operational activities which could damage the GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number: 98**

**Comment Excerpt:**

The Agency justified its decision to lower the NMOC emissions threshold in Subpart XXX from 50 Mg to 40 Mg by conducting a cost/benefit analysis that evaluated the potential impacts of such a change on new landfills that opened in 2014 or later. *See* 79 Fed. Reg. at 41810. EPA's analysis concluded that only three of the EIA's projected 11 new landfills would be required to install GCCS earlier under the proposed NMOC threshold of 40 Mg/year as compared to the baseline or current threshold of 50 Mg/year. Further, the Agency found that reducing the NMOC threshold would increase cost of control by more than 26 percent while reducing NMOC emissions by only 13 percent (79 Fed. Reg. 41809). The analysis thus demonstrates that the emissions reductions resulting from the lower threshold are significantly less cost-effective than those being achieved under the 50 Mg threshold.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 24

**Comment Excerpt:**

*Sensitivity analysis shows the lower emissions threshold has little impact on fugitive methane.*

The analysis above showed that, in addition to the marginal effect of smaller landfills in the 2.5 MMT range on aggregate methane emission, EPA's modeling was also too unreliable to be useful for estimating anything about the isolated effect of a 34 MT instead of a 50 MT NMOC threshold.

Fortunately, the following scenario analysis can provide some independent confidence that the effect of the proposed rule, confined to a limited number of modest sized landfills that are irrelevant to the bigger picture, is vanishingly small even within its inconsequential microcosm.<sup>17</sup>

Our analysis shows that landfills that are approximately 2.5 million metric tons will, very soon after they open, be estimated to emit more than either 34 or 50 metric tons of NMOC annually, with only one or two years separating the two quantities. This is because the emissions threshold is an absolute quantity, not an emissions rate, that is set very low. Hence, landfills that are that size very soon after opening exceed either emissions threshold.

[Footnote 17] Although our scenario analysis does use EPA's gas generation model and input assumptions, which are also of dubious value, they are the same equations and inputs operators are told to use under 40 CFR §60.753 in calculating the NMOC threshold to determine whether a GCCS is required. As such, in this case, admittedly dubious outputs produce the correct answer for the question asked.

In passing, we do not endorse LANDGEM, because it is erected on a first order decay equation that fails to account for critical moisture. Nor do we subscribe to EPA's unsupported assumption that landfills capture 75% of gases generated. That assumption fails to account for the time when

the site is active and uncovered when gas collection is dysfunctional, yet most lifetime gas is generated. Intergovernmental Panel on Climate Change (IPCC), *Fourth Assessment Report*, Waste Chapter 10 (2007), at p. 600 (IPCC Report). But, again, both do reflect the equations and inputs used in calculating NMOC to determine whether a GCCS is required.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills

**Document Control Number:** EPA-HQ-OAR-2014-0451-0145

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Foth and the BOW Group do not support the proposal to lower the nonmethane organic compound (NMOC) emission threshold from 50 Mg/year to 34 Mg/year that triggers the requirement to install a gas collection and control system (GCCS) at existing active landfills. Reducing the NMOC emission threshold would subject additional landfills to gas collection and control requirements. This would burden owners and operators of landfills who have conducted long term planning around the current set of rules and the 50 Mg/year NMOC emission threshold.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Kelly Dixon, Director

**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0195

**Comment Excerpt Number:** 2

**Comment Excerpt:**

EPA rules currently require landfills that have an initial design capacity of 2.5 million megagrams (Mg) with estimated NMOC emissions of 50 Mg or more per year to install Gas Collection and Control Systems (GCCSs). The July 17, 2014 NSPS proposed rulemaking lowered the estimated emission threshold to 40 Mg/yr. The two new proposals now lower the estimated emission threshold to 34 Mg/yr potentially requiring more landfills to install GCCSs.

The proposed rule will impact 33 of 40 MSW landfills in Oklahoma within the next decade. DEQ is concerned the impact of this proposed rule will be acutely felt by municipal or county governments or public authorities and small independently owned MSW landfills in this state. Smaller and/or municipally and independently owned landfills operate on tighter budgets, have less access to cash and may be limited in their ability to finance projects; therefore they are less able to accurately estimate and shoulder the costs associated with Subpart Cf.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 Comment Excerpt Number 5.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager

**Commenter Affiliation:** Burns & McDonnell

**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The proposed NSPS for landfills can discourage the development of Renewable Energy Projects. Landfill owners are concerned with the potential impact to existing and proposed renewable energy projects. The lowering of the threshold for installation and operation of Gas Collection and Control Systems (GCCS) from 50 MG to 40 MG of NMOC emissions has the potential to jeopardize projects with "voluntary" reductions in Greenhouse Gas emissions and carbon credits with NMOC emissions between 40 and 50 MG. At least four of our clients have projects in this range. Three of these projects have moved ahead in recent years with "voluntary" GCCS units on sound economic basis. A fourth voluntary GCCS is under consideration. One of these projects includes language in the terms of its sale of medium btu gas for a premium that stipulates that the project continue to be considered "voluntary." A second project allows for the project to monetize Carbon Credits with hope that these markets, reserved for "voluntary systems" will return to economic significance during the lifetime of the project. A third project, also looks to reserve for the landfill owner all environmental attributes of the renewable energy. Due to potential expansions currently under development or under regulatory review at least two of these projects appear that they will be subject to Subpart XXX while the others appear subject to Subpart WWW. The direction of lowering the threshold is of concern to landfill owners, developers and investors with facilities subject to Subparts WWW and XXX alike.

**Comment Response:**

The EPA asserts that its final actions do not prevent beneficial use projects. Further, the EPA reiterated its approach to control in that the control pathways are not specified. Landfills subject to the final rules may also treat gas for beneficial use and is defining treatment system as system that filters, de-waters, and compresses the landfill gas, in order to minimize burden and maximize flexibility for owners and operators. The EPA has also clarified that the use of treated LFG is not limited to use as a fuel for a stationary combustion device but also allows other beneficial uses such as vehicle fuel, production of high-Btu gas for pipeline injection, and use as a raw material in a chemical manufacturing process. For affected landfills that do not yet exceed the 34 Mg/yr NMOC, the EPA is allowing non-regulatory systems (i.e., "voluntary" systems) to operate the GCCS during the Tier 4 SEM demonstration, however, the GCCS must have operated at least 75 percent of the hours during the 12 months leading up to the Tier 4 SEM demonstration. The EPA has a legal obligation to review NSPSs at least every 8 years. Additional information may be found in the Regulatory Impact Analysis.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent

**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota

**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The proposed NSPS for landfills will negatively impact our existing project and will discourage the development of additional Renewable Energy Projects. Landfill owners are concerned with the potential impact to existing and proposed renewable energy projects. The lowering of the threshold for installation and operation of Gas Collection and Control Systems (GCCS) from 50 MG to 40 MG of NMOC emissions has the potential to jeopardize our project and future projects with “voluntary” reductions in Greenhouse Gas emissions and carbon credits with NMOC emissions between 40 and 50 MG. The direction of lowering the threshold is of concern to our project in particular but to other landfill owners, developers and investors with facilities subject to these rules as well.

The economic and policy direction of the USEPA is of high concern to each of the landfill owners and developers associated with these projects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0104.1 Comment Excerpt Number 1.

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**Commenter Name:** Comment submitted by Matt Lamb

**Commenter Affiliation:** Smith Gardner, Inc

**Document Control Number:** EPA-HQ-OAR-2003-0215-0083

**Comment Excerpt Number:** 2

**Comment Excerpt:**

The proposed standard reduces the baseline non-methane organic compound (NMOC) from 50 megagrams per year (Mg/yr) to 40 Mg/yr. Relative to cost, there is a negative impact to landfills currently under contract to sell carbon credits from the destruction of greenhouse gases (GHGs) prior to the applicability of any mandate or regulation to do so. Reducing this threshold may penalize these landfills, nullifying their eligibility, possibly causing them to lose an income stream accounted for to pay back the early action and investment in the GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0104.1 Comment Excerpt Number 1.

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**Commenter Name:** Stephanie Jones and Jason Schwartz

**Commenter Affiliation:** Institute for Policy Integrity

**Document Control Number:** EPA-HQ-OAR-2014-0451-0177

**Comment Excerpt Number:** 10

**Comment Excerpt:**

Some states already run greenhouse gas reduction regulatory schemes that allow covered sources to offset some of their emissions by purchasing credits from facilities or initiatives that have voluntarily reduced their own emissions, including landfills.<sup>41</sup> As offset credits are only valid for

emissions reductions that exceed regulatory requirements,<sup>42</sup> more stringent methane emission guidelines for landfills could reduce the availability of offset credits to other emitting facilities, and could reduce the ability of these landfills to generate revenue from these credits.<sup>43</sup> On the other hand, “technological lumpiness” or other incentives stemming from the proposed emissions guidelines may cause facilities to install emission control technologies that result in overcompliance,<sup>44</sup> which could increase the availability of offset credits, and the profits they generate. EPA should assess the effects of its proposed guidelines on the potential use of landfills to generate greenhouse gas offset credits.

Footnotes:

41 See, e.g., Regional Greenhouse Gas Initiative: Landfill Methane, available at [https://www.rggi.org/market/offsets/categories/landfill\\_methane](https://www.rggi.org/market/offsets/categories/landfill_methane); California Air Resources Board, <http://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm> (last visited Oct. 26, 2015).

42 RIA at 2-33 (“Voluntary GHG trading programs purchase credits from landfills that capture LFG to destroy or convert methane contained in the gas and obtain credit for the reduction of GHG in terms of carbon equivalents. In order to qualify for these programs, the emission reductions must be in addition to regulated actions and have recent project installation.”) (emphasis added).

43 However, the revenue received [from the sale of landfill gas-generated electricity, landfill gas, and offset credits] represents only a small percentage of the operating costs of a landfill. RIA at 2-33.

44 See U.S. ENVTL. PROT. AGENCY, GUIDELINES FOR PREPARING ECONOMIC ANALYSES 5-10 (2010).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0104.1 Comment Excerpt Number 1.

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

The Division is concerned that MSW landfills with non-methane organic compound ("NMOC") emissions less than 50 Mg/year in arid areas, like Colorado, will have difficulty in reliably operating a control system because MSW landfills in arid areas do not produce high quality landfill gas. The quality of the landfill gas affects the MSW landfill's ability to continuously operate a flare, a primary control option for collected landfill gas. Therefore, the Division requests that EPA consider the impacts of reducing the NMOC threshold for new MSW landfills from 50 Mg/year to 40 Mg/year on MSW landfills in arid areas.

**Comment Response:**

The EPA has crafted a subcategory based on closure status and not geographic location. The EPA is providing this flexibility to address areas of declining gas flows due to the age of the waste, arid climate, or low organic content. Given that there are unique situations that could cause low gas flow, or low gas quality which would cause a GCCS to be unable to operate for 15 years, the EPA is not providing prescriptive criteria for how a landfill owner or operator can demonstrate that a GCCS could not operate for 15 years and will proceed with a site-specific approach for handling these unique cases. Some examples of data elements that could be used to demonstrate a GCCS is unable to operate may include supplemental fuel use at the flare to sustain operations or LFG quality sample measurements showing methane content lower than what is viable for combustion in the destruction device. See Section VI.C of the final NSPS preamble. See Section VI.C of the final Emission Guidelines preamble. The EPA is finalizing a provision that allows the use of actual flow data when estimating NMOC emissions for the purposes of excluding low- or non-producing areas of the landfill from control. See Section IV.A.5 of the final Emission Guidelines preamble.

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**Commenter Name:** William C. Allison V, Director, Air pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2014-0451-0163

**Comment Excerpt Number:** 5

**Comment Excerpt:**

The Division is concerned that MSW landfills with NMOC emissions less than 50 Mg/year in arid areas, like Colorado, will have difficulty sustaining operation of a control system because MSW landfills in arid areas do not produce high qualities of landfill gas and the quality (methane and heat content) of that gas is limited. Based on monitoring results from Colorado's MSW landfills that operate a control system with less than 50 Mg/yr NMOC, installing a collection system and attempting to continuously operate a control device can significantly degrade the quality of the landfill gas, eventually to the point of appearing to inhibit or slow methanogenic decomposition. Therefore, the Division requests that EPA consider developing a NMOC threshold for arid areas as a subset of the existing landfills affected by the proposed Subpart Cf.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0082.1 Comment Excerpt Number 2 under comment code 3b.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 10

**Comment Excerpt:**

Lowering the NMOC Emissions Threshold for GCCS Installation to Either 40 or 34 Mg/year will not be Reasonable or Achievable Without Accompanying Regulatory Provisions.



EPA has proposed in its Supplemental NSPS (80 Fed. Reg. at 52163) and its Proposed EG (80 Fed. Reg. at 52110) to reduce the non-methane organic compound (NMOC) threshold from the "baseline" (Subpart WWW) level of 50 Mg/yr to either 40 or 34 Mg/yr. These standards will not be achievable for new, modified or existing landfills under Subparts XXX and Cf unless the proposed regulatory change is coupled with promulgation of all of the following provisions proposed by the Agency in the Proposed EG:

- A workable alternative site-specific emissions threshold determination or "Tier 4" for determining when a landfill must install and operate a gas collection and control system (GCCS) and for determining the appropriate timing for capping and removing a portion of or an entire GCCS in landfill areas with declining landfill gas flow;
- A subcategory for closed landfills that close within 13 months after publication of the final NSPS and EG, which are subject to the existing NMOC emission rate of 50Mg/yr; and
- Removal of the GCCS wellhead operational parameters for monitoring temperature and oxygen/nitrogen.

As described in detail below, promulgation of these provisions is necessary to enable landfills to operate within a significantly reduced NMOC emissions rate of either 40 or 34 Mg/yr. These provisions are interrelated and work synergistically to enhance decision making regarding the timing of installation and cessation of GCCS operations. Promulgation of these provisions will not delay installation of GCCS, but instead will provide site-specific emissions data to validate the timing of GCCS installation, and the appropriate timing for GCCS capping or removal in areas of declining LFG flow. The provisions will ease implementation burdens for state regulatory agencies and the regulated community, and will remove key operational barriers to early installation of interim LFG emissions controls.

#### **Comment Response:**

The EPA is promulgating the final Landfill NSPS and emission guidelines within a similar timeframe. The EPA has established a subcategory for closed landfills. The EPA is also finalizing a flexible alternative, known as Tier 4, which allows site specific measurement as an alternative to modeled NMOC emissions. The EPA is also finalizing provisions to accommodate landfills with declining as flows. See Section IV of the final Emission Guidelines preamble. See Section IV of the final NSPS preamble.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 82

#### **Comment Excerpt:**

We are concerned that EPA's apparent approach under the NSPS/EG will be difficult to coordinate with the Subpart AAAA NESHAP, which could create significant problems for regulated entities in the future.

As EPA notes, landfills defined as bioreactors under 40 CFR Part 63, subpart AAAA, "*are required to install and operate a GCCS on an accelerated schedule compared to non-bioreactor landfills. Once a landfill is required to install and operate a GCCS under either [Subpart AAAA] or [the current NSPS/EG rules], the GCCS requirements remain the same.*" (80 Fed.Reg. 52137) WM is concerned that the coordinated approach, which has worked effectively for many years, could be undermined if EPA proceeds to finalize new NSPS/EG requirements for shorter lag times.

A key concern is that the current NESHAP would continue to apply the 2.5/50 emission threshold in the NESHAP, while the updated NSPS/EG would apply to the lower 2.5/34 threshold. This failure to coordinate the timing of the rules would thus result in different levels of stringency and inconsistent coverage of sites. Further, EPA's proposal, while acknowledging the relationship between the two rules, does not clearly confirm that a final NSPS/EG with shorter lag times would maintain the current coverage arrangement between the NESHAP and the NSPS/EG.

WM supports maintaining the current system for managing "wet" landfills, wherein Subpart AAAA regulates some landfills and the NSPS/EG regulates others. We strongly encourage EPA to delay implementing the current proposal on wet landfills. Given the connections between the NESHAP Subpart AAAA and this proposed rule, we urge EPA to address these issues in a coordinated rule-making that ensures a consistent approach and clear delineation of authority between the NSPS/EG and the NESHAP.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 Comment Excerpt Number 96 under comment code 3g.

### 3.3 Other Thresholds

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 91

**Comment Excerpt:**

EPA should not adopt the California LMR design capacity thresholds. Based on our review of monitoring results under the CA LMR, WM has concluded that EPA should retain the current design capacity requirements. We base this conclusion on (1) a report developed by SCS Engineers on the results of CA LMR monitoring; (2) the absence of any justification or explanation of the benefits of such a change; and (3) the complexity of integrating such an approach into EPA's current NSPS/EG framework, particularly since the proposed NSPS neither mentions nor requests input on this option.

We reviewed the available monitoring data from initial implementation of the LMR in mid-2011 through the end of 2013. The dataset included 72 landfills, all located in California, 30 of which had not previously been regulated under Subpart WWW and the EG. A total of 521 monitoring reports were evaluated, over this period, 357 from former NSPS landfills that transitioned to the CA LMR in mid-2011, and 164 from new LMR landfills that met the CA LMR design capacity threshold. As expected, former NSPS landfills were much larger than the new LMR landfills; a total of 44,607 acres were monitored by the NSPS landfills and 12,544 acres were monitored by the new LMR landfills.<sup>2</sup>

The results of this review further demonstrated that NSPS landfills account for the vast majority of landfill exceedances detected under the CA LMR, and that all of the landfills required to expand GCCS systems in response these exceedances were previously regulated under Subpart WWW or the EG. NSPS sites represented 58% of the landfills in our dataset, 68% of the monitoring reports, 78% of the acres monitored, and roughly 90% of the instantaneous exceedances detected. In contrast, the new LMR landfills, which had not previously reported under the NSPS because they did not exceed the design capacity and NMOC threshold, represented 42% of the landfills in the dataset but only ~10% of the exceedances.

The data on landfill GCCS expansions is even more striking. While there were a few exceedances at the new LMR landfills, all of them were remediated within 20 days with simple cover repair and/or GCCS adjustments. Over the first 30 months of CA LMR implementation, not a single new LMR landfill in our dataset had an exceedance that triggered the LMR requirement to expand the GCCS. This result is particularly significant because it is the GCCS expansions that are primarily responsible for the methane and NMOC reductions associated with this rule.

Surface emission monitoring is a major operational cost at NSPS landfills, and SEM requirements are even more onerous under CA LMR. If EPA follows the approach taken in the CA LMR it will be vastly expanding the landfills affected by the NSPS and EG. For the most part, the newly affected landfills will be smaller and older than the landfills currently regulated under the NSPS, and many will be municipally owned and will have a difficult time financing the new requirements.

[Footnote]

(2) Note that this total reflects the sum of the acres monitored in the available monitoring reports. It is not the sum of actual acres at the landfills being monitored.

**Comment Response:**

The EPA has retained its fundamental rule framework for these final actions. The design capacity threshold and form of the standard have not been changed. Further, while the EPA has refined its approach to Tier 4, quarterly surface monitoring for compliance purposes has not changed significantly. See section V.D.1 of the 2015 Emission Guidelines proposal (80 FR 52119). See section V.D of the 2014 proposed Emission Guidelines (79 FR 41806).

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 93

**Comment Excerpt:**

A decision by EPA to adopt the CA LMR requirements must be based on a thorough cost-benefit analysis of nationwide impacts. Our initial review of the experience in California indicates that the design capacity approach taken in the CA LMR is not delivering benefits commensurate with costs. For this reason, we have concluded that EPA should not adopt the CA LMR approach regarding design capacity for existing landfills.

We also note that EPA cited the design capacity thresholds required by the Climate Action Reserve in its Landfill Protocol Version 4.0. EPA explains that "[t]his protocol includes waste-in-place thresholds for landfills that recover energy ... to determine what offset projects are eligible." 79 Fed. Reg. at 41783. The purpose of the design capacity threshold in the CAR protocol is to establish an upper-bound on the size of landfills that could be eligible offset providers. The CAR standard is establishing an "additionality test" to prevent larger landfills, which are deemed likely and able to install energy recovery projects anyway, from participating in carbon offset markets. Moreover, the CAR program is voluntary; no landfill with a design capacity below the thresholds is required to participate in an offset program.

Based on its intended purpose, the approach taken in the CAR protocol is wholly inapplicable to the regulation of landfills under the NSPS and EG. Under the NSPS and EG rules, EPA must decide the threshold *above which* landfills become affected - that is, are required to comply with an EPA regulation. For this reason, the approach taken by the CAR should not be used to inform decisions on design capacity under the NSPS or EG rules.

We note that the preamble of Subpart XXX provides a compelling justification for retaining the 2.5 million Mg design capacity. 79 Fed. Reg. at 41807. As EPA explains, lowering the design capacity threshold would increase reporting costs on all landfills, and particularly burden smaller landfills, without delivering significant emission reductions. We note that EPA neither mentions nor requests input on the CA LMR design capacity approach in the proposed NSPS.

For this reason, EPA's requests for input on the CA LMR design capacity approach in the ANPRM is difficult to understand. If EPA finalizes the proposed design capacity threshold, the implementation and coordination challenges associated with adopting the CA LMR approach for existing landfills would be significant.

**Comment Response:**

The EPA believed it was appropriate to solicit input of the form of its standards at proposal. However, upon review, the EPA has decided not to change its fundamental approach to applicability based on design capacity or GCCS installation based on exceedance of the emission threshold. See section V.D.1 of the 2015 Emission Guidelines proposal (80 FR 52119). See section V.D of the 2014 proposed Emission Guidelines (79 FR 41806).

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal  
**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 14

**Comment Excerpt:**

We suggest, as a starting point, that consideration be given to a threshold flux value for methane emissions of 0.00042 g/s-m<sup>2</sup> before requiring installation of a GCCS, as measured by the AMM method and that owners and operators of landfills be allowed up to 270 days, after a determination under 60.763 of proposed 40 CFR part 60 subpart XXX, to conduct the AMM method measurement. The benefit of this approach is that owners and operators will have the flexibility to employ other techniques, such as reducing the organic content of the waste by diversion or increasing biological methane oxidation, to minimize methane emissions. This flux value would be applied as an average over the entire landfill area.

**Comment Response:**

The EPA thanks the commenter for their perspective. Emerging technologies, like AMM method are having major advances but require more information and will not be required at this time. See section VI.B of the final NSPS Preamble and section VI.B of the final Emission Guidelines Preamble.

### 3.4 GCCS Lag Times

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 44

**Comment Excerpt:**

These results [in Table 1 of DCN EPA-HQ-OAR-2003-0095.1] are even more supportive of early gas collection when viewed in the light of EPA's relatively conservative assumptions: EPA's modeling assumes that most landfill operators expand their gas collection systems slightly earlier than required under the current NSPS and emission guidelines (within four years of waste placement, rather than five);

EPA's modeling assumes relatively low decay rates for waste ( $k$  values of 0.02 and 0.04, depending on climatic conditions), despite recent research indicating  $k$  values of 0.09-0.12 would be appropriate for landfills in wetter climates; and

EPA does not appear to have taken into account the fact that horizontal collection systems can offset the costs of vertical collection.

EDF urges EPA to include an early gas collection requirement in the final NSPS and the proposed emission guidelines. Such a requirement could take the form of an adjustment to the current regulatory deadlines for initial installation and expansion, or a requirement that early gas collection measures be included in collection system design plans. However, California's Landfill Methane Rule provides a more flexible approach that simply requires landfill operators

to expand their system in such a way as to ensure that the surface concentration limits for methane are met at all times once the applicability threshold is met and the system is initially installed. This approach assures continuous emission reduction while allowing landfill operators to determine which set of technologies and approaches is most appropriate to individual sites.

**Comment Response:**

The EPA outlined implementation issues associated with shortening lag times at proposal. See 80 FR 52119. The EPA asserts that its finalized rules achieve significant reductions beyond those achieved by current rule requirements. See Section VII of the final Emission Guidelines preamble. See Section VII of the final NSPS preamble.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 43

**Comment Excerpt:**

*EPA Analysis Indicates Early Gas Collection Yields Significant Benefits at Low Cost.* The analyses EPA has included in the record for these rulemakings support the proposition that early gas collection can yield significant emission reductions at relatively modest cost – especially for existing landfills, which will continue to represent the vast majority of landfill emissions over the coming decade.

For its analysis of existing landfills, EPA evaluated the effects of requiring that initial installation take place within two years after applicability is triggered, and requiring that expansion take place within two years after initial waste placement. The results of these analyses are shown in Table 1.<sup>60</sup>

**Table 1. Early gas collection significantly increases reductions in methane emissions at a lower average cost.**

Option	Capacity/ NMOC Thresholds (Tg/Mg)	Initial/ Expansion Lag Times	Average Incremental Annual CH <sub>4</sub> Reductions, 2014-2023 (Mg/yr)	Average Incremental Annual CH <sub>4</sub> Reductions, 2014-2023 (Mg CO <sub>2</sub> -e/yr, GWP=25)	Cost (\$/Mg)
Baseline	2.5/50	No Change	N/A	N/A	46
Option 3	2.5/40	No Change	302,512	7,562,790	102
Option 4	2.5/40	2-yr lag	564,006	14,100,139	93
<b>IMPACT OF EARLY GAS COLLECTION at 40 Mg NMOC</b>			<b>+261,494</b>	<b>+6,547,349</b>	<b>-9</b>
Option 7	2.5/34	No Change	493,586	12,339,657	114
Option 8	2.5/34	2-yr lag	771,076	19,276,910	104
<b>IMPACT OF EARLY GAS COLLECTION at 34 Mg NMOC</b>			<b>+277,490</b>	<b>+6,937,253</b>	<b>-10</b>

As Table 1 indicates, the impact of even this modest early gas collection requirement is significant. At an applicability threshold of 40 Mg NMOC (the level EPA has proposed for the revised NSPS), the impact of adding an early gas collection requirement would be to increase *average annual* methane reductions by over 260,000 metric tons of methane per year – approximately 6.5 million metric tons CO<sub>2</sub>-e per year, using EPA’s preferred GWP of 25.<sup>61</sup> Moreover, the average cost of those reductions would be approximately nine percent *lower* than a regulatory option consisting only of the 40 Mg NMOC threshold. At a lower NMOC threshold of 34 Mg/yr, the effects of adding an early gas collection requirement would be similarly significant with respect to both incremental emission reductions and cost.

Notably, the average cost of methane reductions associated with early gas collection at existing landfills are extremely low, ranging from \$3.70 to 4.20 per ton of CO<sub>2</sub>-equivalent at a GWP of 25 (approximately \$2.57 to 2.92 at a more appropriate GWP of 36).

[Footnotes]

60. Table 1 is adapted from Appendix B-2, Summary of Preliminary Emission Impacts of Regulatory Options for EG Review, Average 2014-2023, Document ID No. EPA-HQ-OAR-2014-0451-0010.

61. Using a more appropriate GWP of 36, the reductions would be approximately 9.4 million metric tons CO<sub>2</sub>-e per year.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 7

**Comment Excerpt:**

There is another reason to minimize lag times. Within an uncovered landfill, it can be difficult to tell how the methane and other gases are escaping.<sup>8</sup> Where a cell is covered, methane and other gases may migrate into adjacent, active (and therefore uncovered) cells.<sup>9</sup> The longer one section of a landfill vents into the air, the greater the chance that other cells also vent methane through that uncovered section, undermining the effectiveness of the rule without significantly reducing its cost.

[Footnotes]

8 Charlotte Scheutz, et al, Gas production, composition and emission at a modern disposal site receiving waste with a low-organic content, *Waste Management* 31 (2011) 946–955 (noting that a landfill in Denmark appeared to lose one quarter of its gas emissions via its leachate collection system, and the rest through an uncertain combination of open cells or dispersal through leachate drainage pipes in permanent gravel below empty cells).

9 Bruno Capaccioni, et al, Effects of a temporary HDPE cover on landfill gas emissions: Multiyear evaluation with the static chamber approach at an Italian landfill, *Waste Management* 31 (2011) 956–965 (documenting the migration and escape of landfill gas through adjacent active cells).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 29

**Comment Excerpt:**

*Early Collection of Gas is Feasible and Effective.* Accelerated installation of gas capture systems is technically feasible and can substantially reduce methane emissions. As EDF noted in the White Paper, Barlaz et al. (2009) observe that "there are landfill operators that aggressively install horizontal LFG collection systems and collect gas within months of refuse burial."<sup>51</sup> The study concludes that beginning gas collection three years after waste placement can boost lifetime collection efficiencies to between 66 and 71.9 percent,<sup>52</sup> and aggressive gas collection



beginning in the first two years after placement can achieve total lifetime collection efficiencies as high as 84%.<sup>53</sup>

[Footnotes]

(51) Barlaz, *supra* note 51 at 1399.

(52) *Id.* at 1402-03. This assumes a *k* value varying between 0.02 and 0.07.

(53) *Id.* This analysis is for a bioreactor landfill, *k* varying between 0.04 and 0.15, and may not be representative of normal landfill operations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 27

**Comment Excerpt:**

EPA declined to propose changes to these requirements in the NSPS, citing general concerns over cost and practicability of early gas collection. Yet there is substantial evidence that significant methane emissions occur prior to the 5-year milestone in the current regulations. Moreover, many landfills have implemented proven and cost-effective control technologies to capture landfill gas as early as several months after initial waste placement. In the final NSPS and the proposed emission guidelines, EPA should ensure that landfills use best practices to maximize gas collection by *either*:

Adopting a requirement that the entire surface of the landfill (except the working face) comply with the methane concentration limits at all times, similar to California's Landfill Methane Rule;  
*or*

Require that landfills adopt one or more best management practices for early gas collection — including but not limited to horizontal collection systems and leachate gas collection, installed no later than two years after initial waste placement — as part of the gas collection system design plans required under 40 CFR § 60.762.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 16

**Comment Excerpt:**

EPA proposes to continue allowing landfills up to five years to install a gas collection system, even though leading researchers have concluded that almost 30 percent of total emissions from a landfill are emitted within this timeframe. EPA's own analysis shows that earlier gas collection would yield significant additional reductions of almost 1,000,000 metric tons of CO<sub>2</sub> equivalent in 2023.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 67

**Comment Excerpt:**

*Reducing the initial and expansion time lags.* For all the reasons stated herein, we support a substantial reduction, if not total elimination, of these time lags.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 24

**Comment Excerpt:**

*Reducing the initial and expansion time lags.* We support substantial reductions, if not total elimination, of these lag times. GCCS should be installed earlier and maintained long after closure of landfills.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 17

**Comment Excerpt:**

EPA does not propose changes to when an owner or operator of a landfill must install a GCCS or expand a GCCS into new areas. Under the proposed rule, owners and operators would continue

to have 30 months to install and begin operating the GCCS upon the landfill exceeding the 34 Mg/yr emission threshold.<sup>61</sup> Consistent with the current emission guidelines, the proposal also allows owners and operators of active areas up to five years to expand the GCCS into new areas and up to 2 years to expand a GCCS at a closed landfill or one at final grade.<sup>62</sup> EPA has based this determination on implementation concerns expressed during small-business and federalism panels, and has declined to model the cost-effectiveness of early gas capture in the proposed rule.

We continue to believe that operators should be required to utilize early gas collection BMPs or, alternatively, be encouraged to implement early gas collection through a requirement that all areas of the landfill meet surface concentration limits as soon as GCCS is first required to be installed.<sup>63</sup> As we have previously documented in both our technical comments<sup>64</sup> and white paper<sup>65</sup> many landfills have successfully utilized early gas collection measures to capture landfill gas on an accelerated timeframe, thereby significantly decreasing NMOC and methane emissions.

[Footnote 61] 80 Fed. Reg. at 52119.

[Footnote 62] 80 Fed. Reg. at 52119.

[Footnote 63] This approach would be consistent with the California Landfill Methane Rule, and is referenced in the proposed EG. *See* 80 Fed. Reg. at 52,121.

[Footnote 64] Environmental Defense Fund, Comments of Environmental Defense Fund on Standards of Performance for Municipal Solid Waste Landfills, Docket ID No. EPA-HQ-OAR-2003-0215-0095 (Sept. 15, 2014).

[Footnote 65] Environmental Defense Fund, Recommendations and Considerations for EPA's Forthcoming Revisions to Section 111 Standards for MSW Landfills, Docket ID No. EPA-HQ-OAR-2014-0451-0008 (Jan. 2, 2013).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 10

**Comment Excerpt:**

The Emission Guidelines would perpetuate excessive and unjustified delay (“lag times”) for GCCS installation and operation, which intensifies the adverse environmental impact of landfill methane.

The Agency’s decision not to reduce lag times (initial and expansion) is not justified, particularly for landfills in high precipitation areas (i.e., areas receiving 40 or more inches of precipitation annually). In that regard, although EPA elected not to model the impacts of any regulatory alternatives that would reduce either type of lag time, 80 Fed. Reg. at 52121/1, uncontrolled emissions during lag periods are widely recognized as a significant factor contributing to the

overall volume of uncontrolled emissions of landfill methane. This includes the recently published (and EPA-funded) study, *Nature Climate Change*, *supra* (“Improving the collection of LFG at open landfills must be a target for policymakers” as well as “[c]ollecting LFG earlier in a landfill’s life and more quickly after waste placement”). *Id.* at 3. Moreover, the lag time-related concerns to which EPA refers are contrary to the experience of many landfills, including Coalition members and other local governments. Rather than waiting 30 months, these entities are installing collection systems within 18 months of reaching the current 50-Megagram threshold. They are also extending their GCCS into expansion areas more quickly than the allowed 5-year and 2-year intervals. In addition to the importance of controlling methane, these actions are influenced by considerations of safety and odor control, which is consistent with the state authority that advised EPA regarding landfills that are achieving earlier installation of GCCS. *See* 80 Fed. Reg. at 52121/3; *see also* 79 Fed. Reg. at 41807/2 (“Many landfills in wet climates install wells ahead of the 5-year schedule for odor or energy recovery purposes.”). This often involves use of horizontal collectors, which can be installed within a brief time after waste is in place. Although small entities raised concerns regarding horizontal collectors, the role for small entities is rapidly diminishing in landfill ownership and operation, *see* 79 Fed. Reg. at 41778/1, and, if appropriate, small entities can be exempted from reduced lag times.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 11

**Comment Excerpt:**

The EPA should require early installation of gas collection systems after waste placement.

A significant amount of methane is generated prior to the installation of gas collection systems. Current regulations allow for landfill operators to delay collection for 2-5 years from the initial placement of waste in a cell. According to the EPA, a majority of landfills comply with the less stringent 5 year requirement.<sup>37</sup> Yale and University of Florida researchers concluded that “collecting LFG earlier in a landfill’s life and more quickly after waste placement should help to reduce emissions” and the current California regulations have done just that without significant detrimental impact on landfill operations.<sup>38</sup>

[Footnote 37] EPA, *Federal Register*, **80**: 166, 52117

[Footnote 38] Powell *et al.* (2015)

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1 Comment Excerpt Number 44.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 14

**Comment Excerpt:**

We agree with EPA's discussion of the potential issues related to shortening the initial or expansion lag times in active areas as specified in subpart WWW, and we agree that shorter lag times will not result in any meaningful environmental benefit. Few, if any, of Republic's landfills reach final grade within 5 years. Thus, shortening the 2-year lag time after initial waste placement for landfills at final grade would likely have little to no effect on the timeframe for installing LFG collection components in new waste disposal areas. In addition, in many cases Republic expands its systems prior to the 5-year deadline for areas not at final grade in order to minimize the potential for odors and to maximize recoverable gas for LFG energy projects.

Reducing lag times will result in additional costs associated with the inevitable damage to GCCS components located in active fill areas. Installing GCCS components in active fill areas increases GCCS construction and maintenance costs because these components are prone to damage by filling operations and settlement, and must be repaired or replaced at a significantly greater frequency than GCCS components installed in closed areas.

When vertical extraction wells are used to collect LFG from an active area, due to landfill geometries, lateral gas collection pipes must be run across relatively flat operations decks to each well. Because these laterals are installed at shallow slopes, they are more likely to fail, as differential settlement causes low points in the piping (i.e., "bellies") in which condensate can collect, thereby cutting off vacuum and gas flow. When this happens, the lateral must be replaced, which involves excavating down to where the lateral ties into the header, cutting and capping the old pipe, tying in a new lateral, and running the new lateral back to the well, which can cost from \$8,000 to \$12,000 for a 300 ft long lateral, not including engineering, construction quality assurance, and surveying. Because laterals in active areas are commonly replaced every 40 feet of waste filling, an additional 80 to 100 feet of waste would require the installation of laterals three different times (once upon initial construction and two replacements due to filling).

Another disadvantage to installing vertical wells in active areas is the potential to damage the wells and vacuum riser pipes either by heavy equipment used in the active face, or in the process of raising the well and filling around it. If the vacuum lateral risers are pinched, they become non-functional and must be replaced at the costs outlined in the prior paragraph. In general, landfill owners can expect to replace a lateral riser once it has been raised 40 ft or more. If the well is pinched or sheared, a new well must be installed. Typical installation costs range from \$90/ft to over \$140/ft, plus mobilization, engineering, construction quality assurance, and record documentation/surveying. Costs can be higher if specialized well casing materials are used, such as CPVC or steel.

Even for wells that are not pinched or sheared as the landfill grows in height, they must often be replaced because the amount of solid-wall pipe becomes too great and the perforated section too far below ground to effectively prevent surface emissions and odors. For example, if a well had 20 ft of solid-wall pipe when it was first installed, the placement of an additional 40 ft of waste would leave the pipe perforation 60 ft below grade, which in many cases may not be optimal for gas recovery or minimizing surface emissions. Consequently, owners/operators face double to

triple the costs to install wells in active areas as compared to installing the wells after the landfill reaches final grade.

In 2014, 43% of the LFG extraction wells installed by Republic were replacement wells (i.e., those that were damaged during filling, pinched during raising, or that had excessive solid pipe lengths due to being raised as filling progressed), which demonstrates the significant capital cost resulting from installing GCCS components in active areas. Shortening the installation lag time would increase these costs further and could have a significant financial impact on smaller landfills at which gas is not as aggressively collected in the active fill area.

**Comment Response:**

The EPA thanks the commenter for their comment. The EPA has not adjusted the initial lag time in these final actions.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 117

**Comment Excerpt:**

WM supports the Agency's decision to maintain the current GCCS installation and expansion timeframes. In particular, reducing the five-year timeframe for active areas of the landfill can lead to personnel safety concerns, as well as frequent damage to the system from heavy equipment and normal waste filling operations. Furthermore, early installation of gas collection equipment can cause increased waste settlement, which in turn affects gas header and piping alignment. This results in system disruptions and downtimes due to the need for frequent repairs. Finally, permitting a GCCS can be a lengthy process. A construction permit is required prior to initiating construction of a GCCS. While EPA assumes that sites can obtain permits within six months of application, permitting often takes more time. Depending upon the size and location of the project, the air permitting process for the control devices could extend several months to two years after the permit application is submitted. Since the facility cannot commence construction of the GCCS (i.e., excavation, delivery of equipment) until the final permit has been issued, permitting can cause unforeseen delays.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 14.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 17

**Comment Excerpt:**

Republic requests that EPA maintain the existing lag times because requiring any more aggressive expansions through mandatory NSPS requirements will lead to significantly higher costs without meaningful benefits.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 14.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 38

**Comment Excerpt:**

**WM Supports EPA's Proposal to Maintain the Existing GCCS Installation and Expansion Timeframes.**

WM supported the Agency's decision to maintain the current GCCS installation and expansion timeframes in the proposed Subpart XXX and we endorse incorporation of the same timeframes in proposed Subpart Cf. As we noted, reducing the five-year timeframe for active areas of the landfill can lead to personnel safety concerns, as well as frequent damage to the system from heavy equipment and normal waste filling operations. Furthermore, early installation of gas collection equipment can cause increased waste settlement, which in turn affects gas header and piping alignment. This results in system disruptions and increased downtimes due to the need for frequent repairs. Finally, permitting a GCCS can be a lengthy process. A construction permit is required prior to initiating construction of a GCCS. While EPA assumes that sites can obtain permits within six months of application, permitting often takes more time. Depending upon the size and location of the project, the air permitting process for the control devices could extend several months to two years after the permit application is submitted. Since the facility cannot commence construction of the GCCS (i.e., excavation, delivery of equipment) until the final permit has been issued, permitting can cause unforeseen delays.

As noted in our comments on the proposed NSPS and ANPRM, WM and others in the landfill industry support early collection where feasible, and earlier installation of either interim or full GCCS occurs at many WM landfills. We cannot, however, ensure that all of our landfills could always meet tighter time frames given the site-specific nature of landfills. We are also concerned that small landfills could face significant delays related to the required permitting given their resource and personnel constraints.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 14.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number: 11**

**Comment Excerpt:**

EPA should not adjust the initial GCCS or expansion timeframes.

We agree with EPA's decision not to propose any reduction in the amount of time for initial GCCS construction or expansion. We continue to concur with EPA's statements in the ANPRM indicating that shorter deadlines for construction will not result in any meaningful environmental benefit. However, EPA has now requested comment on whether GCCS design plans should contain early GCCS measures or BMPs. 80 Fed. Reg. at 52121. While Republic supports allowing landfills the flexibility to address early collection and BMPs as needed on a site specific level, requiring prescribed approaches to be in the initial conceptual plan could constrain the options available to a landfill to institute measures that were not included in the plan but that may otherwise provide an effective means of reducing emissions quickly.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 14.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 10

**Comment Excerpt:**

The use of 34 Mg/year NMOC threshold does not remotely match with other sections of the proposed rule. For instance, the USEPA has acknowledged that the 2-year and 5-year installation requirements will be retained. Cornerstone is aware of many green field regional facilities that would have very little surface area where installation of GCCS would be required even at the 50 Mg/year threshold. To overcome the obstacles facilities would be required to install small control devices that would be considered temporary. This has the effect of wasting resources and potentially forcing facilities to select control devices they would rather not have purchased at all. Additionally, the overall goal of most landfills is to find a suitable landfill gas-to-energy (LFGTE) option that will allow the beneficial use to the collected gas. The infrastructure needed to comply with the regulation more times than not needs to be changed or upgraded after a suitable LFGTE option is selected. Earlier collection will increase the facility's cost of infrastructure which will later be unusable. These costs were not factored in USEPA's estimates.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 14.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1



**Comment Excerpt Number: 6**

**Comment Excerpt:**

Early installation of gas extraction wells is common nowadays to control odor, to implement leachate recirculation or to use additional liquids under a research, development and demonstration (RD&D) permit. As a result, WDNR believes that reduced lag times have already been largely achieved.

**Comment Response:**

The EPA highlighted implementation issues associated with lag times at proposal and in the final analysis that supports the final NMOC emission level and lag times and has not adjusted lag times in these final actions.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 26

**Comment Excerpt:**

**WM therefore recommends that the Agency consider allowing landfill owners/operators to decommission wells by shutting off the vacuum without prior approval.** By the term "decommission" we are referring to a temporary measure of shutting off the vacuum to the well, while keeping the well connected to the gas collection system for reactivation if needed. Should the landfill owner/operator need to permanently cap or remove the well from the system, this would constitute a design change.

**Comment Response:**

The EPA has provided additional clarifications to address decommissioning wells in its final actions but has not revised its approach to approval. The EPA recognizes that many open landfills subject to the Emission Guidelines contain inactive areas that have experienced declining LFG flows. Therefore, the EPA is finalizing criteria for determining when it is appropriate to cap, remove, or decommission a portion of the GCCS. See Section VI.C of the final Emission Guidelines preamble. See Section VI.C of the final NSPS preamble.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 25

**Comment Excerpt:**

The lag times built into the rule for completing a GCCS will cancel out the effect of the lower NMOC threshold on advancing the date of the GCCS requirement. That is to say, the grace period for finishing construction is so long that early onset threshold changes will never become

effective in pushing earlier installation of the collection system. Thus, there will be no methane reductions (or darn close to none).

Most of those landfills in the 2.5 MMT to 5.0 MMT size range will be required to get prepared to operate a GCCS. But, generally, they will not be required to actually do so earlier, because, for the most important of three cases created in the Agency's rules, the earlier year in which they cross the new NMOC threshold will still be within that lag time.

For in the first case involving a new active cell, the rule only requires the operator to "collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of ... 5 years or more if active," which is the when the serious volumes of gas are generated.<sup>18</sup> Our scenario analysis below shows that the years where either the 50 MT, or the 34 MT, thresholds are crossed both lie almost entirely within that five year grace period. Because rainfall is free to enter active cells, that would also be for the areas in the landfill where most lifetime gas is generated.

Nominally, the rule does describe a second type of case which is of an active cell after five years, when the grace period would only be 2½ years. But, as the scenario analysis below shows, the crossover of the threshold under either 50 MT or 34 MT occurs before 5 years in landfills larger than 2.5 MMT.

In the third case described in the rule involving inactive closed cells, the time to commence gas collection is 2 years, but those covered areas will have little infiltrating precipitation necessary for significant gas generation. For that reason, even if the time was advanced a year when a GCCS was required, those covered areas would be an inconsequential factor in methane reductions because they generate so little gas.<sup>19</sup>

[Footnote 18] 40 CFR §752(b)(2)(ii)(A)(2)(i) (emphasis added).

[Footnote 19] 40 CFR §752(b)(2)(ii)(intro).

### **Comment Response:**

The EPA has not adjusted its approach to lag times and outlined implementation issues associated with potential adjustments at proposal. The EPA has outlined the additional reductions achieved by lowering the NMOC emission threshold. The EPA provided a summary of model runs with tightened lag times at proposal. The EPA believes that the commenters assertion that tighter emission thresholds would be "cancell[ed] out" by lack of adjustments to lag times is false. As shown in the final rules and supporting documentation reductions from a tighten emission threshold still occur in the absence of adjustments to lag times.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 27

### **Comment Excerpt:**

For the majority of cases on a capacity-weighted basis, when landfills are between 5.0 MMT and 10.0 MMT in size, their estimated NMOC crossover with either threshold value will occur

within the first year. Hence, the year in which the GCCS is required to be installed will not roll forward due to a lower NMMOC threshold, and there can be no methane reduction from the rule change, apart from the lag time factor.

The following sensitivity TABLE provides the basis for these conclusions. It shows how the year that the threshold NMOC level is exceeded pulls forward with the increasing size of the landfill. It is calculated using EPA's Landgem model with all the Agency's inputs, as would be the typical way to determine if there is a legal requirement to install a GCCS.<sup>20</sup> The 50 MT/yr NMOC crossover year is highlighted in red and the 34 MT/yr crossover, in green.

On the bottom line, then, the decision to focus methane reductions on adjustments to the threshold level for installation of a GCS is, *ipso facto*, a decision to confine action to the margins. For the vast majority of affected existing capacity, and especially new capacity, is at large landfills, many of which are mega-fills, so large that the threshold is exceeded occurs in the first year at either the 50 MT or 34 MT level.

That eliminates even the apparent minor gain from rolling forward the crossover year. Even for the medium sized landfills, the complex tapestry of grace periods and lag times baked into the rule will, in practice, avoid advancing the time the GCCS needs to be installed.

Although EPA continues to repeatedly refer to its proposal as the one that is "more stringent,"<sup>21</sup> in fact it actually achieves close to nothing.

[Footnote 20] Landgem 3.02 was run for NMOC generation at 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 10.0 and 20.0 million metric tons distributed over the typical 15 year life, and a 75% collection efficiency.

[Footnote 21] Notice, at p. 78.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0178 Comment Excerpt Number 25.

### 3.5 Criteria for Removing GCCS

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 48

**Sort Order:** 0

**Comment Excerpt:**

Despite triggering GCCS control requirements under the NSPS/EG, there are still some landfills that do not have enough LFG to run their GCCSs continuously and cannot currently qualify for GCCS removal. To address this issue, we request that provisions be added to the rule to allow less than continuous operation under certain circumstances.

**Comment Response:**

The final rule has no provisions for less than continuous operations. The GCCS must operate because the landfill continuously generates gas. The final rule, however, does contain more flexible criteria for removing the GCCS. The EPA has revised its approach for the final rules to account for declining gas flows in that these landfills may demonstrate that their gas is not sufficient to support a GCCS for the prescribed period. For a discussion of the criteria for removing a GCCS, see Section VI.C of the 2016 NSPS Final Preamble and see Section VI.C.2 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 53

**Sort Order:** 100

**Comment Excerpt:**

Closed and non-producing areas with declining landfill gas production may not generate enough LFG to be continuously operated. When landfill gas production decreases significantly, even small amounts of vacuum exerted can draw air into the waste mass causing oxygen exceedances. This situation can be remedied by operating the wells intermittently to collect the limited LFG available. However, NSPS requires that a vacuum be maintained at all LFG extraction wells. Therefore, to "balance" the well and meet NSPS requirements, the vacuum is often reduced to extremely low levels, assuming the wellhead valve even allows this fine of an adjustment. At this point, changes in atmospheric pressure can be significant enough to result in positive well pressure, which is considered a deviation from the NSPS. The requirements place landfill owners in the untenable position of having either oxygen or pressure exceedances when neither of these fulfill the BSER of a "well operated" GCCS. Worse, regulators could require an expansion to an area that would actually be best served by intermittent well operation because system expansion is the rule's default corrective action for wellhead exceedances.

Neither existing Subpart WWW nor proposed Subpart XXX includes a step-down process for closed areas experiencing declining gas flows on the downside of the gas generation curve. The requirements for GCCS components are for them to be either operating or decommissioned. As EPA is aware, landfills age through the course of its life, landfills experience a rise LFG production, stable LFG production, and declining LFG production. Both the upward and downward part of the cycle requires flexibility in operations.

Proposed Subpart XXX provisions offer limited flexibility, employ somewhat confusing definitions, and are therefore often subject to varying interpretations by regulators.

**Comment Response:**

The EPA has revised its approach to addressing declining gas flows. The EPA is providing this flexibility to address areas of declining gas flows due to the age of the waste, arid climate, or low

organic content. Per the final actions, landfill owners or operators can demonstrate that the GCCS will be unable to operate for 15 years due to declining gas flows.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 82

**Sort Order:** 101

**Comment Excerpt:**

NSPS requires that a vacuum be maintained at all LFG extraction wells while the LFG collection and control system (GCCS) is in operation. However, for closed areas with declining flow the quality of the LFG extracted while under a constant vacuum can be detrimentally affected due to certain site-specific conditions. Despite continued efforts to minimize the air intrusion by reducing the applied vacuum at these wells, the extracted LFG can continue to exhibit poor gas composition. Continued efforts to improve gas composition by further closing of the wellhead control valve eventually results in extremely low vacuums being applied to the well. Under these conditions, the natural changes in the atmospheric pressure can be significant enough to result in a positive well pressure exceedance. Thus, as a result, a lower threshold could place landfill owners at greater risk for an oxygen exceedance or a pressure exceedance as they work to extract sufficient gas despite declining flows. Such exceedances could eventually result in requiring the landfill to decommission the well or request an alternative plan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 53, under comment code 3e.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 33

**Sort Order:** 200

**Comment Excerpt:**

EPA has a well-developed system for the implementation of NSPS at new facilities and incrementally into new areas of a facility. There is not a well-developed system for the removal or scaling-down of operation from closed or low producing areas of the landfill. This is particularly important if EPA elects not to remove the oxygen and temperature wellhead standards as we have suggested in this letter. Old areas can be difficult to operate due to many reasons including lack of sufficient landfill gas flow. EPA has noted in the preamble that the current trend is toward large regional landfills. This results in facilities with long operating life and correspondingly newer areas (with high LFG production) and old/closed areas (with low LFG production). DSW A has experienced this at some of our facilities. LFG wells in old waste

can be very sensitive to vacuum adjustments, easily exceeding the 5% oxygen standard not due to excessive air infiltration, but rather due to low LFG volume. DSW A requests that EPA develop a step-down procedure that can apply to whole facilities or individual areas based on SEM performance testing rather than continuing with existing requirements.

**Comment Response:**

The EPA is finalizing criteria for capping, removing, or decommissioning the GCCS that are as follows: (1) the landfill is closed, (2) the GCCS has been in operation for 15 years or the landfill owner or operator demonstrates that the GCCS will be unable to operate for 15 years due to declining gas flow, and (3) three successive tests for NMOC emissions are below the NMOC emission threshold of 34 Mg/yr. The EPA is not finalizing an alternative set of criteria for capping, removing, or decommissioning a GCCS that includes a SEM demonstration. See Section VI.C of the 2016 NSPS Final Preamble.

The EPA is also finalizing corrective action requirements for wellhead monitoring that allow a landfill owner or operator to identify the most appropriate means of correcting the exceedance based on a root cause analysis. See Section VI.A.2 of the NSPS Final Preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 84

**Sort Order:** 201

**Comment Excerpt:**

As for closed areas or non-producing areas located with active landfill areas, we recommend the following:

Include a step-down process for non-producing areas in order to address declining flows. Wells in this area should be permitted to operate intermittently and not be subject to wellhead standards. By allowing the wells to operate intermittently, rather than fully decommissioning the wells, the declining flows can still be managed and emissions minimized.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 33, under comment code 3e.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 23

**Sort Order:** 202

**Comment Excerpt:**

USEPA acknowledges now that systems will be installed incrementally, but do not have provisions for incremental removal as the landfill gas production slows down over time. The agency added the ability to estimate NMOC emissions from each physically separated area. *We like the addition of the incremental installation of the GCCS and would like to see an allowance for removal of the GCCS on an incremental basis as the landfill gas production decreases over time. A landfill could have older portions which are no longer producing landfill gas but are physical connected. Similarly, the concern with the "physical separated" language is that it limits facilities that may have older areas and newer areas of the landfill that would be better addressed with different levels of GCCS operation. A facility should be able to use the same logic with sections of the same landfill which are not physically separated units if they are able to conservatively estimate the flow and the NMOC from that area.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 33, under comment code 3e.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 21

**Sort Order:** 203

**Comment Excerpt:**

We support EPA's proposal for the use of SEM to determine when a GCCS can be closed. We also request that as flows decline, individual wells could also be removed from the GCCS. EPA recognizes that production of LFG naturally declines over time as an area stops accepting waste and the amount of degradable organic content declines.

Instead of shutting down the GCCS completely, landfills could begin to close select wells. SEM would verify that emissions remain controlled. If exceedances are experienced, the wells could be reopened. However, as landfill gas generation continues to decline, more wells would be removed from the GCCS and verified utilizing SEM. This slow decommissioning process is similar to the process of the slow decline of landfill gas generation. We recommend that the proposed rules be revised to allow both options for GCCS removal: complete shutdown when warranted, or a process of decommissioning, and ultimate abandonment, of wells over time.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 33, under comment code 3e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 61

**Sort Order:** 204

**Comment Excerpt:**

We support EPA's proposal for the use of SEM to determine when the GCCS can be removed. EPA recognizes many landfills or landfill areas are closed or have inactive areas that do not produce as much LFG. The production of LFG naturally declines over time as an area stops accepting waste and the amount of degradable organic content declines.

Instead of shutting down the GCCS completely, landfills could begin to close select wells. SEM would verify that emissions are controlled. If exceedances were experienced, the wells could be reopened. However, as landfill gas generation continues to decline, more wells would be locked out and verified utilizing SEM. This slow decommissioning process is similar to the process of the slow decline of landfill gas generation. We recommend that the rule allow both options for GCCS removal, complete shutdown when warranted or a process of decommissioning, and ultimate abandonment, over time. Our comments on the Tier 4 would apply to SEM for removal.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 33, under comment code 3e.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 21

**Sort Order:** 300

**Comment Excerpt:**

EPA should recognize that many landfills are partially or fully closed, and these sites need flexibility to adjust their control systems to compensate for diminished methane generation and appropriately "exit" the regulatory regime. The current regulations do not effectively provide that needed flexibility.

**Comment Response:**

In order to provide flexibility for closed or closing landfills, the EPA is finalizing a subcategory of closed landfills in the final Emission Guidelines for landfills that close 13 months after date of publication in the Federal Register. See Section VI.C.1 of the 2016 Emission Guidelines Final Preamble. In addition, to address areas of declining gas flows, the EPA is finalizing the option for closed landfill owners or operators to demonstrate that the GCCS will be unable to operate



for 15 years. See Section VI.C of the 2016 NSPS Final Preamble. See Section VI.C.2 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 6

**Sort Order:** 301

**Comment Excerpt:**

EPA should recognize that many landfills are partially or fully closed, and these sites need flexibility to adjust their control systems to compensate for diminished methane generation and appropriately "exit" the regulatory regime. The current regulations do not effectively provide that needed flexibility.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087.1, excerpt number 21, under comment code 3e.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 8

**Sort Order:** 302

**Comment Excerpt:**

We also are concerned about a clear path from exiting the regulatory requirements, once a site no longer exceeds the NMOC threshold.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087.1, excerpt number 21, under comment code 3e.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 37

**Sort Order:** 400

**Comment Excerpt:**

Because operational flexibility is critical in areas with declining flow, Republic recommends EPA consider several alternative approaches for closed areas in light of the new lower threshold. First, EPA should consider eliminating the oxygen and temperature wellhead operating standards because air infiltration, which those standards are intended to address, is not an issue in closed areas. Second, to address the negative pressure issue, landfills should be allowed to “decommission” a well by temporarily shutting off the well until gas flow increases, instead of permanently abandoning it. Landfills could then use periodic monitoring to determine when gas concentrations may be sufficient to maintain negative pressure and reopen the well as appropriate. In addition, surface monitoring and cover integrity checks would continue to ensure optimal performance of the GCCS. To streamline the process, EPA should also clarify that agency approval for a temporary decommissioning is unnecessary because that approach is currently allowed in the existing Subpart WWW rules.

**Comment Response:**

The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 EG Final Preamble. The EPA has revised its approach for the final rules to account for declining gas flows in that these landfills may demonstrate that their gas is not sufficient to support a GCCS for the prescribed period.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 54

**Sort Order:** 401

**Comment Excerpt:**

The rule does not provide operational flexibility to shut-off a well, or to temporarily lock out the vacuum, while declining gas flows preclude the well from meeting the wellhead standards. With an operational shut-off, if or when gas flows increase as determined from periodic well monitoring and surface monitoring scans, the well could easily be brought back on-line.

It can be very costly to meet the existing operational standards if a closed area with declining flow is expected to perform the same as an active landfill area with increasing gas flow.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 37, under comment code 3e.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 81

**Sort Order:** 402

**Comment Excerpt:**

EPA should reconsider the criteria and timing of when a GCCS can be capped or removed. At the same time EPA could realize additional environmental benefits by clarifying that the GCCS does not have to be capped and removed when the criteria are met. Instead landfill owners should be allowed to operate the GCCS but no longer be required to comply with the NSPS requirements. Some landfills may still want to intermittently operate the gas system but the rule language could be misconstrued to not allow continued operation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 37, under comment code 3e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 111

**Sort Order:** 403

**Comment Excerpt:**

WM recommends that the Agency consider allowing landfill owners/operators to deactivate wells by shutting off the vacuum without prior approval, while still requiring approval for "physical decommissioning" ("abandoning") a well. By the term "deactivation," we are referring to a temporary measure of shutting off the vacuum to the well, while keeping the well connected to the gas collection system for reactivation if needed. Should the landfill owner/operator need to permanently decommission or "abandon" the well from the system, that would constitute a design change requiring approval by the Administrator or delegated state authority.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 37, under comment code 3e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 113

**Sort Order:** 404

**Comment Excerpt:**

Permanently decommissioning an active gas extraction well may also be an option. However, it is operationally a last resort option as it results in permanent removal of the well. Circumstances

may change that would warrant reactivating the well at some future point in time (e.g., surface emissions monitoring indicate collection is needed).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 37, under comment code 3e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 116

**Sort Order:** 405

**Comment Excerpt:**

The ARLI determination [see Attachment 5 to DCN EPA-HQ-OAR-2003-0215-0100.1] further stated that the landfill owner/operator may permanently decommission ("abandon") one or more wells from the system; however this would constitute a design change requiring approval by the Administrator or delegated state authority. WM recommends that EPA formally adopt this approach in Subpart XXX and the EG in order to provide operational flexibility for deactivating and abandoning wells.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 37, under comment code 3e. See Section VI.C.2 of the 2016 EG Final Preamble.

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**Commenter Name:** Comment submitted by Charlie Sedlock, Director

**Commenter Affiliation:** Hamm, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0084.1

**Comment Excerpt Number:** 8

**Sort Order:** 406

**Comment Excerpt:**

We believe that EPA does not provide adequate consideration for landfills nearing the end of the gas production curve. There should be some latitude for wells that do not consistently produce to be closed temporarily and opened as the site conditions dictate.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 37, under comment code 3e.

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**Commenter Name:** Comment submitted by Dave Heitz  
**Commenter Affiliation:** Geosyntec Consultants  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0102.1  
**Comment Excerpt Number:** 4  
**Sort Order:** 407

**Comment Excerpt:**

EPA should [provide] additional wellfield monitoring flexibility for closed and non-producing areas.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 37, under comment code 3e.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 85  
**Sort Order:** 500

**Comment Excerpt:**

The difficulties associated with operating a landfill gas collection and control system on low gas flow also suggest that EPA should reconsider its one-size-fits-all requirement that such systems must operate for at least 15 years. The only reason continued operation of those systems is appropriate for closed landfills at all is to ensure emissions are minimized until the generation of landfill gas slows enough to warrant a discontinuation of control efforts, regardless of how long the system has actually been in operation. The 15-year requirement has also led to confusion and inconsistent interpretations among some states due to the lack of clarity regarding when the 15-year clock should start. Republic asks EPA to reconsider the need for an arbitrary 15-year requirement for continued operation of controls on a closed landfill. In the alternative, Republic asks EPA to at least clarify that requirement by providing clear guidance regarding when the 15-year clock should begin to run.

**Comment Response:**

The EPA has revised its approach to the 15-year requirement. To accommodate landfills with declining gas flows, the landfill owner or operator can demonstrate that the GCCS will be unable to operate for 15 years due to declining gas flows.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)  
**Commenter Affiliation:** Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 83

**Sort Order:** 501

**Comment Excerpt:**

Many closed landfills installed GCCS prior to the NSPS, EG and Federal Plan requirements. The current rule language states that the minimum 15-year duration for gas system operations begins with the date of the initial performance test. For sites subject to the NSPS, initial performance tests of the control system likely occurred between December 1998 and June 1999. However, for the sites subject to either state/local EG rules or the Federal Plan, the initial performance test dates occurred as late as April 2003. Closed landfills are typically subject to the state EG or Federal Plan requirements and not the NSPS requirements. Therefore, at many closed sites the useful life of the equipment (i.e., 15 years) has already been surpassed, but they may not have 15 years of NSPS operation of the GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 86

**Sort Order:** 502

**Comment Excerpt:**

A landfill owner/operator should be able to remove NSPS/EG control requirements based on an operational period of 15-years from the initial well installation date for the affected landfill unit or area, not the date of NSPS or EG performance test. Time with a GCCS in operation under state/local regulatory requirements, directive, permits, etc., should be counted against a 15-year minimum on a per unit or area basis.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter—DCN-EPA-HQ-OAR-2003-0215-0196, page 13. This response is for both of these comments. See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 56

**Sort Order:** 503

**Comment Excerpt:**

As for closed areas or non-producing areas located with active landfill areas, we recommend the following:

Allow closed areas to remove controls 15-years from the initial well installation date for the affected landfill or area, not the date of the performance test. This is similar to the language found in Ohio's EG program (OAC 3745-76-07(B)(2)(e)). EPA approved OEPA's EG program on October 6, 1998. This recognizes that LFG may no longer be produced in these older areas.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 101

**Sort Order:** 504

**Comment Excerpt:**

In 2009, WM was required to install a GCCS at a site based on modeling. After making the million-dollar investment, gas flows steadily declined to about 100 scfm - an amount barely able to sustain a flare without adding supplemental fossil fuel. Supplemental fuel costs to feed propane to the flare to keep it operating increased by fifty-fold. Since 2012, the flare could not sustain operation without the supplemental propane. This problem is common, and presents significant compliance challenges and costs for a facility, particularly when the facility may not be able to operate the system optimally and yet cannot petition to remove the GCCS for at least 15 years from the date of the initial performance test. The issues associated with low flow and poor quality LFG at the outset of a landfill's lifespan are repeated at the end of the landfill's lifespan when LFG generation begins to decline. The NSPS presents few options to address low flow and gas quality conditions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 91

**Sort Order:** 505

**Comment Excerpt:**

For a closed MSW landfill, not co-located with other landfill units (active or closed), the closed MSW landfill should be able to remove NSPS control requirements once the site demonstrates that it emits less than the 50 Mg/year emissions threshold based on actual LFG flow and site-specific NMOC concentration in accordance with §60.764(b) regardless of the age of the GCCS or how long it has operated.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter—DCN-EPA-HQ-OAR-2003-0215-0196, page 13. This response is for both of these comments. See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e.

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**Commenter Name:** Matt Lamb, Scientist, Smith Gardner, Inc.

**Commenter Affiliation:** Smith Gardner, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0190

**Comment Excerpt Number:** 4

**Sort Order:** 506

**Comment Excerpt:**

The length of time a LFGCCS has been operating in a portion of a landfill is unrelated to the productivity of that area, and should be removed from the proposed rules. Of more relevance is the age of waste in the non-producing area. Some landfills consist of areas that have been inactive for decades. In such cases, active operations in new cells may trigger NSPS regulation, bringing the separate older areas under regulation as well. The LFGCCS is then installed at the same time across these areas of varying waste age. Currently, the rules may require, in these cases, that the LFGCCS be installed in areas that are non-producing from the first day of system operation.

To avoid this, S+G recommends that the length of time the LFGCCS has operated not be considered, and that the following criteria be used instead to determine with the LFGCCS may be removed:

- The landfill is closed, or is a closed portion of an active landfill; and
- Landfill surface emissions monitoring results in the area are under **500 ppmv** for **4 consecutive quarters**.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e regarding the 15-year GCCS operational criteria. See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e for the surface-emissions based approach for GCCS removal.



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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 22

**Sort Order:** 507

**Comment Excerpt:**

The proposed rule continues to include a 15-year requirement to operate a GCCS before it can be removed, unless it can be shown that the GCCS could not be operated for 15 years due to declining flow. However, no guidance or criteria are provided for how to demonstrate whether a GCCS could not be operated due to declining flow. Without such criteria, it is difficult for us to evaluate whether this provision would be useful. Further, declining flows are not the only reasons that gas production might be low; active areas of landfills in dry climates that recently reached the 5-year waste age criteria, and active areas with mixed MSW and inert waste would also have gas production that is much less than typical MSW areas.

This 15-year criteria is a concern because the GCCS in a closed or low-productive landfill area should be able to be shut down if the closed area meets all relevant criteria for emissions, whether that occurs in year 5, year 10, or year 15. We therefore request that the current 15-year requirement to operate a GCCS be removed, or additional criteria be provided explaining how an area would qualify for the declining flow exemption.

If EPA does not remove the 15-year requirement, we further suggest that EPA begin measuring the period from the date the GCCS was installed, rather than the date of the initial performance test. Many closed landfills installed GCCSs prior to the current NSPS/ EG requirements. The current rule language states that the minimum 15-year duration for gas system operations begin with the date of the initial performance test. For sites subject to the NSPS, initial performance tests likely occurred between December 1998 and June 1999. However, for sites subject to either state/local EG rules or the Federal Plan, initial performance tests may have occurred as late as April 2003. Closed landfills are typically subject to the state EG or Federal Plan requirements and not the NSPS requirements. Therefore, at many closed sites, the GCCS may have operated for more than 15 years, or even beyond the expected useful life of the equipment, but not operated for 15 years since the initial NSPS performance test. Therefore, we request that if a 15-year period continues to be used, it be measured from the GCCS installation date not the initial NSPS performance test.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste

Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 62

**Sort Order:** 508

**Comment Excerpt:**

The rule continues to include the arbitrary minimum 15-year GCCS operation requirement. Mandating a uniformly applicable 15-year operational period does not account for the variable site specific conditions that exist across the country. As a result, unnecessary costs, resources, and power are being consumed as a result of the requirement to operate for 15-years.

It is unclear why a closed or non-productive landfill or area could not remove its GCCS prior to year 15 if it met all relevant criteria for emissions. Fifteen years is not based on any technical or scientific information. In addition, the criteria for installing a GCCS is directly related to NMOC emissions threshold or Tier 4 results. Given that, the same criteria should apply for GCCS removal from NSPS requirements. Therefore, we request that the current 15-year requirement be removed.

Further, many closed landfills installed GCCS prior to the current NSPS/ EG requirements. The current rule language states that the minimum 15-year duration for gas system operations begins with the date of the initial performance test. For sites subject to the NSPS, initial performance tests of the control system likely occurred between December 1998 and June 1999. However, for sites subject to either state/local EG rules or the Federal Plan, the initial performance test dates occurred as late as April 2003. Closed landfills are typically subject to the state EG or Federal Plan requirements and not the NSPS requirements. Therefore, at many closed sites the useful life of the equipment (i.e., 15 years) has already been surpassed, but they may not have 15 years of NSPS/EG operation of the GCCS. Therefore, we request that the 15-year period not restart with the issuance of Subpart Cf and XXX.

In lieu of the 15-year operational criteria, EPA has added an allowance that 15 years does not have to be met if it can be shown that the GCCS could not be operated for 15 years due to declining flow. However, no guidance or criteria are provided for how to demonstrate a GCCS could not be operated due to declining flows. Without such criteria, it is difficult for us to evaluate whether this provision would be useful or workable.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e. See response in section VI.C of the NSPS preamble or section VI.C.2 of the Emission Guidelines preamble for a discussion related to how to demonstrate that a GCCS cannot operate for 15 years.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 46

**Sort Order:** 509

**Comment Excerpt:**

EPA should clarify the criteria for when GCCS may be capped or removed and eliminate the arbitrary 15-year rule.

Republic supports EPA's effort to clarify the criteria that must be met for a landfill to cap or remove a GCCS due to declining landfill gas flows. As landfills age, gas quality and flow drop, requiring landfill owners/operators to supplemental the landfill gas with increasing amounts of fossil fuel to maintain proper flare operation. However, given that some landfills may wish to continue operating their GCCS even after the criteria for cessation of operation have been met, Republic also appreciates EPA's recognition, in the context of the study conducted by Eastern Research Group, that landfills may "continue to operate the GCCS for safety and LFG migration as part of their 30-year post-closure care obligations under the Resource Conservation and Recovery Act (RCRA) regulations." *See* EPA-HQ-OAR-2014-0451-0084, at 5-6. Republic asks EPA to directly reconfirm that understanding—i.e., that landfills may continue to operate their GCCS after EPA's closure criteria have been met—in response to this comment.

EPA appears to have attempted to address our previous comments in its proposal by reconsidering its one-size-fits-all requirement that all GCCS must operate for at least 15 years and adding an exception to that requirement for GCCS that cannot be operated for 15 years due to declining gas flow. However, EPA's proposal offers no guidance or criteria regarding how landfills will be able to sufficiently demonstrate that a GCCS could not be operated for 15 years due to declining flows. Without further clarification, Republic is concerned that landfills may have difficulty qualifying for the exception and, as a result, it may not provide the relief that Republic has requested and that EPA has intended.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment [code 3e] regarding the 15-year operating criteria. See DCN EPA-HQ-OAR-2003-0215-0196, excerpt number 62, under comment code 3e for guidance on demonstrating declining gas flow.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 16

**Sort Order:** 510

**Comment Excerpt:****The 15 year criteria for equipment removal or capping is arbitrary and should be removed.**

The rule criteria for capping or removing a GCCS continues to include the arbitrary minimum 15-year requirement to operate a GCCS before a site can qualify to cap or remove the GCCS from NSPS requirements. Given that the other proposed criteria focus on NMOC and methane emissions, the 15-year criterion is irrelevant. A closed landfill should qualify to remove or cap its GCCS once it demonstrates the emissions are below applicability thresholds or actual methane emissions are maintained below 500 ppmv. In The EPA's Small Business Advocacy Review

Panel Final Report,<sup>10</sup> it appears the small business panel also agreed that the 15 year criteria was arbitrary and site specific emissions measurements would be more representative of when a site could remove the GCCS requirements. **The surface emissions criteria are the true drivers for determining when the GCCS may be removed from NSPS requirements just as they are for determining when a site installs a GCCS (using Tier 1-4 options).**

In lieu of the 15-year operational criteria, EPA has added an allowance that 15 years does not have to be met if it can be shown that the GCCS could not be operated for 15 years due to declining flow. Although EPA provides no guidance or criteria for how to demonstrate a GCCS could not be operated due to declining flows, a site could demonstrate declining flow when it is unable to operate the GCCS as designed if it must supplement with fossil fuel to sustain control device operations. Gas quality will reach a point when sustained control device operations are no longer feasible without the addition of fossil fuel (i.e., propane).

[Footnote 10] "The Panel agrees EPA should account for declining gas flow by allowing site-specific measurements as part of the removal criteria. Those changes should allow for consideration of declining gas flow independent of the current 15 year GCCS requirement." (Docket ID Number EPA-HQ-OAR-2014-0451-0139, page 12).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e regarding the 15-yr GCCS operating criteria. See DCN EPA-HQ-OAR-2003-0215-0196, excerpt number 62, under comment [code 3e] for guidance on demonstrating declining gas flow.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 47

**Sort Order:** 511

**Comment Excerpt:**

Republic also continues to oppose the 15-year GCCS operational requirement generally because EPA has provided no rational basis for it. Regardless of how long a GCCS system has actually been in operation, closed landfills should be able to discontinue operations based on site-specific emission levels that triggered the requirement to install GCCS in the first place. The 15-year requirement also causes confusion due to the lack of clarity regarding when the 15-year clock should begin to run, resulting in inconsistencies from state to state. For these reasons, Republic asks EPA to reconsider the need for an arbitrary 15-year requirement for continued operation of GCCS at a closed landfill.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 19

**Sort Order:** 600

**Comment Excerpt:**

The "Tier 4" method should also be used in determining when and if any portion of a GCCS could be removed or decommissioned. Under the current regulations once a GCCS is installed it cannot be removed from applicability under the NSPS/EG until after it has been in operation for 15-years and is able to document through a series of tests that the emission of NMOCs are below the threshold. To clarify, GCCS removal applies to the entire GCCS whereas GCCS decommissioning refers to removing, disconnecting, or shutting off portions, components, or areas of a GCCS. These terms are in reference to the regulatory applicability and not necessarily the physical removal or dismantling of components or equipment. In other words, a GCCS may be removed and/or decommissioned but remain in operation. For example, once a GCCS or a portion of a GCCS is deemed to no longer be required under current or proposed regulations it will be "removed or decommissioned" from the applicable rule requirements but may still remain in operation for other reasons. TXSW ANA requests that these terms be clearly defined in the proposed NSPS and the EG.

TXSWANA further requests that the current 15-year requirement to operate a GCCS be removed. Mandating a uniformly applicable 15-year operational period does not account for the variable site specific conditions that exist across the country. As a result, unnecessary costs, resources, and power are being consumed with no established correlation with the arbitrary requirement to operate for 15-years. TXSWANA proposes that a Tier 2 initially be performed on the closed landfill or closed area using actual flow rates. Should the Tier 2 test indicate that the NMOC rate is below the NMOC threshold, the GCCS or a portion of the GCCS is then turned off and allowed to remain off for 30-days. Following this 30-day period, an SEM will be performed. If no SEM exceedances are found or if an exceedance is remediated (1) without using the GCCS and (2) within the timelines and consistent with there-monitoring requirements in the current rule, then the GCCS can remain off. This portion of the landfill (or the entire landfill) will then be retested using SEM in each of the next three quarters. If no SEM exceedances are detected or, even if detected, the exceedance is able to be remediated without the use of a GCCS within the timelines and consistent with the re-monitoring requirements currently set out in the rule for the following next three quarters, the GCCS may remain off. The closed area will then be tested one year following the last SEM. If during that follow up year the SEM shows that the closed landfill or closed portion of the landfill continues to have no exceedances or no exceedances that cannot be remediated without the use of the GCCS, the GCCS or portion of the GCCS may be removed from being subject to regulation under the NSPS/EG rules.

If however, during the quarterly SEM or the one year follow up SEM, there is an exceedance which cannot be remediated without use of the GCCS, the GCCS will be placed back into operation. The site may start the removal or decommissioning process over at some future date.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e regarding the 15-year GCCS operational criteria.

The EPA is finalizing the criteria for removing or decommissioning a GCCS, but the final criteria do not include a provision for removing a GCCS based on surface emissions monitoring. See Section VI.C of the 2016 NSPS Final Preamble. See Section VI.C.2 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 69

**Sort Order:** 601

**Comment Excerpt:**

The industry further requests that the current 15-year requirement to operate a GCCS be removed. Mandating a uniformly applicable 15-year operational period does not account for the variable site specific conditions that exist across the country. As a result, unnecessary costs, resources, and power are being consumed as a result of the requirement to operate for 15-years. We propose that

a Tier 2 be performed using actual flow rates. Should the Tier 2 test indicate that the NMOC rate is below the threshold; the GCCS or portion of the GCCS would then be turned off and allowed to remain off for 30 days. Following this 30-day period, a SEM will be performed. If no SEM exceedances are found or if any exceedance is remediated first, without using the GCCS; and second, within timelines and consistent with and re-monitoring requirements in the current rule, then GCCS will remain off. This portion of the landfill (or entire landfill) will then be retested using SEM for the next three quarters. If no SEM exceedance is detected, or if detected but able to be remediated without the use of the GCCS within the timelines and consistent with and re-monitoring requirements in the current rule, the GCCS will remain off and will be tested after one year following the last SEM. If the closed landfill or closed portion of the landfill continues to have no exceedance or no exceedance that cannot be remediated without the use of the GCCS, the GCCS or portion of the GCCS may be removed from being subject to regulations under the NSPS/EG rules.

If however, during the quarterly SEM or the one year follow up SEM, there is an exceedance which cannot be remediated without use of the GCCS, the GCCS will be placed back into operation. The site may start the removal process or decommissioning process over at some future date.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e for the surface-emissions based approach for GCCS removal. See response to DCN

EPA-HQ-OAR-2003-0215-0099.1, excerpt number 85, under comment code 3e regarding the 15-year GCCS operational criteria.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 68

**Sort Order:** 602

**Comment Excerpt:**

Once a closed site or closed portion of a landfill has triggered the requirement to install and operate a GCCS, the use of a "Tier 4" method should also be used in determining when and if any portion of a GCCS could be removed or decommissioned. Under the current regulations, once a GCCS is installed it cannot be removed from applicability under the NSPS/EG until after it has been in operation for 15-years and able to document through a series of tests that the NMOCs are below the threshold. Similar to using SEM for determining when a GCCS needs to be installed, we propose that SEM be employed on the back-end for GCCS removal/decommissioning. To clarify, GCCS removal applies to the entire GCCS, whereas GCCS decommissioning refers to removing, disconnecting, or shutting off portions, components, or areas of a GCCS. The use of these terms is in reference to the regulatory applicability and not necessarily the physical removal or dismantling of components or equipment. In other words, a GCCS may be removed and/or decommissioned but remain in operation. For example, once a GCCS or a portion of a GCCS is deemed to no longer be required under current or proposed regulations it will be "removed or decommissioned" from the applicable rule requirements but may still remain in operation for other reasons. As such, the industry requests that these terms be clearly defined in the proposed NSPS and the EG.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 85

**Sort Order:** 603

**Comment Excerpt:**

As for closed areas or non-producing areas located with active landfill areas, we recommend the following:

To verify emissions are still controlled, an area will still be subject to cover integrity inspections and quarterly SEM. If SEM exceedances are not detected for three consecutive quarters, then the site could defer to annual SEM as allowed in 40 CFR §60.766(f) for the closed or non-producing areas. If exceedance(s) are detected (above 500 ppmv), then apply corrective actions in accordance with 40 CFR §60.765(c)(4). The site would re-initiate quarterly monitoring until three consecutive quarterly events demonstrate no exceedances of 500 ppmv standard. The site would then defer to annual monitoring as allowed in 40 CFR 60.766(f). Monthly cover integrity inspections and SEM would cease once the 1% NMOC threshold is achieved as determined in accordance with 40 CFR 60.764(b).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 106

**Sort Order:** 604

**Comment Excerpt:**

Closed portions of an active landfill may also be reviewed using the SEM approach; however, if no SEM exceedances are detected, those closed areas will no longer be required to be tested with any subsequent "Tier 4" SEM events. The use of SEMS would continue to demonstrate proper environmental performance as would monthly cover integrity checks.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 105

**Sort Order:** 605

**Comment Excerpt:**

WM recommends that EPA allow the use of SEM to confirm when a closed landfill or closed area of a landfill can remove all or a portion of the GCCS. Subpart WWW and the EG now employ the mandate for a minimum of 15 years of operation, and a modeling demonstration or calculation to determine whether GCCS equipment may be removed. As noted above, the model over predicts the generation of landfill gas and under predicts the level of methane oxidation that occurs in final cover. The addition of a SEM criterion would allow landfill owner/operators



flexibility to decommission all or a portion of a GCCS in closed areas that are not producing landfill gas. The surface emission scan would be a far more reliable indicator of methane decline than modeling.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 87

**Sort Order:** 606

**Comment Excerpt:**

There are several potential solutions to address declining gas flows and gas quality at closed landfills or closed landfill units or areas for consideration, which should be clarified in the rule, as follows:

The allowance for completion of annual SEM, instead of quarterly, should apply to closed areas of active landfills, not limited to landfills that are completely closed.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 15

**Sort Order:** 607

**Comment Excerpt:**

We also support EPA's proposal for the use of Tier 4 SEM to determine when all or a portion of the GCCS can be capped or removed. The EPA recognizes that many landfills or landfill areas are closed or have inactive areas that do not produce significant amounts of LFG. The production of LFG naturally declines over time as an area stops accepting waste and the amount of degradable organic content declines. Once a landfill demonstrates that surface emissions are below 500 ppm over four consecutive quarters of measurement, the equipment removal requirements would be met.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 17

**Sort Order:** 608

**Comment Excerpt:**

We believe it is important to clarify that in many cases the GCCS will not be physically removed where sites meet the equipment removal provisions; they would only be removed from meeting the NSPS or EG requirements. These closed sites will continue to operate the GCCS as dictated by site conditions and other regulatory requirements. EPA correctly recognizes that while the proposed rule allows for GCCS removal based on a surface emission-based approach, in practice a GCCS is rarely removed. Landfills would continue to operate the GCCS for safety and LFG migration as part of their 30-year post-closure care obligations under the Resource Conservation and Recovery Act (RCRA) regulations. See Docket ID Number EPA-HQ-OAR-2014-0451-0084. Given in practice a GCCS is rarely physically removed under the equipment removal provisions, Tier 4 should be conducted under typical GCCS operating conditions.

In docket ID number EPA-HQ-OAR-2014-0451-0107, EPA clarifies that an owner/operator should conduct Tier 4 under typical operating conditions. If typical operating conditions include GCCS operations, then the site would perform Tier 4 with the GCCS operating. According to EPA, the requirement is to keep surface emissions below 500 ppm. If the owner or operator has surface emissions above 500 ppm, whether they are preparing to install or preparing to remove a GCCS for the purposes of the NSPS/Emission Guidelines, then the owner or operator must either install, or may not remove the GCCS. So, the requirement to keep surface emissions below 500 ppm is with or without the GCCS operating. EPA also clarifies that the proposed Tier 4 compliance option had no bearing on its determination of emissions reductions resulting from the proposed 34 Mg/year threshold. EPA states that neither testing and monitoring costs, control costs, nor emission reductions factor in the Tier 4 approach. All of these items are estimated using modeled LFG rates and NMOC concentrations to determine the timing of GCCS installation and removal. None of them factor in site-specific surface concentrations. *See* EPA-HQ-OAR-2014-0451-0107 at p.337.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment [code 3e]. As discussed in the preambles to the final NSPS (section VI.C) and Emission Guidelines (section VI.C.2), the EPA has not decided to not finalize the alternative option to use Tier 4 to determine that a landfill can remove the GCCS.

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**Commenter Name:** Peter Zalzal  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0204  
**Comment Excerpt Number:** 16  
**Sort Order:** 609

**Comment Excerpt:**

Closed Landfills. EPA requests comment on allowing Tier 4, along with other factors, to accelerate removal of GCCS at closed landfills or closed areas of open landfills. Our recommendations on methane concentrations and rigorous monitoring apply equally at closed landfills. In addition, we recommend that EPA exclude closed areas of open landfills from this demonstration, as these areas are difficult to define and gas is capable of migrating between different areas in landfills. Finally, we urge EPA to ensure any area allowed to remove GCCS has already installed final cover—as installation of final cover can dramatically reduce methane emissions.<sup>60</sup>

[Footnote 60] 80 Fed. Reg. at 52,115; *see also* EDF Landfill Comments at 7.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Jeffrey Vandebusch  
**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0145  
**Comment Excerpt Number:** 10  
**Sort Order:** 610

**Comment Excerpt:**

Foth and the BOW Group support the proposal to identify alternative criteria for determining when it is appropriate to shut down a GCCS in low LFG producing areas of landfills. Utilizing SEM demonstration would be an acceptable alternative to determine when GCCS can be shut down in low LFG producing areas.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch  
**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0156  
**Comment Excerpt Number:** 12  
**Sort Order:** 611

**Comment Excerpt:**

Georgia EPD agrees in principal to the idea that inactive areas of the landfill should be allowed to close, and supports the monitoring in the proposal to ensure that those areas are indeed inactive.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 48

**Sort Order:** 612

**Comment Excerpt:**

EPA should focus on the proposed criteria using the SEM procedure. Republic supports the use of SEM to determine when a GCCS can be removed because of the flexibility that it affords. Republic also supports the use of SEM procedures determining when to decommission wells. Additional comments on SEM procedures are provided below in our comments on EPA's proposed Tier 4 procedure.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 49

**Sort Order:** 613

**Comment Excerpt:**

**Gas collection systems should be maintained for longer instead of shorter periods.** We strongly oppose reducing the time period during which landfill owners must maintain gas collection systems after the landfill is closed. Longer rather than shorter maintenance and post-closure gas collection periods and other damage and risk avoidance measures should be implemented because many landfill long-term liabilities do not become manifest early on. Under Subtitle D of the Resource Conservation and Recovery Act ("RCRA"), after the landfill closes and a final or alternative cover is installed, the owner is required to maintain the site for the first 30 years of the post-closure period,<sup>55</sup> during which time limited financial assurances are required.<sup>56</sup>

Under air regulations for landfills promulgated in 1996, air modeling, undertaken 15 years after landfill closure, must demonstrate that emissions of NMOCs are less than 50 metric tons per year before the gas systems can be abandoned. The NMOC standard is used as a surrogate for final site stability, i.e. when decomposition has consumed all of the available organic material and gas generation has largely ended.

EPA's 1996 rule-making support documents indicated that the average number of years before gas collection systems could be removed was 16 years, though EPA determined the range to be 15 to 85 years; generally, due to their sheer mass and the workings of the decay model, the larger mega-landfills of today fall within the longer end of the range.<sup>58</sup> Under these circumstances, EPA seeks comments on whether gas collection systems can be removed earlier based on examining reductions in measured actual surface emissions.

We oppose reliance on air quality testing for this purpose for a number of reasons. First, as noted later, the surface or "sniff" air quality test is taken at 100 foot intervals, which is too far apart to detect localized emissions in high fluxes in sites as large as a several hundred acres. Second, field tests demonstrate that when the landfill is closed and covered, much of the original organic discards remain in the landfill undecomposed. Because landfills are highly compacted and heterogeneous, infiltrating runoff courses through narrow channels, and these "[c]hanneling effects mean that biodegradation of landfilled waste may occur preferentially along wetted channels where flow, nutrient transport and waste product removal is intensive while large pockets of waste remain relatively dry."<sup>59</sup> This explains why, in controlled tests by Zeiss, moisture reached only 28% of the decomposables in the landfill. In other words, the decay process is not complete and gas collection systems should stay in place.

The fact that Zeiss's study was conducted in 1992 does not affect its validity. Since Zeiss' study, modern landfills have increased densities, with some reaching an average over 1,500 lbs./cu.yd by using heavier compactors with larger and more heavily studded wheels making more passes, 60 by piling trash to greater depths, by recirculating leachate that increases compressive forces from wetting, and by delaying installation of the final cover to provide more time for settlement before the site is sealed. Substantially higher densities today translate into significantly more restrictive preferred paths of flow, with more material untouched by critical moisture than found by Zeiss in 1992.

Notably, after a dormancy period during the middle period of a landfill's life when the site is covered and maintained, there will later be a second wave of gas generation after the site closes. This is because maintenance eventually ends, the cover deteriorates, precipitation reenters the waste mass and, because so much of the original organic matter still remains, decomposition will recommence.

Shortening the time to retire the gas collection systems via air measurements at a time when the site is *temporarily* dormant is ill conceived. Measurements at the times proposed would be lower not because the site has finally stabilized but because the surface emissions are temporarily are at a low point.

Similarly, prematurely ending gas well maintenance will insure sub-operational gas ollection to attempt to capture the second wave of gas generation when the covers inevitably degrade shortly after maintenance ends. Low surface emissions during the limited dormancy phase only reflect the quiet before the storm.

[Footnotes]

<sup>55</sup> 40 C.F.R. 258.61(a).

<sup>56</sup> 40 CFR 258.71.

<sup>58</sup> U.S. Environmental Protection Agency, *Air Emissions from Municipal Solid Waste Landfills* (1996), at 3-16 and 3-17, Tables 3-3 and 3-4, available at <http://www.epa.gov/ttn/atw/landfill/bidfl.pdf>.

<sup>59</sup> Zeiss, Chris et al., *Moisture Flow Through Municipal Solid Waste: Patterns and Characteristics*, 22 J. Env. Systems (1992-93) at 228 (attached).

<sup>60</sup> See O'Malley, Penelope, *Density, Density, Density*, MSW Management (July/August 2006) (attached).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 35

**Sort Order:** 614

**Comment Excerpt:**

We also oppose the substitution of air quality testing and monitoring in lieu of retaining functional gas collection systems throughout a landfill's lifetime or to shorten or delete other post-closure care requirements (except, to some extent, for new landfills that do not accept organic materials).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment code 3e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 27

**Sort Order:** 615

**Comment Excerpt:**

Some additional definitions should be added to the rule. In the industry, decommissioning a well is used to denote the taking of a well off-line temporarily to address operational or maintenance issues. As noted, decommissioned wells should continue to be monitored monthly to determine whether they can be brought back on-line; however, during this time, they should not be subject to wellhead standards. Further, decommissioning should not be considered a design change requiring a revision to the GCCS Design Plan. Decommissioning a well should not require agency approval, however, they should be included in the semi-annual NSPS/EG compliance reports. We request that EPA add a similar definition of well decommissioning to the rule.

Well abandonment is used in the industry when a well is taken off-line permanently. The well is disconnected from the vacuum but may or may not be physically removed or drilled out and capped, depending on access or site conditions. Once abandoned, the well would not be part of the NSPS/EG compliance system. Past records would be kept for the required timeframe. As long as SEM requirements can be met in the area of the abandoned well, the abandonment should not be considered a design change requiring a revision to the GCCS Design Plan. Abandoned wells will be listed in the next semi-annual NSPS/EG compliance report and then taken off of the site's GCCS map. We request that EPA add a similar definition of well abandonment to the rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 19, under comment [code 3e] for definitions of decommissioning. The EPA is not creating a definition of well abandonment in these actions.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 23

**Comment Excerpt:**

EPA's proposal to allow for actual gas flows to be used in excluding areas of collection currently only includes "*nonproductive physically separated (i.e., separately lined) closed areas.*" EPA "*considers areas to be physically separated if they have separate liners and gas cannot migrate between the separate areas.*" This definition would limit the use of the criteria to only those closed areas that are completely separate "hills," and represents only a small fraction of the closed areas that require flexibility for declining flows. The rule should be revised to apply to any closed area, not just physically separate ones. Similarly, the "equipment removal" provisions should be expanded to allow for removal from closed areas, not just closed landfills.

As landfills become larger regional facilities, it will become more common for areas to be certified closed for long periods of time prior to closure of the entire facility. GCCS designs can be configured to allow for isolation of specific areas, so actual flow and/or NMOC generations from closed areas that are not physically separated can be measured. EPA should allow the provisions for capping or removing the GCCS to be applied to all closed areas (provided they meet the appropriate criteria).

Gas will naturally move from areas of high pressure to areas of low pressure. It is therefore unlikely that gas would migrate from an unclosed area that is under vacuum, toward a capped area that is under reduced vacuum or positive pressure. Gas would instead migrate from the closed area toward the unclosed area, into the GCCS in the unclosed area. The closed area would be clearly delineated in the field to document the area not subject to NSPS operating standards, and SEM would continue to the edges of this area, allowing for detection of any migrating gas. In the event of an exceedance, the owner/operator would then be tasked with alleviating the exceedance, either by better cover at the edges of the closed areas; increased collection within the closed area; increased collection in the nearby uncapped area; or installation of additional collectors in the vicinity of the exceedance.

Therefore, it should make no difference whether an area is physically separated as to whether an area is a candidate for removing a GCCS. For these reasons, we request that EPA redefine closed areas as any closed area that can be adequately identified and separately tracked from other areas of the site.

**Comment Response:**

See response DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 64, under comment code 3f.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 35

**Sort Order:** 701

**Comment Excerpt:**

Republic appreciates EPA's effort to address the operational concerns associated with operating a GCCS in areas where there is declining landfill gas flow. However, we request EPA to broaden the scope to address more than just physically separated closed areas. As we have identified in our comments to the September 8, 2006 proposed amendments (71 Fed. Reg. 53277) and additional supplemental information, the proposed rule needs to also consider nonproducing closed areas located in active landfills that are not physically separated. We believe that additional flexibility is warranted to address these issues.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 23, under comment code 3e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196



**Comment Excerpt Number:** 64

**Sort Order:** 702

**Comment Excerpt:**

With this rulemaking, it appears that EPA is defining closed areas as those physically separate, without shared liner, and without any communication or movement of LFG between the areas. This definition is very rigid and would limit the use of the criteria to only those closed areas that are completely separate "hills." This represents only a small fraction of the closed areas that require flexibility for declining flows. In our view, whether an area is physically separated should make no difference as to whether an area is a candidate for removing a GCCS. The key is declining flow. This definition is actually more stringent than current interpretations under the NSPS/EG. Based on this, we request that EPA redefine closed areas as any closed area that can be adequately identified and separately tracked from other areas of the site.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 23, under comment code 3e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 31

**Sort Order:** 703

**Comment Excerpt:**

As landfills become larger facilities, incremental closed areas will become very common and be closed for a long time prior to facility closure. GCCS can be designed to isolate areas, so flow from closed areas that are not physically separated can be measured. EPA should allow the provisions for capping or removing the GCCS to be applied to all closed areas. In addition, EPA should allow for actual flow/NMOC measurements from all closed areas as a means to exclude those areas under the 1% criteria.

The proposed rule allows the use of actual data rather than estimated emissions for assessing when a landfill area meets the 1% NMOC emission criteria for removal of the GCCS, which we support. However, we believe that additional flexibility is still warranted for closed and non-productive areas.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 23, under comment code 3e.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 31

**Sort Order:** 704

**Comment Excerpt:**

**WM also Recommends that the Agency Expand the Provisions to Exclude Areas From Collection to Include all Closed Areas at a Site, not Just Those that are "Physically Separated."**

Landfills are becoming increasingly larger, regional facilities. These landfills have longer operating lives, and it is increasingly common for certain areas of the site to be closed for decades before the entire site reaches closure. Under these circumstances, closed areas at an active site encounter the same operational and compliance problems associated with declining gas production that were described in the previous section.

EPA's proposal to allow for actual gas flows to be used in excluding areas of collection now includes only "*nonproductive physically separated (i.e., separately lined) closed areas.*" This provision should be revised to allow for such a demonstration at any closed area, not just physically separate ones. Similarly, the "equipment removal" provisions should be expanded to allow for removal from closed areas, not just closed landfills.

EPA limits the utility of the provision by explaining its view of physically separated areas: "*EPA considers areas to be physically separated is they have separate liners and gas cannot migrate between the separate areas.*" 80 Fed. Reg. at 52135. EPA limits the provision due to a concern that gas could migrate from an unclosed area (with GCCS) to a closed area (where GCCS has been removed or excluded); however, this concern is unfounded. Gas will naturally move from areas of high pressure to areas of low pressure. It is therefore unlikely that gas would migrate from an unclosed area that is under vacuum, toward a capped area that is under reduced vacuum or positive pressure. The more likely scenario is that gas would migrate from the capped area toward the uncapped area, either into the GCCS or out through the surface in the uncapped area. If a closed area were allowed to be excluded from collection, that area would be clearly delineated in the field. Surface emission monitoring would continue to the edges of this area, allowing for detection of any migrating gas. The owner/operator would then be tasked with remediating the exceedance, either by placing additional cover at the edges of the closed areas; increasing collection within the closed area; increasing collection in the nearby uncapped area; or installing additional collectors in the vicinity of the exceedance.

GCCS designs may be configured to allow for isolation of specific areas, so actual flow and/or NMOC generations from closed areas that are not physically separated can be measured. EPA should allow the provisions for capping or removing the GCCS to be applied to all closed areas.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 23, under comment code 3e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 55

**Sort Order:** 705

**Comment Excerpt:**

We also recommend that the NSPS rule language under 40 CFR 60.762(b) be revised as follows:

*The collection and control system may be capped or removed provided that the conditions of paragraphs (b)(2)(v)(A), and either (B) or (C) are met:*

*(A) The landfill shall be a closed landfill as defined in § 60.761 of this subpart. A closure report shall be submitted to the Administrator as provided in § 60.767(d); and*

*(B) The collection and control system shall have been in operations a minimum of 15 years and following the procedures specified in § 60.764(b) of this subpart, the calculated NMOC gas produced by the landfill shall be less than the emissions threshold on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart; or*

*(C) For a closed landfill not co-located with other landfill units, following the procedures specified in § 60.764(b) of this subpart, the calculated NMOC gas produced by the landfill shall be less than the emissions threshold on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 23, under comment code 3e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 57

**Sort Order:** 706

**Comment Excerpt:**

It should be clarified that the allowances in the NSPS/EG rules for closed landfill should apply to closed areas of active landfills. This is consistent with how controls are required by area under the two- and five-year criteria prescribed in the NSPS rule.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter—DCN-EPA-HQ-OAR-2003-0215-0196, page 13. This response is for both of these comments. See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 23, under comment code 3e.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist  
**Commenter Affiliation:** Union of Concerned Scientists et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0196  
**Comment Excerpt Number:** 1  
**Sort Order:** 707

**Comment Excerpt:**

The entire discussion about non-producing areas is based on the premise that they are closed and on the downward side of the gas generation curve. However, there are active areas with low gas production that should be able to avail themselves of some of the above allowances, especially if the NMOC threshold is reduced from 50 Mg/yr. These could include active areas of landfills in dry climates that recently reached the 5-year waste age criteria but where gas production is limited, or active areas with mixed MSW and inert waste where the gas production is much less than typical MSW areas. Since the keys are gas production and emissions, low gas production and emissions in these low producing active areas should be recognized with certain allowances available for closed areas.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 23, under comment code 3e.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1  
**Comment Excerpt Number:** 10

**Comment Excerpt:**

We emphasize the importance of applying these same rigorous NMOC thresholds not just to determine when GCCS requirements are triggered, but also to determine when it is appropriate to remove GCCS. Because the NMOC thresholds are intended to reflect the level of uncontrolled emissions at which it is technically and economically feasible to operate a GCCS, it makes sense that the same threshold would be used to determine both the initial and final date for use of the GCCS. In addition, lowering the threshold for removal of the GCCS to match the applicability threshold would ensure that GCCS is operated over a larger portion of the landfill's life cycle, enhancing the overall lifetime collection efficiency of the GCCS.

**Comment Response:**

The EPA is finalizing the requirement that NMOC emissions must be below 34 Mg/yr for open landfills and 50 Mg/yr for closed landfills in order for a GCCS to be removed. These levels are

consistent with the NMOC level for installing a GCCS. For a discussion of the criteria for removing a GCCS, see Section VI.C of the 2016 NSPS Final Preamble and see Section VI.C.2 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 82

**Comment Excerpt:**

As EPA noted in the preamble to the draft 2006 rule, there are many situations in the landfill industry in which an old, closed portion of a landfill has been inappropriately drawn into the NSPS because of its location to an adjacent, newer facility. This can lead to problems when gas production in the older areas has fallen off so significantly that it is difficult, if not impossible for this portion of the site to comply with the NSPS operational standards.

**Comment Response:**

See section IV.A.4 of the final NSPS Preamble or IV. A. 5 of the final Emission Guidelines Preamble for a discussion related to non-producing areas of landfills.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 12

**Sort Order:** 1000

**Comment Excerpt:**

We propose the following alternative threshold for removal of a gas collection and control system.

When methane collection, of a GCCS that is operating according to 40 CFR part 60, reduces to  $0.00035 \text{ g/s-m}^2$ , then the GCCS can be shut-off for a test of the landfill's methane emission rate without the GCCS operational. As an example, if a landfill has an area of  $300,000 \text{ m}^2$ , then the GCCS could be shutoff for the test when methane collection reduces to  $0.00035 \text{ g/s-m}^2 \times 300,000 \text{ m}^2 = 105 \text{ g/s}$ .

After the GCCS has been shut-off for between 30 and 270 days, the methane emission rate shall be measured using the AMM method. If the measured methane emission rate is less than  $0.00042 \text{ g/s-m}^2$  averaged over the landfill area, then the GCCS can be shut-off permanently. The above criteria are proposed considering that the California Code of Regulations include 75% landfill gas collection efficiency as a threshold value (represented by the "heat input capacity" as per Appendix 1 of the California Code of Regulations).

The 0.00035 g/s-m<sup>2</sup> emission flux value is calculated as follows (neglecting offsite subsoil flow and storage), where:

G = methane generation rate

C = methane collection rate

E = methane emission rate to the atmosphere

B = biological methane oxidation rate

B = biological methane oxidation rate (%) = percent of methane flowing through a soil cover or biocover that is biologically oxidized

The biological methane oxidation rate is defined as

[See original comment letter 0101.1 for equations.]

The methane generation rate would then be calculated as:

$$G = C + E + B = 0.0014 + 0.00042 + 0.00004 = 0.00186 \text{ g/s-m}^2$$

If the GCCS were to be removed and yet methane emissions are not to exceed 0.00042 g/s-m<sup>2</sup>, then methane generation must be reduced to  $G = O + 0.00042 + 0.00004 = 0.00046 \text{ g/s-m}^2$  before a GCCS could be removed.

If there is 75% collection efficiency of this gas prior to removal of the GCCS, then using equation (2) to calculate the corresponding methane collection rate:

$$C = 0.75G = 0.00035 \text{ g/s-m}^2$$

Therefore, when the methane collection rate is less than 0.00035 g/s-m<sup>2</sup>, then the GCCS can be shut-off to test the actual methane emission rate without the GCCS operational.

### **Comment Response:**

The EPA has not revised its approach to adopt the requirements suggested by the commenter. The EPA asserts that that its finalized approach to removal is appropriate.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 13

**Sort Order:** 1001

### **Comment Excerpt:**

If there is 75% collection efficiency of this gas prior to removal of the GCCS, then using equation (2) to calculate the corresponding methane collection rate:

$$C = 0.75G = 0.00035 \text{ g/s-m}^2$$

Therefore, when the methane collection rate is less than 0.00035 g/s-m<sup>2</sup>, then the GCCS can be shut-off to test the actual methane emission rate without the GCCS operational.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 12, under comment code 3e.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 14

**Comment Excerpt:**

The EPA should extend the requirement for LG collection to require collection and treatment for as long as sufficient gas remains to be combusted.

Given typical NMOC concentrations, and the fact that NMOC emissions limitations only apply to the collected gas, significant quantities of methane are emitted *after* the 34 Mg NMOC / yr threshold is reached. Based on a median NMOC concentration of 648 ppm,<sup>50</sup> a landfill will emit 4,900 metric tons of methane, or over 120,000 metric tons of CO<sub>2</sub>e using the now outdated 100 year methane GWP of 25, the first year it drops below the 34 Mg threshold.

At a minimum, the revisions should remove the existing disincentive for aggressive gas collection. Since landfill operators are allowed to determine when they have dropped back below the 34 Mg of NMOC threshold based on gas collected, the better the landfill is at collecting gas, the longer it is required to collect it. Conversely, if a landfill is relatively inefficient at collecting gas, it collects less gas, less NMOCs, and can shut-off its collection system sooner.

[Footnote 50] EPA (2008) *Emissions Factor Documentation for AP-42 Section 2.4 Municipal Solid Waste Landfills EPA/600/R-08-116*

**Comment Response:**

The EPA believes that the accommodations provided for landfills with declining gas flow in the final rules are sufficient and appropriate. The EPA also asserts that its approaches, as finalized encourage the use of management practices that may also achieve additional emission reductions.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 63

**Sort Order:** 1200

**Comment Excerpt:**

We request that the term "non-producing" be changed to "low-producing" as these areas produce some amount of LFG. Non-producing areas are those with inert materials only, and those are already exempt from GCCS coverage.

**Comment Response:**

The EPA has revised the term to "non-productive". This distinction accounts for low and non-producing areas.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 49

**Sort Order:** 1201

**Comment Excerpt:**

Republic agrees that the removal of the of oxygen/nitrogen and temperature operational requirements will facilitate management of declining gas flows in "non-producing" areas. However, Republic asks EPA to utilize the term "low-producing" for such areas instead of "non-producing" to avoid confusion—since such areas have *declining* flow, they clearly have *some* flow. In contrast, the term "non-producing" should be reserved for areas that only contain inert materials and are not expected to produce MSW landfill gas emissions at all, and are thus exempt from regulation under EPA's NSPS and emission guidelines.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0196, excerpt number 63, under comment code 3e.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 50

**Sort Order:** 1202

**Comment Excerpt:**

EPA should clarify the requirements for "low-producing" areas.

Since "low-producing" areas may also experience difficulty meeting the remaining operational requirement for negative pressure, landfills should be allowed to "decommission" a well by temporarily shutting off the well until gas flow increases instead of permanently abandoning it. Landfills with decommissioned wells could then use periodic monitoring to determine when gas concentrations may be sufficient to maintain negative pressure and reopen the well if needed. In addition, surface monitoring and cover integrity checks would continue to ensure optimal performance of the GCCS. To streamline the process, EPA should also clarify that agency approval for a temporary decommissioning is unnecessary because that approach is currently allowed under the existing Subpart WWW.



**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0196, excerpt number 63, under comment code 3e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 66

**Sort Order:** 1300

**Comment Excerpt:**

Despite triggering GCCS control requirements under the NSPS/EG, there are still some landfills that do not have enough LFG to run their GCCSs continuously and cannot currently qualify for GCCS removal. To address this issue, we request that provisions be added to the rule to allow less than continuous operation under certain circumstances. The California LMR lists such a scenario as one of the alternatives that would be approvable under the rule. The Bay Area AQMD EG rule has similar language whereby less than continuous operation petitions can be submitted for approval.

**Comment Response:**

The EPA has added provision to the final rules that allow for a demonstration that the GCCS will be unable to operate for 15 years due to declining gas flow.

### 3.6 Excluding Non-productive Areas from Control

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 64

**Comment Excerpt:**

EPA has specifically requested comments on how to address closed areas of open landfills, given the challenges associated with operating a GCCS in areas where there is declining landfill gas flow. However, it appears that EPA has defining "closed areas" in very limited fashion—to only include areas that are physically separate and do not share a liner or have the potential to have any effect on the movement of landfill gas in another area. This definition is very rigid and would limit the definition of "closed areas," and the separate provisions that apply to closed areas, to those areas that are completely separate "hills."

Given EPA's limited definition of "closed areas," that term would only include a small fraction of the areas that may warrant additional flexibility due to declining landfill gas flows. Whether a

"closed area" is physically separate should make no difference as to whether the area is an appropriate candidate for removal of a GCCS due to low flows. EPA's concern that gas could migrate from an unclosed area (with GCCS) to a closed area (without GCCS) is unfounded because landfill gas travels from areas of high pressure to areas of low pressure, not the other way around. Therefore, rather than migrating from an open area that is under negative pressure toward a closed area that is under zero pressure (or even positive pressure), gas would instead migrate from the closed area toward the open area with the GCCS, if it moved at all. Accordingly, Republic asks EPA to expand the definition of "closed areas" to include areas with low gas flow even if there is not a clear physical barrier preventing gas from traveling to another area. Because any closed areas would be clearly delineated in the field, and SEM would continue to the edges of the closed area, the landfill will still be able to ensure proper emission control and address any exceedances through corrective action measures.

**Comment Response:**

In the final NSPS and final Emission Guidelines, the EPA has retained the requirement that closed areas of open landfills must be physically separated (e.g., separately lined). The EPA has retained this distinction because we continue to believe that landfill gas can migrate between areas of the landfill. As described in the proposal for the NSPS (79 FR 41817), measurements might not accurately reflect actual emissions from the given landfill area because gas could be moving underground and escaping or being collected from an adjacent section of the landfill. While the commenter has stated this gas migration would not actually occur, they did not provide any additional data to prove otherwise.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 30

**Comment Excerpt:**

EPA's proposal includes methods for excluding or partial GCCS decommissioning for "*nonproductive physically separated (i.e., separately lined) closed areas.*" This proposal should be revised to allow for this demonstration for any closed area, not just physically separate ones. Similarly, the "equipment removal" provisions should be expanded to allow for removal from closed areas, not just closed landfills. EPA "*considers areas to be physically separated if they have separate liners and gas cannot migrate between the separate areas.*"

This concern that gas could migrate from an unclosed area (with GCCS) to a closed area (without GCCS) is unfounded. Gas travels by convection or from high pressure to areas of low pressure. Therefore, rather than migrating from an open area that is under negative pressure toward a closed area that is under zero pressure or even a positive pressure, gas would instead migrate from the closed area toward the open. Therefore, we request that the rule be expanded to areas where gas can travel between the two areas. Any closed area should be clearly delineated

in the field to document the area not subject to NSPS operating standards – SEM would continue to the edges of this area, allowing for detection of any migrating gas. The landfill would then be tasked with correcting exceedances.

**Comment Response:**

See response DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 64, under comment code 3f. See section VI.C of the final NSPS Preamble and section VI.C.2 of the final Emission Guidelines Preamble for a discussion of the criteria for removing, capping, or decommissioning a GCCS.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 25

**Comment Excerpt:**

EPA should provide operational flexibility for landfills experiencing declining LFG generation, including closed areas at active sites.

WM appreciates EPA's efforts to address the operational concerns associated with operating GCCS in areas experiencing declining flow. However, the proposed rule still appears to only allow landfills with physically separated closed areas to use either the modeled or measured procedures to determine NMOC emissions for purposes of the 1 percent NMOC exclusion. The proposed rule should also afford this flexibility to non-producing and low-producing closed areas in the active landfill that are not physically separated as well as low-producing areas at active landfills. On multiple occasions over the last eight years, WM has discussed our concerns with EPA and offered solutions for how Subpart WWW and EG should address areas with declining flow. (See Docket ID Numbers EPA-HQ-OAR-2014-0451-0037, EPA-HQ-OAR-2003-0100, EPA-HQ-OAR-2003-0215-17, EPA-HQ-OAR-2003-0215-0055, EPA-HQ-OAR-2003-0215-0057 and EPA-HQ-OAR-2003-0215-0058.) We reiterate these same concerns and again provide possible solutions herein. We are still concerned that in its proposed Subpart XXX and Subpart Cf, EPA does not appropriately address declining flow conditions.

As we described in our comments on the proposed NSPS and ANPRM, instead of shutting down the GCCS completely, landfills could begin to decommission select wells and use SEM to verify that emissions remain controlled. By the term "decommissioning," we are referring to a temporary measure of shutting off the vacuum to the well, while keeping the well connected to the gas collection system for reactivation if necessary. If exceedances are detected that cannot be corrected in accordance with the corrective action timelines in Subparts WWW and Cc, the wells could be reopened. Over time, as landfill gas generation continues to decline, more wells would be decommissioned and continued emissions control verified utilizing SEM. This slow decommissioning process is similar to the process of the slow decline of landfill gas generation. The need for a landfill owner/operator need to permanently abandon or remove a well from the system would continue to be addressed as a design change a, an issue that we comment upon later in this submittal. We recommend that the rule allow for both removal and gradual

decommissioning of the system depending upon site-specific conditions. We also recommend EPA include the following as a definition of "decommission":

*Decommission means for purposes of this subpart a temporary measure of shutting off the vacuum to the well, while keeping the well connected to the gas collection system for reactivation if necessary.*

**Comment Response:**

See response to DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 64, under comment code 3f. For additional information about decommissioning, including use of a SEM approach see section VI. C. 2 of the final Emissions Guidelines preamble.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 1

**Comment Excerpt:**

KDAQ requests clarifying the present definition of "closed area" to further specify that "closed areas" are those areas that are physically separated from open areas. Introducing ambiguity into the definition of "closed area" will lead to discrepancies between landfill size and applicability of the operational requirements of the applicable New Source Performance Standards (NSPS). KDAQ supports a "bright line" standard, to the extent that it is possible, for triggering applicability of these requirements.

**Comment Response:**

See response to DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 64, under comment code 3f.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 6

**Comment Excerpt:**

Pennsylvania requires owners and operators of MSW landfills to maintain a physical separation between closed and active areas in the landfill in accordance with 25 Pa. Code 273.234 (relating to final cover and grading) and 273.252 (relating to general limitations). Consequently, DEP supports provisions that would allow owners and operators of closed landfill areas with physically separated closed areas to model NMOC emission rates or determine actual LFG flow rates in order to allow low or non-producing areas to be excluded from the LFG control

requirements. Therefore, the final Emission Guidelines should provide flexibility by allowing an owner or operator to model NMOC emission rates or measure the actual flow rate of landfill gas.

**Comment Response:**

We thank the commenter for their support. See section IV.A.4 of the final NSPS Preamble. See section IV.A.5 of the final Emission Guidelines Preamble.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 110

**Comment Excerpt:**

EPA should provide flexibility for older and closed landfills experiencing declining LFG generation. We appreciate EPA's efforts to address the operational concerns associated with operating GCCS in closed areas due to declining flow. However, proposed Subpart XXX only allows landfills with physically separated closed areas to use either the modeled or measured procedures to determine NMOC emissions for purposes of the 1 percent NMOC exclusion. The proposed rule should also afford this flexibility to non-producing closed areas in the active landfill that are not physically separated. On multiple occasions over the last 8 years, WM has discussed our concerns with EPA and offered solutions for how Subpart WWW and EG should address areas with declining flow. (*See* Docket ID Numbers EPA-HQ-OAR-2003-021S-17, EPA-HQ-OAR-2003-021S-0055, EPA-HQ-OAR-2003-0215-0057 and EPA-HQ-OAR-2003-0215-0058.) We reiterate these same concerns and again provide possible solutions herein. We are still concerned that in its proposed Subpart XXX and ANPRM, EPA does not appropriately address declining flow conditions in closed areas and closed landfills.

**Comment Response:**

See response DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 64, under comment code 3f.

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**Commenter Name:** Comment submitted by Matt Lamb

**Commenter Affiliation:** Smith Gardner, Inc

**Document Control Number:** EPA-HQ-OAR-2003-0215-0083

**Comment Excerpt Number:** 5

**Comment Excerpt:**

The proposed rule allows the use of calculated NMOC generation, rather than direct measurement, for the purpose of determining if a separate area of the landfill is non-productive. It is unclear how this provision will provide relief to many existing closed landfills. These facilities in many instances are closed, and have been closed for some time. It is understood that this rule applies to sites commencing operation after July 17, 2014; but before 90 days after

publication of the rule. So existing landfills would not be able to take advantage of this provision as written, or unless the site expanded or was modified after July 17, 2014. It is unclear how this provision helps the smaller closed county and community landfills.

**Comment Response:**

The final NSPS and final Emission Guidelines contain parallel provisions to use modeled or measured NMOC emissions for the purposes of determining if a physically separated, closed area of an open landfill is considered to have low gas production.

See section IV.A.4 of the final NSPS Preamble. See section IV.A.5 of the final Emission Guidelines.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 65

**Comment Excerpt:**

EPA has also requested comment on using actual flow measurements to demonstrate that NMOC emissions from a closed area represent less than 1% of a landfill's total NMOC emissions. As landfills become larger, Republic expects that incremental closed areas will become more common and be closed for a longer period of time prior to facility closure. GCCS can be designed to isolate areas, so actual flow and/or NMOC generations from closed areas that are not physically separated can be measured. Accordingly, EPA should allow the provisions governing capping or removing a GCCS to apply in all closed areas. In addition, EPA should allow landfills to use actual flow and NMOC measurements as a means of demonstrating that closed areas meet the 1% criteria.

In past proposed rulemakings, EPA has requested comment on different approaches for removing a GCCS in closed landfill areas and on various criteria for determine which areas warrant ongoing control. Apparently in consideration of the comments received, EPA has proposed provisions that provide additional flexibility for such areas, including clarifying the criteria for removing a GCCS and withdrawing the numeric wellhead standards for oxygen/nitrogen and temperature. In addition, the proposed rule allows the use of actual data rather than estimated emissions for assessing when a landfill area meets the 1% NMOC emission criteria for removal of the GCCS. Republic supports these efforts.

**Comment Response:**

The final NSPS and Emission Guidelines allow landfill owners or operators to model NMOC emissions or take actual measurements NMOC emissions at physically separated, closed areas of open landfills. The EPA has not expanded the term "closed area" to include areas that are not physically separated as discussed in response DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 64, under comment code 3f. See section VI.C of the final NSPS Preamble and section VI.C.2 of the final Emission Guidelines Preamble for a discussion of the criteria for the removal of the GCCS. See section VI.A.1 of the final NSPS Preamble and VI.A.1 of the final Emission

Guidelines Preamble for a discussion of the wellhead operating standards for nitrogen/oxygen and temperature.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 52

**Comment Excerpt:**

The proposed rule allows the use of actual data rather than estimated emissions for assessing when a landfill area meets the 1% NMOC emission criteria for removal of the GCCS, which we support. However, we believe that additional flexibility is warranted for closed and non-productive areas.

**Comment Response:**

See response DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 65, under comment code 3f. See response DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 64, under comment code 3f.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

We generally support (along with the flexibility suggested in SWANA's comments) the proposed provisions to allow landfills the use of actual data rather than estimated emissions for assessing when a landfill area meets the 1% NMOC emission criteria for removal of the gas collection and control system "GCCS".

**Comment Response:**

See response DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 65, under comment code 3f.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 24

**Comment Excerpt:**

EPA should allow for actual flow/NMOC measurements from all closed areas as a means to exclude those areas under the 1% criteria.

**Comment Response:**

See response DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 65, under comment code 3f.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 32

**Comment Excerpt:**

The Agency should allow for actual flow/NMOC measurements from all closed areas as a means to exclude those areas under the 1% criteria.

**Comment Response:**

See response DCN: EPA-HQ-OAR-2014-0451-0176, excerpt 65, under comment code 3f.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 34

**Comment Excerpt:**

It appears that EPA did not consider a change to the 1% criteria, which was discussed with EPA and industry in the past. It is very difficult to meet a 1% threshold, even when using actual flow and NMOC data. We are hopeful that EPA will reconsider this threshold and establish one that can more reasonably be met. Past discussions with EPA revolved around utilizing a 5% NMOC criteria, which we believe is more reasonable, especially if the NMOC threshold is reduced from 50 Mg/yr. We recommend that EPA consider utilizing a 5% NMOC criteria in conjunction with SEM.

**Comment Response:**



The MSW landfill rules have historically allowed owners or operators to exclude from control areas of the landfill that are non-productive. In the final NSPS and final Emission Guidelines, the EPA has retained the 1 percent criteria level, rather than raising it, to prevent landfills from excluding areas from control unless emissions were very low. In order to help owners or operators demonstrate that a non-productive area may be excluded from control, the final rules allow the owner or operator to use site-specific flow measurements to determine NMOC emissions. Using actual flow measurements off of the GCCS yields a more precise measurement of NMOC emissions for purposes of demonstrating the closed area represents less than 1 percent of the landfill's total NMOC emissions. See section IV.A.4 of the final NSPS Preamble. See section IV.A.5 of the final Emission Guidelines.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 26

**Comment Excerpt:**

It appears that EPA did not consider a change to the 1% criteria. It is exceedingly difficult to meet a 1% threshold, even when using actual flow and NMOC data. We are hopeful that EPA will reconsider this threshold and establish one that can more reasonably be met. We suggest that a 5% NMOC criteria is more reasonable.

**Comment Response:**

See response DCN: EPA-HQ-OAR-2003-0215-0196, excerpt 34, under comment code 3f.

### **3.7 Separate Thresholds for Wet Climates/ Recirculation**

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 19

**Sort Order:** 100

**Comment Excerpt:**

EPA requests comment on applying early gas capture requirements at wet landfills, and, at minimum, the agency should extend early capture requirements to these sources. As the agency notes, and as many independent studies have confirmed, landfills in wetter climates have the potential to more swiftly produce landfill gas and so can benefit from earlier installation of control technology. In fact, EPA's proposed emission guidelines conclude: "Collectively, reductions from [] 377 wet landfills constitute approximately 50 percent of the incremental reductions achieved by the proposed option 2.5/34. Nearly all of these incremental reductions are

coming from the 343 landfills that are located in areas receiving 40 inches of precipitation or more."<sup>66</sup>

EPA's analysis in the proposal demonstrates that, for the 377 wet landfills that would be subject to the proposed rule, shortening the installation timeframe by one year and the expansion timeframe by two years in conjunction with the lowered NMOC threshold of 34 Mg/yr will result in approximately 220 Mg/yr of additional NMOC emission reductions and 35,200 Mg/yr additional methane reductions.<sup>67</sup> We agree with EPA that these additional reductions are significant and urge EPA to finalize a requirement that utilized shorter installation and expansion timeframes for wet landfills. We also respectfully ask that the agency include sensitivity analyses assessing the impacts of these standards at more representative (k) values, ranging from 0.05 to .30, which would further enhance the benefits of early gas capture at these sources.

[Footnote 66] 80 Fed. Reg. at 52,137.

[Footnote 67] 80 Fed. Reg. at 52138.

**Comment Response:**

The EPA is not creating separate emission threshold or lag time requirements for wet landfills. However, the EPA is finalizing additional electronic reporting requirements for wet landfills with a design capacity of 2.5 million Mg or greater to inform potential future action on wet landfills. See Section VI.A.3 of the 2016 NSPS Final Preamble. See Section VI.A.3 of the 2016 EG Final Preamble. The EPA has provided a sensitivity analysis of k values in dockets HQ-OAR-2003-0215 and HQ-OAR-2014-0451.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 34

**Sort Order:** 101

**Comment Excerpt:**

When looking for major strategies involving landfills that could be pursued to reduce methane emissions, EPA ignored the urgent need to curb a separate, industry-led reversal in the fabric of landfill regulation that has led to massive increases in methane emissions. It has been called leachate recirculating landfills, or wet cells, or, occasionally, bioreactors.

The original 1991 Subtitle D rules that established the first federal minimum landfill standards were, as part of their requirement for liners, focused on keeping the site dry and therefore biologically inactive. In that way, the mobilization of air and water pollutants into the environment could be minimized for the time that barriers and pumps kept moisture out of the site. Beginning in 1999, in an effort to increase profitability, and seemingly indifferent to the impact on climate or its neighbors, the landfill industry implemented, and EPA quickly acquiesced to, a fundamental reversal in the so-called "dry tomb" design basis for landfill safety. Decomposition – and hence gas production – was deliberately accelerated by increasing the amount of moisture in situ. This was largely done by pumping the leachate that drains to bottom

back to the top to recirculate, and by delaying installation of the final cover for many years to allow rainfall in. On occasion, outside liquids like sewage sludge was also added.

Sometimes, those landfills that recirculate leachate are called recirculating landfills and those that add outside liquids, bioreactors. The former might increase initial moisture levels from approximately 20% to 30%-35%, and bioreactors, to 40%-45%. Because bioreactors require special licensing for a small gas generation,<sup>42</sup> most wet landfills only recirculate leachate.<sup>43</sup>

The primary economic drivers for accelerating decay was to increase settlement that recovers air space to re-sell a second time, and to boost the methane concentration, and hence the energy value, of landfill gas to financially viable levels (a little known fact is that without recirculation, landfill gas does not have sufficient Btu value to be economically useful).

EPA too easily contorted the dry tomb rules, which were specifically intended to keep moisture out, so they could allow for the opposite of those original design principles . This was done by allowing alternative covers, failing to enforce the requirement to immediately cover filled cells, and, of course, also ignoring the intention that the wastes be kept dry.

The number of wet landfills continues to increase, especially among the larger landfills. In 2013, only 26% of landfills by number recirculated leachate, but, by landfill capacity, 43% , or nearly half, were operated under wet principles.<sup>44</sup>

[Footnote 42] 40 CFR §258.28/

[Footnote 43] 40 CFR §258.4.

[Footnote 44] EPA, GHG Reports filed under 40 CFR Part 98 Subpart HH for RY 2013.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0204 Comment Excerpt Number 19 under comment code 3g.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 11

**Sort Order:** 102

**Comment Excerpt:**

The adverse impact of excessive lag times is, moreover, most acute with landfills that recirculate leachate or add other liquids to accelerate waste decomposition, the result of which is even more methane production and even less methane collection.

As noted in the German Environment Agency’s July 2015 study, *supra*, *Climate Change Mitigation Potential*, “in recent years the U.S. has witnessed a trend toward dumping of waste in ‘wet landfills’ . . . which need no leachate treatment, [and] aim to accelerate biological decomposition in the landfill by adding liquid and recirculating the leachate. Measurements show that methane emissions also rise sharply.” *Climate Change Mitigation Potential* at 95; see

also 79 Fed. Reg. at 41778/3 (leachate recirculation and liquids addition accelerates waste decomposition and gas generation rates). While landfills of that type produce more methane, they actually collect less. *Nature Climate Change*, *supra*, at 2 and Figure 1. The underlying economic motivations include creating more air space (for disposal of additional waste), generating more gas for energy recovery (only part of which is recovered) and avoiding the costs of other leachate management alternatives. Landfills of this type, specifically, any landfill that recirculates leachate or adds other fluids, including any bioreactor landfill regardless of whether it meets the definition of bioreactor in 40 C.F.R. part 63, subpart AAAA, should be governed by an accelerated schedule for GCCS operation. An initial lag time of 1 year and an expansion lag time of 1.5 years are recommended. In addition, the recirculation or addition of liquids should be prohibited in any portion of a landfill where the GCCS is not in operation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0204 Comment Excerpt Number 19 under comment code 3g.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 28

**Sort Order:** 103

**Comment Excerpt:**

*Evidence of Significant Landfill Gas Generation Shortly After Waste Disposal.* EDF's White Paper emphasized the need for early gas collection by referencing several studies indicating that significant landfill gas generation — perhaps as much as 30% of total lifecycle emissions from the landfill — can occur within the first five years of waste disposal.<sup>48</sup> Since EDF submitted the White Paper, additional peer-reviewed literature has emerged to indicate that early gas collection may be even more important than previously thought, particularly in landfills in wetter climates. Specifically, Wang *et al.* (2013) analyzed historic landfill gas collection data at eleven geographically diverse U.S. landfills, and concluded that the rate at which waste decayed in the studied landfills is likely much higher than the default values EPA has used in modeling for the proposed NSPS. Whereas EPA's models assume decay rates (known as "*k* values") of 0.02 or 0.04 yr<sup>-1</sup>, Wang *et al.* found an average decay rate of 0.09-0.12 yr<sup>-1</sup>. As the authors note, their findings imply that "more methane is produced in the early years following waste burial when gas collection efficiencies tend to be lower."<sup>49</sup> These results are consistent with other empirical literature, which indicates that many landfills have *k* values much higher than 0.02-0.04 yr<sup>-1</sup> (reflecting faster decomposition of wastes).<sup>50</sup>

[Footnotes]

(48) Barlaz *et al.*, *Controls on Landfill Gas Collection Efficiency: Instantaneous and Lifetime Performance* 59 J. Air & Waste Mgmt. Ass'n 1399, 1402-03 (Dec. 2009) (indicating 30% of cumulative methane emissions occur within first five years of modeled landfill); U.S. EPA, *Quantifying Methane Abatement at Three Municipal Solid Waste Landfills at 4-2* (Jan. 2012)

(field study reporting significant methane emissions from uncontrolled portion of landfill that had been receiving waste for only three months). ;

(49) Xiaoming Wang et al., *Using Observed Data to Improve Estimated Methane Collection From Select U.S. Landfills*, Environ. Sci. Technol. 3251, 3256 (2013).

(50) See Hamid R. Amini et al., *Comparison of First-Order Decay Modeled and Actual Field Measured Municipal Solid Waste Landfill Methane Data*, 33 Waste Management 2720, 2725 (2013) (reporting  $k$  values of 0.04, 0.06 and 0.09 for three studied landfills, and reviewing other studies reporting  $k$  values as high as 0.5 yr<sup>-1</sup>).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0204 Comment Excerpt Number 19 under comment code 3g.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 13

**Sort Order:** 104

**Comment Excerpt:**

Subcategorizing landfills in wet climates. Finally, EPA requests comment on the appropriateness of requiring more rigorous design capacity thresholds or emissions limits for landfills in wetter climates or landfills that recirculate leachate. As the agency notes, and as many independent studies have confirmed, landfills in wetter climates have the potential to more swiftly produce landfill gas<sup>23</sup> and so can benefit from earlier installation of control technology. As we emphasize above, we believe that more rigorous design capacity and emissions thresholds are appropriate for all landfills. If the agency were to further explore subcategorizing wet landfills, we urge EPA to evaluate additional, more protective thresholds and to calculate emissions reductions based on higher, representative  $k$  values.<sup>24</sup> Based on this analysis, it may be appropriate to establish more protective standards, which could apply to a substantial number of landfills (1543 of the landfills have NSPS  $k$  values of 0.05, corresponding to more than 25 inches of rainfall).

[Footnotes]

(23) Xiaoming Wang et al., *Using Observed Data to Improve Estimated Methane Collection From Select U.S. Landfills*, Environ. Sci. Technol. 3251, 3256 (2013).

(24) See Id.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0204 Comment Excerpt Number 19 under comment code 3g.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 96

**Sort Order:** 200

**Comment Excerpt:**

Different standards for wet landfills are not warranted or justified. WM disagrees that these so-called "wet landfills" should be subject to a more stringent set of requirements. First and foremost, EPA's mere solicitation of comment in the preamble to Subpart XXX and in the ANPRM fails to provide any clear notice of what EPA may be considering. In fact, EPA requests comment on the fundamental question of how a wet landfill might be defined, noting for example that a wet landfill could be defined as a landfill that has precipitation of greater than 25 inches per year and/or recirculates leachate (or other liquids) *See* 79 Fed. Reg. 41808; 79 Fed. Reg. at 41784. EPA offers no reasoned basis for either this example definition or its assumption that wet landfills may warrant separate treatment under Subpart XXX.

EPA should not attempt to define or apply different standards to "wet" landfills. There is no scientific data to support that a wet landfill would be defined as a landfill that has greater than 25 inches of precipitation per year and/or recirculates leachate (or other liquids), nor has EPA prepared a sufficient analysis of the additional costs that would impose an unnecessary burden on hundreds of landfills that recirculate leachate. Moisture content can vary considerably from cell to cell in a landfill, creating pockets of saturated and dry layers. In addition, several variables play a role in determining how the leachate and liquids will interact with the waste mass, including the type of waste accepted, daily cover types, climate, age of the waste, etc. These variables add complexity to how the leachate and liquids will interact with the waste mass. Therefore EPA should not assume that any given amount of precipitation or leachate recirculation should be the sole basis for causing enhanced gas generation.

The National Emission Standard for Hazardous Air Pollutants for Municipal Solid Waste Landfills, 40 CFR Part 63 Subpart AAAA (the "Landfill NESHAP") already addresses landfills that have 40% or more moisture content due to the addition of liquids. The NESHAP requires installation of GCCS prior to initiating liquids addition, regardless of whether the landfill emissions rate equals or exceeds the NMOC threshold prescribed in the NSPS (currently 50 Mg/yr). Startup of the GCCS is required within 180 days after initiating liquid addition or within 180 days after reaching 40% moisture content within the landfill, whichever is later.

EPA evaluated recirculating leachate as a part of the Landfill NESHAP rulemaking and determined that leachate recirculation should not trigger additional requirements. *See, e.g.,* Municipal Solid Waste Landfills: Background Information Document for National Emission Standards for Hazardous Air Pollutants - Public Comments and Responses, EPA 453/R-02-014 November 2002 at p. 47). As part of the GHGRP, EPA requires MSW Landfills to disclose whether they practice leachate recirculation. Further, if sites do recirculate leachate, then the site must account for the leachate recirculation along with precipitation to determine which k value to use to estimate emissions (See Table HH-1 of Subpart HH of Part 98). Large quantities (i.e., several million gallons) of leachate recirculation have negligible impact on the total precipitation value that ultimately dictates which k value to use. WM provided comments to EPA discussing

the effect of water with respect to the development of an appropriate k value in AP-42. (See Attachment 4 [of DCN EPA-HQ-OAR-2003-0215-0100.1]).

Given the lack of specific information related to how this "option" might be implemented, the absence of any analysis, the apparent redundancy with NESHAP Subpart AAAA, and the absence of a scientifically reliable means of determining a threshold specification for wet landfills, we urge EPA to retain the current approach in Subpart WWW and the EG. EPA should continue to rely on the existing Landfill NESHAP requirements to address early collection for sites that have 40% moisture content due to liquids addition. The same basic design capacity and emission based triggers for installing a GCCS will appropriately ensure timely installation of emissions controls at all landfills.

**Comment Response:**

The EPA is not creating separate emission threshold or lag time requirements for wet landfills in this action. However, the EPA is finalizing electronic reporting requirements for wet landfills to inform potential future action on wet landfills. See Section VI.A.3 of the 2016 NSPS Final Preamble. See Section VI.A.3 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 67

**Sort Order:** 201

**Comment Excerpt:**

In Republic's experience, landfills located in wet climates do not warrant any different requirements than other landfills. As an initial matter, the landfill National Emission Standard for Hazardous Air Pollutants already provides a backstop with the MACT standard that requires bioreactor landfills to install a gas collection and control system in the bioreactor prior to initiating liquids addition, regardless of whether the landfill emissions rate equals or exceeds the estimated uncontrolled emission rate of 50 Mg/yr specified in the NSPS. Startup of the collection and control system is required within 180 days after initiating liquid addition or within 180 days after reaching 40% moisture content within the bioreactor, whichever is later.

However, inherent in that policy is the understanding that precipitation and leachate recirculation alone should not trigger additional requirements. Imposing new mandatory requirements for such landfills would result in a large and unnecessary burden that would require additional cost even though EPA has not provided discussion of the cost and cost effectiveness based on a one year early installation date. Additionally, there is no scientific data to support the determination that a wet landfill should be defined as a landfill with a prescribed precipitation per year and/or recirculates leachate (or other liquids).

Each landfill is somewhat unique in that the solid waste mass creates various and complex pathways for water movement, and moisture content can vary considerably even within a landfill, creating pockets of saturated and dry layers. In addition, several variables play a complex role in determining how the leachate and liquids will interact with the waste mass,

including the type of waste accepted, daily cover types, climate, age of the waste, etc. For this and other reasons, EPA should not assume that greater amounts of precipitation or leachate recirculation will result in greater gas generation.

Without further scientific data to support early gas collection at these types of facilities, EPA should rely on the existing MACT rule which addresses waste decomposition in wet environments more quickly. We recommend EPA to address any proposed changes to "wet" landfills in a coordinated rule with the NESHAP Subpart AAAA and NSPS/emission guidelines to ensure a consistent approach. The same basic design capacity and emission-based triggers for installing a GCCS will appropriately ensure timely installation of emissions controls at all landfills.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 Comment Excerpt Number 96 under comment code 3g.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 79  
**Sort Order:** 202

**Comment Excerpt:**

Shorter lag times for wet landfills are not warranted or justified.

WM is concerned that EPA is continuing to target "wet" landfills for additional requirements under the proposed NSPS/EG. In its comments on the ANPRM, WM explained why EPA should not reduce the initial lag times for landfills located in wet climates, landfills that recirculate leachate, or landfills that add other liquids to accelerate waste decomposition. Specifically, WM highlighted ambiguity in the definition of wet landfills, the oversimplification that results from definitions that rely primarily on measured precipitation and leachate levels, and the potential overlap in requirements between the Landfill NSPS/EG and the Subpart AAAA NESHAP. (See Docket # EPA-HQ-OAR-2014-0451-0037) We continue to have concerns regarding all of these issues, in addition to a number of new issues raised in the proposed EG.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 Comment Excerpt Number 96 under comment code 3g.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1



**Comment Excerpt Number:** 18

**Sort Order:** 203

**Comment Excerpt:**

In Republic's experience, neither landfills located in wet climates nor landfills that recirculate leachate warrant any different requirements than other landfills. As an initial matter, the landfill National Emission Standard for Hazardous Air Pollutants already provides a backstop with the MACT standard that requires bioreactor landfills to install a gas collection and control system in the bioreactor prior to initiating liquids addition, regardless of whether the landfill emissions rate equals or exceeds the estimated uncontrolled emission rate of 50 Mg/yr specified in the NSPS. Startup of the collection and control system is required within 180 days after initiating liquid addition or within 180 days after reaching 40% moisture content within the bioreactor, whichever is later.

However, inherent in that EPA policy is the understanding that leachate recirculation alone should not trigger additional requirements. Imposing new mandatory requirements for landfills with leachate recirculation system would result in a large and unnecessary burden that would require hundreds of landfills that recirculate leachate to incur additional cost even though EPA has not provided any cost/benefit or emission reduction analysis to support such a change. Additionally, there is no scientific data to support the determination that a wet landfill should be defined as a landfill that has greater than 25 inches of precipitation per year and/or recirculates leachate (or other liquids).

Each landfill is somewhat unique in that the solid waste mass creates various and complex pathways for water movement, and moisture content can vary considerably even within a landfill, creating pockets of saturated and dry layers. In addition, several variables play a complex role in determining how the leachate and liquids will interact with the waste mass, including the type of waste accepted, daily cover types, climate, age of the waste, etc. These variables add complexity to how the leachate and liquids will interact with the waste mass. For this and other reasons, EPA should not assume that greater amounts of precipitation or leachate recirculation will result in greater gas generation.

Without further scientific data to support early gas collection at these types of facilities, EPA should rely on the existing MACT rule which addresses waste decomposition in wet environments more quickly. The same basic design capacity and emission-based triggers for installing a GCCS will appropriately ensure timely installation of emissions controls at all landfills.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 Comment Excerpt Number 96 under comment code 3g.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 7

**Sort Order:** 204

**Comment Excerpt:**

It is unnecessary to reduce lag time for landfills in wet climates or to define a wet climate or wet landfill. Wisconsin rules specify that a gas blower and flare must be in place and the gas collection system extended to a cell prior to the initiation of leachate recirculation in that cell or the addition of free liquids wastes or other liquids under an RD&D permit under 40 CFR 258. The hardware for gas extraction is not specified in Wisconsin rule, and gas extraction early in cell filling history may be limited to connections to leachate cleanout lines and any supplemental piping installed on or in the leachate collection layer. This leaves flexibility for development of improved methods of gas extraction early in cell history. The approved gas extraction well field design is still required to be installed as the waste mass increases in the cell to waste final grades. Requiring early installation of gas collection systems for areas of leachate recirculation or free liquids addition regardless of climate considerations seems like a simpler approach that would be more easily interpreted and enforced.

In Wisconsin, these rules eliminate the need to consider wet versus dry climate or small versus large cells/landfills, or needing to define a "wet" landfill. Leachate recirculation, as approved under rules in authorized states under 40 CFR 25.8, is fairly popular. This is particularly the case for larger landfills. Wisconsin's experience is that larger landfills are more likely to use recirculation and additional liquids as part of a suite of tactics to accelerate settlement to regain filling capacity and to reduce costs of handling and accepting non-free liquids wastes. The larger landfills also grossly dominate the production of landfill gas and would be the most likely to be subject to NSPS permits.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 Comment Excerpt Number 96 under comment code 3g.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 80

**Comment Excerpt:**

**EPA's Own Analysis of the 2.5/34 Proposal Indicates that the Additional Emission Reductions Achieved by Requiring Shorter Lag Times are Minimal.**

In the preamble of proposed Subpart Cf, EPA describes its analysis of potential emission reductions at "wet" landfills. Under EPA's analysis, 377 of the 651 landfills estimated to be required to install GCCS by 2025 would be "wet," a term they do not define. EPA states *"reductions from these 377 wet landfills constitute approximately 50% of the incremental reductions achieved by proposed option 2.5/34. Nearly all of these incremental reductions are coming from the 343 landfills that are located in areas receiving 40 inches of precipitation or*

*more. Based on this analysis, the NMOC threshold of 34 Mg/yr in this proposal achieves significant reduction in emissions from wet landfills." (80 Fed.Reg. at 51237)*

EPA then analyzed the magnitude of the additional reductions that might result from shorter lag times. Specifically, EPA stated "an additional approximately 220 Mg/yr of reductions in NMOC emission and 35,200 Mg/yr of reductions in methane could be achieved from these 377 wet landfills in 2025." (80 Fed.Reg. at 52138)

We have reached several conclusions based on our review of EPA's analysis. First, we note that the level of incremental emission reductions achieved under an emission threshold of 2.5/34, without imposing any additional requirements on wet landfills, is less than 5% of the base case NMOC and CH<sub>4</sub> emission reductions, that is compared to the current rule (at 2.5/50). This is a modest reduction in emissions, given the significant reduction of the emissions threshold. As described in our comments on the proposed 2.5/34 emission threshold, the incremental cost per ton of emissions reduced associated with the 2.5/34 proposal cost is over three times higher than as the cost per ton of emissions reduced under the current rule.

WM has also evaluated the magnitude of the incremental emission reductions resulting from the basic 2.5/34 approach as compared to additional reductions resulting from imposing the shorter lag time requirement for wet landfills. Specifically, we compared the level of NMOC and CH<sub>4</sub> emission reductions under shorter lag times to total incremental reductions (e.g., the 2.5/34 scenario) resulting from the 377 "wet" landfills.<sup>21</sup> The result of requiring shorter lag times would be a 16% increase in incremental reductions.

The additional emission reductions resulting from shorter lag times should be put in context, however, because the reductions achieved by the core 2.5/34 scenario are only 5 percent of the base case reductions. Thus, we have compared the emission reductions associated with requiring shorter lag times at wet landfills already complying with the 2.5/34 scenario to the total reductions delivered by the rule (e.g., the base case + the 2.5/34 increment + the shorter lag times. **This analysis confirms that the additional emission reductions associated with requiring shorter lag times for "wet" landfills are vanishingly small – only 0.4% - of the total annual emission reductions expected under the current proposal.**

[Footnote 21] To perform this comparison, we assumed that 50% of the incremental emission reductions associated with going from 2.5/50 to 2.5/34 would be generated by "wet" landfills. See 80 Fed.Reg.at 52137).

#### **Comment Response:**

The EPA is not creating separate emission threshold or lag time requirements for wet landfills. However, the EPA is finalizing additional electronic reporting requirements for wet landfills with a design capacity of 2.5 million Mg or greater to inform potential future action on wet landfills. See Section VI.A.3 of the 2016 NSPS Final Preamble. See Section VI.A.3 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 81

**Comment Excerpt:**

EPA has failed to provide cost or cost-effectiveness information for the proposed shorter lag times requirement.

WM is concerned that EPA has failed to provide any discussion of the cost and cost effectiveness of shorter lag time requirements. From our review of other proposed changes to the NSPS and EG, we have concluded that the more stringent requirements come with significantly higher costs. EPA should not finalize shorter lag times at wet landfills without providing additional information to the regulated community and other stakeholders.

**Comment Response:**

The EPA is not creating separate emission threshold or lag time requirements for wet landfills. See Section VI.A.3 of the 2016 NSPS Final Preamble. See Section VI.A.3 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** S. Woodson

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0148

**Comment Excerpt Number:** 6

**Comment Excerpt:**

Benson et. al analyzed conventional landfill practices compared to those of bioreactor and recirculation landfills. The study recognized techniques aimed to improve and reduce landfill gas regeneration and efflux from open and closed landfill. Benson et. al proposed the idea that accelerating the rate of decomposition, paired with enhanced monitoring and maintenance, will reduce the rate of long-term monitoring of effluxed LFG and decrease overall production of methane gas (Benson et. al, 2006) . Increasing the rate of decomposition is commonly completed by the addition of water or leachate to landfill, which catalyzes microbial activity and production.

Results indicated that recirculation of leachate would be an efficient technique in controlling degradation of solid waste and increasing landfill gas production for quick capture and control. Application of this alternative mitigation technique has shown to decrease the risk of MSW-settlement induced damage through the process of rapidly increasing the decomposition of municipal solid waste (Benson et. al, 2006). Captured landfill gas is currently used as a renewed energy source in some areas. Not only will improvements to technological devices improve monitoring and surveillance of LFG, it will also be advantageous for the energy industry. Dissimilar to the techniques and benefits illustrated in the revision guidelines, flux chambers and unconventional measurement techniques of methane and NMOC have been proved to be efficient techniques in reducing total landfill gas emission rates.

**Comment Response:**

The EPA has requested additional information from landfills recirculating leachate or adding liquids. The EPA has not specifically adjusted requirements for these landfills at this time.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 84

**Comment Excerpt:**

EPA's approach to the definition of wet landfills focuses too narrowly on precipitation and leachate variables and fails to consider many other landfill characteristics that influence moisture content in landfills.

In our comments on the proposed NSPS and ANPRM, WM noted that scientific data does not support the position that wet landfills can be defined on the basis of precipitation per year and/or leachate recirculation levels. The proposed AP-42 revisions defined "wet" landfills as "landfills which add large amounts of water to the waste."<sup>24</sup> At the time, WM commented on this issue from the Proposed AP-42 Revision as follows:

This definition has no practical application because it is unclear and completely subjective as to what volume constitutes a "large" amount of water. It appears that the imprecision is a necessary reflection of the imprecision in the definition of "wet" used in the Reinhart study on which the new k value is based. One problem in relying on the Reinhart report to support a new k is that no analysis of the influence of the waste moisture content, the amount of water added or annual precipitation on their modeled k was performed in the report. Sites were simply classified as wet or dry without any demonstrable criteria.<sup>25</sup>

In addition, WM's comments<sup>26</sup> on the Reinhart paper<sup>27</sup> explained that there is no established quantitative measure of moisture levels in landfills. Further, we noted that precipitation, in and of itself, is not well correlated with landfill moisture levels. Other factors, like waste acceptance rates, the amount of moisture in the disposed waste, cell size, cover type, and cover timing also have a significant impact on landfill moisture levels.

It is our view that EPA's proposal to use precipitation levels as the sole criteria for classifying "wet" landfills is misguided. We note that EPA has not provided any scientific justification for this approach in the current proposed NSPS and EG rules. We strongly urge EPA to avoid simplistic definitions that fail to account for the complexity of the landfill environment. Landfills should not be defined as "wet" based only on precipitation of over 40 inches per year. EPA must base its approach on sound science and analysis.

[Footnote 24] US EPA, *Proposed Revisions to the AP-42 Chapter 2.4 Municipal Solid Waste Landfills*, 2008, p. 2.4-6.

[Footnote 25] WM Comments on EPA's *Proposed Revisions to the AP-42 Chapter 2.4 Municipal Solid Waste Landfills* and the *Background Information Document* titled "Emission Factor Documentation for AP-42 Section 2.4 Municipal Waste Landfills", submitted to EPA on May 5, 2009.

[Footnote 26] WM Comments on "*First-Order Kinetic Gas Generation Model Parameters for Wet Landfills Draft*," [the Reinhart paper], published in 2004. WM comments were provided on March 10, 2005.

[Footnote 27] US EPA, op cit.

**Comment Response:**

The EPA is not making adjustments for "wet landfills" or providing a definition of "wet landfills" at this time. The EPA has requested additional information on landfills recirculating leachate or adding liquids through the final actions and believes this information will be beneficial in assessing emissions in the future.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 64

**Sort Order:** 700

**Comment Excerpt:**

*Lower threshold for wet landfills to install gas collection.* In wet landfills, moisture is increased by one or more strategies, including adding outside liquids, recirculating leachate and postponing installation of the final cover. Taking these actions advances near-term gas generation goals, but no gas collection system may be present while this process takes place, resulting in increased emissions; and, as explained above, landfill-to-gas projects may lead to far greater fugitive methane than captured methane. EPA asks whether the emission threshold that compels installation of a GCCS should be lowered, and we agree that it should. However, the wetting of landfills should be banned unless it is clearly established that more gas is captured than escapes.

**Comment Response:**

The EPA is not creating a separate emission threshold or lag time requirements for wet landfills in this action. Instead, the EPA believes it is appropriate to further assess emissions from wet landfills prior to taking additional action on control requirements or changes to the k-values. See Section VI.A.3 of the 2016 NSPS Final Preamble. See Section VI.A.3 of the 2016 EG Final Preamble.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 35

**Sort Order:** 701

**Comment Excerpt:**

In the evolution from dry to wet landfills, no visible attention was given to the resulting enormous expansion in greenhouse emissions, not to mention the substantial increase in emissions of volatile hazardous air pollutants to downwind neighbors, nor noxious odor problems that have plagued these wet cells, along with the far greater risk of massive garbalanches as all that moisture reduced the coefficient of friction holding the mountains of garbage together.

EPA has stated (without apparently understanding the implications), that recirculating landfills ramped up near term methane generation over traditional landfills by 2 to 10 times and boosted the fraction of landfill gas that is methane by more than a third. Yet, the industry's own reports show that, while gas generation jumps as much as 10 times, the best recirculating landfills only increase the volume of gas captured by 75%.<sup>45</sup> Simple math, then, indicates that leachate recirculation has slashed capture efficiency in half. Together, this means *wet landfills will release 9 times more near-term methane as a traditional site*,<sup>46</sup> and they are becoming the dominant form in the landfill mix.

If the shift to wet landfills is not reversed soon, the impact in increased near term methane emissions will be so great that the net increase in methane from landfills will overwhelm the reductions at oil and gas rigs.

EPA needs to recognize that, with the urgency of global warming, the enormous climate harms inflicted by wet landfills, which are advancing the date when we cross irreversible tipping points, are unacceptable. No more than two years should be allowed for landfills to wind them down these operations.

[Footnote 45] 67 FEDERAL REGISTER 36463 and 36465 (May 22, 2002).

[Footnote 46] Approximately 94% of this increase is due to the fact that, as decomposition is accelerated by that additional moisture, the timing of when much of that gas generation would normally have occurred is shifted from the distant future many decades hence to the present. Total lifetime gas generation, however, remains the same, although the total volume of that lifetime gas that is methane increases by more than a third because the gas that is generated is richer in methane.

Nonetheless, timing differences are not irrelevant to the Administration's climate strategy centered on methane. In fact, now timing is everything. That is because we are presently confronted by the frightening risk of crossing irreversible trigger points in places like the arctic, the Siberian tundra, Greenland and the Western ice sheet in Antarctica. The last thing a rational society would contemplate in these circumstances is drastically altering operational practices in ways that shift massive volumes of sky high-GWP methane from a future time to the present.

Sadly, in a tragic indication of how far regulatory capture has metastasized, none of that appears to hold any sway with EPA's focus on salvaging the unsustainable landfill-centric business model at all costs.

### **Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121 Comment Excerpt Number 64 under comment code 3g.

**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator

**Commenter Affiliation:** Californians Against Waste, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0191

**Comment Excerpt Number:** 17

**Sort Order:** 702

**Comment Excerpt:**

Wet landfill practices must be banned. Over half of the landfills that would be subject to regulation under the Proposed Rule would be classified as “wet cell” landfills, including “bioreactors,” landfills that recirculate leachate, and those located in areas that receive 40 inches of moisture yearly.<sup>25</sup> Wet landfills present unique concerns related to fugitive methane emissions because anaerobic decomposition is enhanced in the presence of elevated moisture. In turn, the increased production of methane leads to greater chances of leakage, even in the presences of landfill gas collection devices. Furthermore, the conditions inherent to wet-cell landfills result in an increased risk of fire.<sup>26</sup> Existing standards for non-bioreactor<sup>27</sup> landfills were developed under the assumption of dry conditions. Consequently, the emission guidelines should be updated to reflect the prevalence of high-moisture conditions at many landfills. The EPA has presented one option: an accelerated schedule for installing and expanding landfill gas collection systems. While an accelerated schedule would reduce some fugitive emissions, the best means for addressing such emissions is to ban the practice of leachate recirculation and “wet cell” construction. Thus, EPA must cease granting research development and demonstration (“RD&D”)<sup>28</sup> exceptions to the prohibition on outside liquids. The EPA should ensure that to the maximal extent possible moisture content is minimized in areas that receive high levels of precipitation. Furthermore, neither leachate recirculation nor delays in the installation of final covers should be allowed.

Footnotes:

25 Proposed Rule at 52,137.

26 See, e.g., J. Powell, *supra* note 4.

27 Bioreactors are subject to separate standards at 40 CFR part 63, subpart AAAA.

28 Under 40 C.F.R. § 258.28 outside liquids are banned, but there is an exception at 40 C.F.R. § 258.4. It is this loophole that must be closed.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121 Comment Excerpt Number 64 under comment code 3g.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121



**Comment Excerpt Number:** 69

**Sort Order:** 703

**Comment Excerpt:**

*Phase out of “wet” landfills.* The recent advent of recirculating landfills may increase methane emissions. A core precept of the 1991 RCRA Subtitle D landfill rules was based on “dry tomb” principles in which no liquids were to be added deliberately, barriers were required to minimize infiltration, and pumping systems were to remove any significant moisture volumes that managed to intrude. These measures were intended to increase the likelihood that the many pollutants in our solid discards, several of which are also hazardous, would be kept immobile and isolated from the environment.<sup>71</sup> By the end of the decade, however, *de facto* industry practice increased moisture levels by recirculating leachate and delaying installation of a final cover. Reasons for this practice include acceleration of decomposition to increase the rate of settlement and thus landfill space; reduction of leachate treatment expense; and boosting of the Btu value in landfill gas for more profitable energy recovery. As noted previously, because gas collection systems function less well without a top seal, wet landfills likely emit substantially greater volumes of fugitive landfill gas, and that probably is so also because methane creation is intentionally increased. Wet landfill practices, which include actively recirculating landfills, also release more VOCs into the atmosphere.<sup>72</sup>

[Footnote]

(71) *See generally* 40 C.F.R. 258.28.

(72) We note that EPA has acknowledged the presence of HAPs in landfills and urge EPA to adopt landfill hazardous air pollution regulations under 42 U.S.C. § 7412.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121 Comment Excerpt Number 64 under comment code 3g.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 9

**Comment Excerpt:**

Horizontal collection. Another example of local conditions confounding model assumptions is the fact that many landfills use wet cell practices to boost profitability that will create the patina of early gas collection as a matter of law without the substance, in fact<sup>9</sup>. These types of operations first delay installation of the final cover, which is essential for gas collection to function, for years. That already minimizes any benefit from claiming to have a GCCS earlier.

Footnote:

9 See Part III, *infra*.

**Comment Response:**

The EPA has not adjusted lag times for wet landfills in these final actions.

**3.8 Subcategory of Closed Landfills**

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 15

**Comment Excerpt:**

The DEP believes that it is appropriate to allow MSW landfill owners and operators to close a landfill within 13 months after publication of the final Emission Guidelines to avoid being significantly affected by the final rule. The closed landfill subcategory will operate at the existing NMOC emission rate threshold of 50 Mg/yr instead of the proposed rate of 34 Mg/yr, which is appropriate.

**Comment Response:**

The EPA is finalizing the subcategory for closed landfills and is expanding the subcategory to include those landfills that close within 13 months after publication of the final Emission Guidelines. Landfills in the closed landfill subcategory continue to be subject to a 50 Mg/yr NMOC emission rate threshold. See Section VI.C.1 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 28

**Comment Excerpt:**

We applaud the EPA's acknowledgement that closed landfills should be categorized separately. In addition, we support the concept of expanding the subcategory to include landfills that close within 13 months of the publication of the EG. It is critical that landfills which are planning to close have the necessary time to meet all of the criteria and file the required documentation to achieve closed status.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, excerpt number 15, under comment code 3h.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 35

**Comment Excerpt:**

We applaud the EPA's acknowledgement that closed landfills should be categorized separately. We support the concept of this proposed subcategory for closed landfills. In addition, we support the concept of expanding the subcategory to include landfills that close within 13 months of the publication of the NSPS and EG. It is critical that landfills which are planning to close have the necessary time to meet all of the criteria and file the required documentation to achieve closed status.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, excerpt number 15, under comment code 3h.

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**Commenter Name:** Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills

**Document Control Number:** EPA-HQ-OAR-2014-0451-0145

**Comment Excerpt Number:** 12

**Comment Excerpt:**

We support the proposal to maintain the 50 Mg/year emission threshold for existing closed landfills.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, excerpt number 15, under comment code 3h.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 5

**Comment Excerpt:**

The DEP believes that it is appropriate to allow MSW landfill owners to permanently close MSW landfills within 13 months after publication of the final Emission Guidelines. To this end, EPA should expand the "closed landfill" subcategory in the final Subpart Cf provisions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, excerpt number 15, under comment code 3h.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 18

**Comment Excerpt:**

The DEP agrees with retaining the current threshold of 50 Mg/yr for the closed landfill subcategory, as proposed.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, excerpt number 15, under comment code 3h.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 43

**Comment Excerpt:**

Republic also supports expanding the "closed landfill" subcategory to include landfills that close within 13 months of the publication of the final emission guidelines to avoid interfering with the closure of landfills already schedule to close in the near term. Absent a reasonable transition policy, landfills that are scheduled to close within a few months after EPA finalizes its new emission guidelines may not have sufficient time to meet any new criteria and file newly required documentation to achieve closed status.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, excerpt number 15, under comment code 3h.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 29

**Comment Excerpt:**

*In the proposed rules, USEPA requested comments on expanding closed landfill subcategory to include landfills that close within 13 months after publication of the final EG rules in the Federal Register.*

We support the extended timeframe for the closed landfill subcategory. This would allow landfill owners to evaluate landfills nearing the end of their operational life and determining whether they should close the facility rather than continue as an open landfill under the new rules.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, excerpt number 15, under comment code 3h.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 42

**Comment Excerpt:**

Based on the analysis and comments provided above indicating that a change in NMOC threshold is not justified, a closed landfill subcategory is unnecessary. However, Republic does support EPA's recognition that closed landfills have low emissions and should not be subject to a new lower NMOC threshold. *See* 80 Fed. Reg. at 52103, 52112, & 52130-31. Thus, if EPA does revise the NMOC threshold, Republic supports a subcategory of closed landfills to ensure closed landfills demonstrated to have low emissions are not unnecessarily burdened with the requirement to install or continue operating a GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, excerpt number 15, under comment code 3h.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 7

**Comment Excerpt:**

Additional costs will be incurred if the reduced trigger of 40 Mg/yr is implemented on existing landfills that have closed and have decommissioned or are in the process of decommissioning their GCCS systems in accordance with the current 50 Mg/yr standard.

TXSWANA believes that closed sites or other sites that have decommissioned the GCCS systems because their reduced emission levels satisfied the present 50 Mg/yr requirement should be exempted from this reduction in the NMOC limit. It would be unreasonably costly to require re-installation or re-operation of a system that (1) acted in compliance with the then applicable rule and (2) had a diminished and declining gas curve. The extra costs of re-installing or refurbishing a GCCS system that will only be re-operated for a short term (until the NMOC emissions fell below 40 Mg/yr) and, during this short time, the emissions would be below the level presently considered acceptable imposes an unreasonable obligation. Not much upside for potentially a lot of cost.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, excerpt number 15, under comment code 3h.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 25

**Comment Excerpt:**

Although the reduction in threshold will initially only apply to new sources or those drawn in through modification or expansion, the industry is concerned about the potential for this [lower threshold] requirement to be carried over to the existing Subpart WWW and Emissions Guidelines. If that were to occur, sites that have exited the program could presumably be at risk to be pulled back in after having decommissioned their GCCS. To avoid the potential for this occurring, we recommend that EPA expressly exempt sites that have exited the program.

**Comment Response:**

The EPA is finalizing the subcategory of closed landfills and is expanding the subcategory to include those landfills that close within 13 months of publication of the final rule. Landfills in the closed landfill subcategory continue to be subject to a 50 Mg/yr NMOC emission rate threshold for installing a GCCS, consistent with the NMOC threshold in 40 CFR part 60, subparts Cc and WWW. See Section VI.C.1 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number: 28**

**Comment Excerpt:**

*In the proposed rules, USEPA requested comments on whether the proposed subcategory for closed landfills is the most appropriate method for controlling emissions and addressing concerns with closed landfills or whether USEPA should exempt closed landfills from the proposed Subpart Cf entirely.*

We would support exempting the new closed landfill subcategory from Subpart Cf entirely. We understand the limitations of GCCS operations at older, closed landfills. These facilities no longer have income streams from waste acceptance and owners have financially planned for the post-closure of these facility based on the current rules. It would cause additional financial and operational burden to change the rules so late in the life of these facilities.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 25, under comment code 3h.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 13

**Comment Excerpt:**

EPA has proposed, however, to retain the 50 Mg/yr threshold at closed landfills, citing concerns with implementing stronger standards at landfills after they have closed. Closed landfills are, however, a substantial source of emissions,<sup>54</sup> and as described above, evidence demonstrates that capture at much lower emissions thresholds is feasible. Moreover, EPA's analysis suggests that the lower threshold would only affect 36 additional landfills in 2025,<sup>55</sup> and in any event, EPA has proposed Tier 4, emissions-based requirements for removal of GCCS, which would allow closed landfills with low emissions to address concerns related to continued operation of GCCS.

We recommend that EPA apply the 34 Mg/yr threshold at both open and closed landfills. EPA projects that consistent application of these standards will result in important emission reduction benefits—an additional 200,000 metric tons of methane in 2025 beyond standards that apply only at open landfills.<sup>56</sup> In addition, EPA's analysis demonstrates only very modest additional costs associated with these reductions, increasing cost from a projected \$4.30/ton CO<sub>2</sub> equivalent to \$4.90/ton CO<sub>2</sub> equivalent. Consistent with the requirements of section 111, EPA should apply these strengthened thresholds uniformly at open and closed landfills.

[Footnote 54] See EDF White Paper at 16 (citing information from EPA's Mandatory Reporting Rule indicating that closed landfills are responsible for approximately half of methane emissions from the sector).

[Footnote 55] 80 Fed. Reg. at 52,130.

[Footnote 56] 80 Fed. Reg. at 52,164.

**Comment Response:**

The EPA is finalizing the subcategory for closed landfills and is expanding the subcategory to include those landfills that close within 13 months after publication of the final Emission Guidelines. Landfills in the closed landfill subcategory continue to be subject to a 50 Mg/yr NMOC emission rate threshold. See Section VI.C.1 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 12

**Comment Excerpt:**

While EPA proposes to apply a more stringent 34 Megagram non-methane organic compound emissions threshold to active landfills, the Agency would exclude all closed landfills from that proposed standard (and continue the current 50 Megagram standard) based on the faulty assumption that closed landfills are owned by entities that have ceased operation and do not have funds to support continued GCCS operation.

Although for active landfills EPA proposes to lower the current NMOC emissions threshold for installation and operation of GCCS from 50 Mg per year to 34 Mg per year, in the case of closed landfills EPA would continue the 50 Mg threshold. *See* 80 Fed. Reg. at 52130- 131. The Agency’s rationale appears to focus on concerns related to small entities.

*Id.* at 52130/2-3. These concerns are neither necessary nor justified.

As EPA notes in the preamble for the proposed Emission Guidelines as well as the ANPRM, landfill ownership-operation is increasingly dominated by a handful of very large companies, with just two companies having nearly 40% of overall industry revenue. *See* [http://www3.epa.gov/airtoxics/landfill/landfills\\_nsps\\_proposal\\_eia.pdf](http://www3.epa.gov/airtoxics/landfill/landfills_nsps_proposal_eia.pdf) at 2-13 and 2-14. In addition, “[l]arge, private companies are better able to accommodate the increased costs of owning a landfill, since owning multiple sites, many of which have large capacities, provides an economy of scale for cost expenditures.” *Id.* at 2-12. A necessary part of the business of these large landfill companies is closure and post-closure responsibilities at their landfill properties. *See* <http://www.sec.gov/Archives/edgar/data/823768/000095012315002550/d793975d10k.htm> (noting Waste Management Inc.’s ongoing responsibility at 247 active landfills and 210 closed landfills); <http://www.sec.gov/Archives/edgar/data/1060391/000106039115000010/rsg-2014x1231x10xk.htm> (describing Republic Service’s ongoing responsibility at 189 active landfills and 125 closed landfills). In short, EPA’s proposed 34 Mg threshold should also apply to closed landfills, subject to an exception in the case of small independent companies and units of government that do not have continuing involvement in landfill ownership and operation.



**Comment Response:**

As explained in 80 FR 52130, *after closure, the gas flows at landfills decline and the ability to achieve additional reductions also declines*. The EPA also highlighted the following issues to support creation of the closed landfill subcategory: 1) the need to supplement flare with pilot (fossil) fuels in order to maintain flare operation despite declining gas quantities and quality, 2) potential extension of the amount of pilot fuel necessary for flame stability, 3) potential for limited access to additional revenues because closed landfills are no longer collecting tipping fees and the cost for GCCS and regulatory compliance were not factored into their closure plans, 4) fixed compliance costs regardless of the operating status of the landfill, such as permitting fees, drill rig mobilization fees. The EPA also highlighted commenter concerns about staffing limitations at closed landfills.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 44

**Comment Excerpt:**

Republic is also concerned that landfills that have already been closed may not have sufficient documentation to satisfy any new requirements imposed under EPA's proposed emission guidelines. As you are aware, the current NSPS and emission guidelines do not require closure documentation to be maintained for the life of the facility. As a result, closure documentation needed to comply with the proposed emission guidelines may have already been discarded by landfills and regulatory authorities. Republic asks EPA to consider alternative requirements for closed landfills that may not be able to provide complete closure documentation.

**Comment Response:**

Landfills in the closed landfill subcategory of the Emission Guidelines would be exempt from initial reporting requirements in subpart Cf, provided that the landfill already met these requirements under subparts Cc or WWW of 40 CFR part 60. See Section VI.C.1 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Claudia R. Rodgers, Acting Chief Counsel

**Commenter Affiliation:** Small Business Administration

**Document Control Number:** EPA-HQ-OAR-2014-0451-0155

**Comment Excerpt Number:** 5

**Comment Excerpt:**

*EPA should consider allowing more landfills to close and remain under the current regulations.* By setting the cutoff date as of the date of the publication of the proposed rule EPA provided no practical notice to regulated entities of this flexibility. Facilities nearing the end of their useful

life will have little ability to change their fees and plan for the longer operation of the GCCS required by lowering the emission threshold to 34 Mg/yr, and so may find an early closure to be preferable. Advocacy recommends providing the opportunity to be ‘closed’ under the Emission Guidelines up until the state or Federal regulations implementing the revised Emission Guidelines are effective.

**Comment Response:**

The EPA is finalizing the subcategory for closed landfills and is expanding the subcategory to include those landfills that close within 13 months after publication of the final Emission Guidelines. Landfills in the closed landfill subcategory continue to be subject to a 50 Mg/yr NMOC emission rate threshold. See Section VI.C.1 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** William C. Allison V, Director, Air pollution Control Division  
**Commenter Affiliation:** Colorado Department of Public Health and Environment  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0163  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

Due to the poor quality of landfill gas in arid areas, the Division suggests that EPA not rely solely on surface emissions when defining a closed landfill in arid areas, such as Colorado. Instead, the Division suggests that EPA consider surface emissions and the characteristics of gas being collected, such as low methane, low carbon dioxide, inability to keep vacuum, or exceeding the nitrogen / oxygen thresholds when defining a closed landfill or closed area of a landfill.

**Comment Response:**

The EPA has defined a closed landfill as a landfill that is no longer accepting solid wastes. There is no distinction between different climate conditions (e.g., wet, arid, etc.) as part of this definition. See section VI.C.2 of the final Emission Guidelines Preamble for the criteria for capping, removing, or decommissioning a GCCS.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 24

**Comment Excerpt:**

**WM Supports EPA’s Proposal of a Subcategory for Closed Landfills, Which Would Remain Subject to the 50 Mg/yr NMOC Threshold**

We applaud EPA's acknowledgement that closed landfills should be categorized separately and subject to the existing 50 Mg/yr NMOC threshold. We recommend that this proposed subcategory for closed landfills be adopted in the final Subparts Cf and XXX. In addition, we support the concept of expanding the subcategory to include landfills that close within 13 months of the publication of the final Emissions Guidelines and NSPS. It is critical that landfills that are planning to close have the necessary time to meet all of the criteria and submit the documentation required to be designated as closed.

For clarity, we are recommending changes to EPA's proposed definition as follows:

*Closed landfill means a landfill in which solid waste is no longer being placed, and in which no additional solid waste will be placed without first filing a notification to the agency. If such notification has been filed, and additional solid waste is placed in the landfill, the landfill is no longer closed.*

*Closed landfill area means an area of a landfill in which solid waste is no longer being placed, and in which no additional solid waste will be placed without first filing a notification to the agency. If such notification has been filed, and additional solid waste is placed in that area of the landfill, that landfill area is no longer closed.*

*Closed landfill subcategory means the subcategory of existing or new landfills that stopped accepting waste on or before [insert date 13 months after date of publication of the final EG Rule in the Federal Register].*

**Comment Response:**

The EPA is finalizing the subcategory for closed landfills and is expanding the subcategory to include those landfills that close within 13 months of publication of the EG and NSPS. Landfills in the closed landfill subcategory continue to be subject to a 50 Mg/yr NMOC emission rate threshold for installing a GCCS. See Section VI.C.1 of the 2016 EG Final Preamble. The EPA has provided additional language to address closed landfill areas the final NSPS and Emission Guidelines. The EPA has also provided definitions of closed landfill subcategory at 60.41f and closed landfill at 60.41f and 60.761.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 45

**Comment Excerpt:**

We also recommend EPA delete the cross-reference to the closure requirements under the solid waste permitting rules, including the Resource Conservation and Recovery Act (RCRA) Subtitle D or state-equivalents. Removing those references would be consistent with the 1998 NSPS amendment, in which EPA removed references to Part 258 in the definition of "closed landfill" after determining that the Part 258 reference was not appropriate for all landfills, given that landfills closed prior to the October 1993 effective date of Part 258 and are not subject to Part 258. To avoid confusion, EPA should likewise remove the reference under the proposed 40 CFR

Part 60.38f(f) to Part 258 closure requirements. Since the goal of the provisions related to closed landfills should only be to ensure the area will not accept more waste, and therefore will not generate more landfill gas, there should be no reason to require documentation of final cover or final approval of closure from a solid waste agency in determining whether a landfill should qualify as "closed" under the emission guidelines.

Because the primary issue of concern is whether the landfill or landfill area will accept more waste, and thus generate more landfill gas. It is not important whether the landfill or area has a final cover or has received a final approval of closure from the solid waste agency.

In light of EPA's decision to propose a closed landfill subcategory and the comments provided above, Republic also recommends that EPA consider adopting the following definitions to provide additional clarity to the final rule:

*Closed landfill* means a landfill in which solid waste is no longer being placed, and in which no additional solid waste will be placed without first filing a notification to the Administrator. Once a notification has been filed, and additional solid waste is placed in the landfill, the landfill is no longer closed.

*Closed landfill area* means an area of a landfill in which solid waste is no longer being placed, and in which no additional solid waste will be placed without first filing a notification to the agency. Once a notification has been filed, and additional solid waste is placed in that area of the landfill, the landfill area is no longer closed.

*Closed landfill subcategory* means a closed landfill that stopped accepting waste on or before 13 months after the publications of the final rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 comment excerpt number 24 under comment code 3h. The EPA has retained references to Part 258, where appropriate and continues to believe that closure reports are appropriate.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 36

**Comment Excerpt:**

For clarity, we are recommending changes to EPA's proposed definition as follows:

Closed landfill means a landfill in which solid waste is no longer being placed, and in which no additional solid waste will be placed without first filing a notification to the agency.

Closed landfill area means an area of a landfill in which solid waste is no longer being placed, and in which no additional solid waste will be placed without first filing a notification to the agency.

Closed landfill subcategory means a closed landfill that stopped accepting waste on or before 13 months after the publications of the final rule.

A key component of these definitions is that they not be linked to closure requirements under solid waste permitting rules such as Resource Conservation and Recovery Act (RCRA) Subtitle D or state-equivalent rules. These requirements are complex, and it can take many years to obtain official closed status. The primary issue under the NSPS/EG is whether the landfill or landfill area will accept more waste, and thus generate more landfill gas. It is not important whether the landfill or area has a final cover or has received a final approval of closure from the solid waste agency.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 comment excerpt number 24 under comment code 3h.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 29

**Comment Excerpt:**

For clarity, we recommend the following additions to EPA's proposed definitions:

Closed landfill refers to a landfill in which solid waste is no longer being placed, and in which no additional solid waste will be placed without first filing a notification to the agency.

Closed landfill area refers to an area of a landfill in which solid waste is no longer being placed, and in which no additional solid waste will be placed without first filing a notification to the agency.

Closed landfill subcategory refers to a closed landfill that stopped accepting waste on or before 13 months after the publications of the final rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 comment excerpt number 24 under comment code 3h.

### **3.9 Thresholds and Timing-Other**

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

We recommend that EPA adopt the same design capacity and NMOC thresholds in the NSPS and EG. Given the small number of anticipated new landfills and the fact that EPA projects these landfills will be larger, the impacts of lowering design capacity and NMOC thresholds will be greater when applied to existing landfills. Even so, we urge EPA to adopt consistent applicability standards for both the NSPS and EG so as not to create incentives for landfills to modify and potentially be subject to less rigorous thresholds.

**Comment Response:**

In the final NSPS and Emission Guidelines, the EPA has maintained the existing design capacity at 2.5 million Mg and 2.5 million m<sup>3</sup> and finalized the NMOC emission threshold at 34 Mg/yr. Both of these threshold levels are the same in the final NSPS and Emission Guidelines. See section IV.A.1 of the final NSPS Preamble and section IV.A.1 of the final Emission Guidelines Preamble.

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**Commenter Name:** Comment submitted by Paul Aud, Environmental Engineering Manager

**Commenter Affiliation:** Louisville Metro Air Pollution Control District (APCD)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0091.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

EPA should require landfills that produce a certain amount of LFG to use that fuel for heating buildings, generating electricity for the power grid, providing steam for other industries and for its own operations.

**Comment Response:**

The final rules do not specify a requirement for the use of landfill gas for beneficial uses such as those listed by the commenter. Each landfill owner or operator will make a site-specific determination for how to control landfill gas which includes destruction or treatment for sale or beneficial use. See section VI.E of the final NSPS Preamble for additional discussion.

## **4.0 GCCS COMPONENTS AND PERFORMANCE**

### **4.1 GCCS-BSER**

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 11

**Comment Excerpt:**

**The efficacy of gas collection is inherently uncertain.** We note at the outset that in the NPRM, EPA has not changed its assessment from 1996 that it is not “technically feasible” to measure the amount of gas in a landfill that is available for collection. In other words, the agency does not know how much methane is contained in any given landfill, and thus cannot determine the percentage of existing methane that any of particular measure actually removes. The agency states that for this reason, it again is not proposing a standard of performance for this source, and instead is retaining its (slightly adjusted) design and operation standard for gas control and collection systems (“GCCS”). EPA also states it has determined that a “control system designed and operated within the parameters demonstrated *in the performance test* to reduce NMOC (and, in turn, methane) by 98 percent by weight” represents BSER for controlling landfill gas emissions. The lack of information about how much gas is actually in the landfill and how much is subject to either removal or leakage, however, simply underscores the very large degree of uncertainty concerning the efficacy of EPA’s choice of emission controls – as does the fact that the GCCS operating standard of 98% is based on a performance test and not on actual, ongoing, on-site measurements. In fact, current field measurements of landfills’ gas collection performance are inadequate; landfills have no smokestacks through which all escaping gas can be measured. To further complicate matters, even if instantaneous measurements could be taken, methane generated by decaying wastes buried in the ground is not produced all at once as the wastes are interred, but rather decomposition slowly continues its work over decades.

**Comment Response:**

The EPA has revised its impact analysis to account for gas collection efficiency. See Chapter 3 of the RIA for these final actions for more information on collection efficiency.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 12

**Comment Excerpt:**

In 2007, the Intergovernmental Panel on Climate Change’s 2007 Fourth Assessment Report<sup>31</sup> undertook an extensive independent analysis which concluded that “estimates of ‘lifetime’ recovery efficiencies may be as low as 20%.”<sup>32</sup> As one IPCC AR4 commenter pointed out,<sup>33</sup> the following factors contribute to this conclusion: (a) high moisture levels are necessary for decomposition and gas generation but are only intermittently present; (2) a cover is necessary for gas collection but may not be installed until the middle of a landfill’s life and deteriorates over time;<sup>34</sup> (3) gas generation tapers off after the site, capped by a final cover and deprived of infiltrating rain, dries out; and (4) when sufficient moisture is present to generate gas, gas collection systems may not be installed or fully functional.<sup>35</sup>

These facts suggest that gas collection works properly only when the site is sealed. However, landfills are sealed only during the middle period of their life cycle when relatively little gas is generated due to the absence of critical moisture. In other words, gas collection and gas generation tend to rise and fall in a somewhat inverse relationship to each other.

According to the IPCC AR4, the best collection systems can achieve more than 90% collection efficiency *during the time a landfill is sealed*.<sup>36</sup> That, of course, is not always the case. In addition, the report points out that not all landfills perform optimally and others “may have less efficient or only partial gas extraction systems,” and added that “there are fugitive emissions from landfilled waste prior to and after the implementation of active gas extraction.”<sup>37</sup> Therefore, the IPCC concluded, “*estimates of ‘lifetime’ recovery efficiencies may be as low as 20%.*”<sup>38</sup>

[Footnotes]

<sup>31</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: Mitigation of Climate Change. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Chapter 10, Waste Management and GHG-Mitigation Technologies* (2007) (“IPCC AR4 WGIII”) at 600, available at [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg3/en/ch10.html](http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10.html).

<sup>32</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: Mitigation of Climate Change. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Chapter 10, Waste Management and GHG-Mitigation Technologies* (2007) (“IPCC AR4 WGIII”) at 600, available at [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg3/en/ch10.html](http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10.html).

<sup>33</sup> Oonk, Hans, *Expert Review of First Order Draft of Waste Chapter to IPCC’s Fourth Assessment Report* (2006) at Comment 10-38 (attached).

<sup>34</sup> Properly operating vacuum-based gas collection systems also require a top seal to prevent surface oxygen being drawn into the piping, which would create flammable conditions. Duffy, Daniel, *Landfill Gas to Energy: Means and Methods*, MSW Management (January-February 2010) (attached).

<sup>35</sup> Though gas is generated shortly after waste emplacement begins, gas systems are not required to be installed until five years later. 40 C.F.R. 60.752(b)(2)(ii)A)(2)(i). Although the systems are then in place for a period of time after a cover is installed, covers deteriorate, and the gas collection systems are withdrawn from service before the end of the 30-year post-closure period. 40 C.F.R. 60.752 (b)(2)(v).

<sup>36</sup> IPCC AR4 WGIII at 600.

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

#### **Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121 Comment Excerpt Number 11 [under Comment Code 4a](#).



**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 13

**Comment Excerpt:**

Gas collection systems' performance is certainly not optimal. Many of the inherent flaws of gas collection systems cannot be overcome as long as decomposables continue to be co-buried with inert discards.

**Comment Response:**

As outlined in 80 FR 52110, the best system of emission reduction (BSER) for the NSPS and Emission Guidelines continues to be a well designed and well operated gas collection and control system. The EPA's final actions do not mandate source separation or organics diversion. As outlined in 80 FR 52116, the EPA recognizes the importance of diversion and its ultimate effect on methane emissions from landfills. The EPA continues to encourage diversion through flexible alternatives in the final actions.

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**Commenter Name:** Ted Michaels, President

**Commenter Affiliation:** Energy Recovery Council (ERC)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0175

**Comment Excerpt Number:** 4

**Comment Excerpt:**

Landfills are imperfect systems, and even the most effective gas collection systems still emit significant amounts of methane over their lifetime. Over the life of waste in a landfill, the lifetime collection efficiency at landfills that collect gas is estimated to be only 35 – 70%, leaving a significant amount of methane uncollected.<sup>8-12</sup> Furthermore, landfills don't measure their emissions, they model them: One study found the typical landfill emissions model used underestimated emissions.<sup>13</sup>

[Footnote 8] Environmental Commissioner of Ontario, *EcoIssues: GHG11 Landfill Methane* Webpage, [http://ecoissues.ca/GHG11\\_Landfill\\_Methane](http://ecoissues.ca/GHG11_Landfill_Methane), accessed October 20, 2015.

[Footnote 9] ischedick M. *et al.* (2014) *Industry. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., *et al.* (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.  
[https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc\\_wg3\\_ar5\\_chapter10.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter10.pdf)

[Footnote 10] Levis, J., M.A. Barlaz (2014) *Landfill Gas Monte Carlo Model Documentation and Results*, Available at:  
[http://www3.epa.gov/epawaste/conserves/tools/warm/pdfs/lanfl\\_gas\\_mont\\_carlo\\_modl.pdf](http://www3.epa.gov/epawaste/conserves/tools/warm/pdfs/lanfl_gas_mont_carlo_modl.pdf)

[Footnote 11] CalRecycle (2012) CalRecycle Review of Waste-to-Energy and Avoided Landfill Methane Emissions. Available at:

<http://www.calrecycle.ca.gov/Actions/Documents%5c116%5c2012%5c689%5cCalRecycle%20Review%20of%20WtE%20Avoided%20Emissions%2007032012.pdf>

[Footnote 12] See Exhibit 7-9 of U.S. EPA (2015) *Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM)*,

[http://www3.epa.gov/epawaste/conserve/tools/warm/pdfs/WARM\\_Documentation.pdf](http://www3.epa.gov/epawaste/conserve/tools/warm/pdfs/WARM_Documentation.pdf)

[Footnote 13] Amini, H.R., D. Reinhart, A. Niskanen (2013) Comparison of first-order-decay modeled and actual field measured municipal solid waste landfill methane data, *Waste Management* 33: 12 (December 2013), 2720 – 2728.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121 Comment Excerpt Number 11 [under Comment Code 4a](#).

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 4

**Comment Excerpt:**

Gas collection & control systems with open flares or enclosed combustors remain the BSER.

Republic agrees with EPA's determination that a "well-designed and operated landfill GCCS remains [best system of emission reduction] BSER" and its decision to maintain the combination of a design and operational standard for the collection system in lieu of an emission standard. 80 Fed. Reg. at 52110. As recognized by EPA, design and operational standards are appropriate for landfills because there is no way to compare the landfill gas available for collection to the amount actually collected. *See* 56 Fed. Reg. 24484 (May 30, 1991); 79 Fed. Reg. at 41802.

Republic also agrees with EPA that a control system designed and operated to achieve 98% destruction or an outlet concentration of 20 ppmvd of non-methane organic compounds (NMOC) is still the BSER for landfills and that there is no available information to suggest that a revision to the BSER for control systems is warranted at this time.

**Comment Response:**

We thank the commenter for their support.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 30

**Comment Excerpt:**

EPA has determined in connection with proposed Subpart XXX that BSER for landfills is a well-designed and operated GCCS. It specifically identifies a GCCS that includes a nonenclosed flare or an enclosed flare and/or any other control device capable of achieving 98% reduction of NMOC or an outlet concentration of 20 ppmvd of NMOC. TXSWANA agrees.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 4 under Comment Code 4a.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 8

**Comment Excerpt:**

DSWA agrees with EPA that a well operated GCCS is the best system of emission reduction (BSER) for municipal solid waste (MSW) landfills.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 4 under Comment Code 4a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 15

**Comment Excerpt:**

The industry [NW&RA and SWANA] agrees that a well-designed and operated GCCS is, and should continue to be considered BSER.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 4 under Comment Code 4a.

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**Commenter Name:** Comment submitted by Michael J. Barden

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

We agree with EPA that a properly designed GCCS can offer BSER.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 4 [under Comment Code 4a.](#)

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 51

**Comment Excerpt:**

WM supports the Agency's BSER determination.

WM supports EPA's determination (80 Fed. Reg. at 52110) that a well-designed and well-operated landfill GCCS with a control device capable of reducing NMOC by 98 percent by weight continues to be the best system of emission reduction (BSER). We concur that this remains the best format for both the final NSPS and EG rules. We agree with EPA's reiteration that a standard of performance cannot be established for the gas collection system since it is not technically feasible to measure the amount of landfill gas available for collection. (79 Fed. Reg. at 41802)

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 4 [under Comment Code 4a.](#)

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 7

**Comment Excerpt:**

EPA has determined that a well-controlled gas collection and control system (GCCS) continues to constitute BSER. Although EDF does not dispute this determination, we urge EPA to strengthen the GCCS standards so that they truly reflect best practices and technologies for controlling landfill emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 4 [under Comment Code 4a.](#)

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**Commenter Name:** Frank L. Kohlasch, Manager, Air Assessment Section Environmental Analysis and Outcome Division

**Commenter Affiliation:** Minnesota Pollution Control Agency (MPCA)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0197

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The MPCA has supervised the design, installation and operation of gas collection control systems (GCCS) at closed landfills throughout Minnesota. Our experience with landfill GCC systems leads us to believe the requirements of this proposal rule reflects a well-designed and operated GCCS, and thus represents the "best system of emission reductions" as required by III(d) of the Clean Air Act.

As the owner of closed landfills in Minnesota for the past 21 years, the MPCA has evaluated every closed landfill above one million cubic yards in volume, and has installed active gas collection systems at 22 of the closed landfills [The comment letter provides a list identifying each of the 22 landfills]. The benefits of installing GCCS at these landfills (most of which were unlined) included control of gas migration, reduction of greenhouse gas (GHG) emissions, odor control, and removal of volatile organic compounds (VOCs) from the waste mass before those pollutants could enter the ground water. GCCS has been found to be more effective and efficient than the previous presumptive remedy of groundwater pump and treat.

The MPCA inventories GHG emissions, and also projects GHG emissions to implement statutory GHG emission reduction goals. [The figure provided in the comment letter] represents our estimate of GHG emissions with current GCCS systems in place. Because of the use of GCCS at both operating and closed landfills, Minnesota's emission of GHG gases from closed and operating landfills is reduced by about 60% each year. Minnesota's annual release of carbon dioxide equivalents from landfills has gone from a peak emission rate in 2005 of about 5 million tons to about 1.75 million tons in 2012. The reductions and projections are shown in the figure below, extracted from the MPCA's analysis in March 2015.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 4 [under Comment Code 4a.](#)

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**Commenter Name:** Amanda B. (no surname provided)

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2003-0215-0189

**Comment Excerpt Number:** 5

**Comment Excerpt:**

One section of this proposed rule will set a new threshold for the level at which landfills will need to implement a gas collection and control strategy. Gas collection systems and landfill covers are the engineering controls are most often used to control LFG. Collection systems will often burn LFG. The resulting combustion products are less dangerous than the original chemicals. Collecting LFG and using it for energy is another option. This would improve air quality and provide revenue for landfills, helping to offset the cost of a gas collection system. Gas can be collected in vertical or horizontal extraction wells drilled into the waste (Environmental Protection Agency, 2015). The collected gasses can be burnt and converted into electricity, providing an economic benefit for the landfill and preventing harmful gasses from entering the atmosphere.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 4 [under Comment Code 4a](#).

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**Commenter Name:** S. Woodson

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0148

**Comment Excerpt Number:** 3

**Comment Excerpt:**

Under current regulation, Gas Collection and Control Systems (GCCS) must be installed in landfills with weight capacities of 2.5 million Mg or annual NMOC emissions >50 Mg (EPA, 2015). Up-to-date, control, installation and monitoring of the GCCS is dependent on the owner; whom many argue is not a reliable source of assuring proper detection and monitoring techniques. GCCS systems are designed to mitigate and control LFG odor, control LFG released to the environment, and capture LFG for energy sources (Benson, 2015). GCCS is a primary source for regulating and controlling LFG.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176 Comment Excerpt Number 4 [under Comment Code 4a](#).

## 4.2 GCCS-Design and Operational Standards

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**Commenter Name:** Comment submitted by Michael J. Barden

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1

**Comment Excerpt Number:** 8

**Comment Excerpt:**

The baro-pneumatic method provides sufficient data regarding a landfill's structure and pneumatic properties, including its LFG generation rates, gas permeabilities, and gas-filled

porosities, to enable construction of a numerical gas-flow and transport model of the landfill. The model is then calibrated by varying its vertical and horizontal gas permeabilities and effective gas-filled porosities until a best fit of model pressures to observed field pressures is attained. Finding this best fit can be expedited by equipping the numerical model with an inverse (automated calibration) code, as was done by Jung et al (2011). The baro-pneumatic data necessary to construct and calibrate such a model include 1) vertical gas permeabilities, obtained by monitoring pressure changes at depth in response to natural diurnal (twice daily) changes in barometric pressure at the landfill's surface (Weeks, 1978); 2) Gas-filled porosities and horizontal gas permeabilities, obtained by conducting short-term collector well extraction or shutdown tests; and 3) LFG generation rates, calculated using Darcy's Law, the observed pressures at landfill surface and at depth in the LFG monitoring probes, and the model estimates for gas permeability.

Once the baro-pneumatic gas flow model is calibrated, it can be used to design a LFG collection/control system that optimizes the gas recovery and methane content (for an LFG collection system). LFG collector wells (vertical and/or horizontal) connected to a vacuum blower can then be incorporated into the calibrated model and the well locations, screened intervals, and their flow rates varied to find the optimum GCCS conceptual engineering design and accurately simulate its performance. The proposed layout, depths, and screened intervals of collector wells are varied in the model to maximize collection efficiency or LFG methane content and minimize LFG emissions, whichever is the engineering goal. The design is presented using site topographic maps and includes layout of the proposed collector well locations, gas extraction manifold(s), well depths, and screened intervals. The predicted production and estimated quality of LFG (% methane) are listed for each well collector.

The optimized conceptual engineering design includes LFG methane content at each well; gas permeabilities and gas-filled porosities; layout of collector well locations, depths, and screened intervals; evaluation of the interaction between vertical and horizontal collectors; recommended gas extraction rates; simulated vacuums at each well; and estimated total LFG capture and capture efficiency. The gas extraction rates at collector wells will have been adjusted to maximize quantity and quality of LFG while providing minimum emissions and migration of methane, NMOC, and odor. This approach to designing LFG collection and control systems offers unique advantages in providing accurate estimates of LFG generation rates, higher LFG collection efficiencies, lower construction costs, lower landfill emissions, more effective monitoring of the landfill's performance, and more-effective LFG migration control. The technology and applications also address EPA's interests in achieving emission reduction techniques by specific technologies and best management practices that could further reduce emissions of landfill gas.

The gas flow model can assess the configuration, effectiveness, and interaction of vertical wells and horizontal collector systems for future buildout of the landfill GCCS.

[Footnotes]

Jung, Y, P. Imhoff, S. Finsterle. 2011. Estimation of Landfill Gas Generation Rate and Gas Permeability Field of Refuse Using Inverse Modeling, *Transp Porous Med* 90:41–58.

Weeks, E.P. 1978. Field determination of vertical permeability to air in the unsaturated zone. U.S. Geological Survey Professional Paper 1051.

**Comment Response:**

The EPA thanks the commenter for the additional information on the baro-pneumatic gas flow model. The EPA has decided to retain its use of a first-order decay equation for these final actions.

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**Commenter Name:** Hydro Geo Chem, Inc.

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0194

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Given accurate data regarding a landfill's structure and pneumatic properties, including the LFG generation rates, gas permeabilities, and gas-filled porosities determined by the BPM, it is possible to construct a 3-dimensional numerical gas-flow and transport model of the landfill, including its GCCS. The model can then be calibrated by varying the model's vertical and horizontal gas permeabilities and effective gas-filled porosities until a best fit of model pressures to observed field pressures is attained. Finding this best fit can be expedited by arming the numerical model with an inverse (automated calibration) code. LFG collector wells (vertical or horizontal) equipped with gas extraction pumps can then be incorporated into the calibrated model and their locations, screened intervals, and flow rates varied to find the optimum GCCS conceptual engineering design and accurately simulate its performance.

The BPM is based on the assumption that LFG generation rates are essentially constant over the three- to four-day monitoring period, an assumption easily verified by observing the match between simulated and measured pressure responses over the time of the field test (see Figure 4). This approach to designing LFG collection and control systems offers unique advantages in providing accurate estimates of LFG generation rates, higher LFG collection efficiencies, lower construction costs, lower LFG air entrainment, and more-effective LFG migration control. The following is a discussion of this advanced LFG technology.

Once the baro-pneumatic gas flow model is calibrated, it can be used to design a LFG collection/control system that optimizes the gas recovery and methane content (for an LFG collection system) and/or contains a LFG migration plume (for a migration control system). The proposed layout, depths, and screened intervals of collector wells are varied in the model to maximize collection efficiency or LFG methane content and minimize LFG emissions, whichever is the engineering goal. The design is presented using site topographic maps and includes layout of the proposed collector well locations, gas manifold(s), well depths, and screened intervals. The predicted production and estimated quality of LFG (% methane) are listed for each well collector.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0096.1 Comment Excerpt Number 8 under comment Code 4b.

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**Commenter Name:** Comment submitted by Michael J. Barden  
**Commenter Affiliation:** Hydro Geo Chem, Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1  
**Comment Excerpt Number:** 7  
**Comment Excerpt:**

The current NSPS requires GCCS designs to address several engineering properties of the landfill, including gas generation rates and flow characteristics (40 CFR 60.759.a.1). In practice, flow characteristics are often assumed using reference values for waste permeabilities and porosities without actually measuring site-specific characteristics to support the design. The resulting GCCS is commonly over or under-designed due to the highly variable and heterogeneous nature of these pneumatic properties. Accurate estimation or determination of site-specific landfill pneumatic properties is essential to sound and appropriate engineering design of a GCCS. The baro-pneumatic method approach to GCCS design is more consistent with the specified NSPS design requirements by incorporating measurements of these properties into the design evaluation.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter - DCN-EPA-HQ-OAR-2014-0451-0194 (page 9). This response is for both of these comments.

See response to DCN EPA-HQ-OAR-2003-0215-0096.1 Comment Excerpt Number 8 under comment Code 4b.

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**Commenter Name:** Hydro Geo Chem, Inc.  
**Commenter Affiliation:** Hydro Geo Chem, Inc.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0194  
**Comment Excerpt Number:** 3  
**Comment Excerpt:**

The results of the baro-pneumatic field investigation include the landfill's estimated LFG generation rates and, if desired, the optimized conceptual engineering design including LFG methane content at each well, gas permeabilities and gas-filled porosities, layout of collector well locations, depths, and screened intervals, evaluation of the interaction between vertical and horizontal collectors, recommended gas extraction rates, simulated vacuums at each well, and estimated total LFG capture and capture efficiency. The gas extraction rates at collector wells will have been adjusted to maximize quantity and quality of LFG while providing minimum emissions and migration of methane, NMOC, and odor. Based on landfill operational data (i.e., the distribution and age of waste, if available) the LFG generation estimates can be used to derive site-specific Scholl-Canyon type 1st-order decay equation parameters, including  $L_0$ , the methane potential ( $m^3$  methane/Mg waste), and  $k$ , the 1st-order decay constant ( $yr^{-1}$ ), to enable future estimates of LFG generation. Monitoring LFG generation over an extended time period would be an opportunity to verify that the assumption of 1st order decay kinetics is valid.

**Landfill Expansion**

The optimized GCCS can be designed to be flexible and adaptable for the later addition of waste, settling of waste, and connectivity to future landfill cells should the system be installed before final receipt of waste in a given disposal cell. An initial set of vertical wells can also be designed to remain in place and operational when additional filling of the landfill occurs. The gas flow model can assess the configuration, effectiveness, and interaction of vertical wells and horizontal collector systems for future buildout of the LFG collection/control system. Any horizontal wells would presumably be installed during landfill expansion. If vertical wells were selected, these would be installed when the target elevation is reached and advanced to the current top of refuse. This approach will reduce drilling and well installation costs and still allow for future expansion.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0096.1 Comment Excerpt Number 8 under comment Code 4b.

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**Commenter Name:** Comment submitted by Michael J. Barden

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1

**Comment Excerpt Number:** 10

**Comment Excerpt:**

The final GCCS conceptual engineering design is optimized by varying the number, locations, screened intervals and extraction rates for the gas collection wells incorporated into the model and evaluating the effects of those variables on construction costs and on both short- and long-term system performance. This iterative engineering design process produces a design that provides cost-effective spacing and sizing of horizontal and vertical extraction wells, cost-effective sizing and construction of LFG collector piping, collection headers, condensate removal systems, blowers, and flares. The capture of LFG is also maximized to ensure compliance with design requirements of 40 CFR Part 60.752 air-quality criteria.

The LFG collection or control system that is designed and constructed on the basis of this site-specific design approach will be capable of supplying the maximum useable quantity and quality of LFG while minimizing emissions of LFG, methane, and NMOC. The landfill project will then be in a position to derive the maximum possible revenue should the landfill site be used for a LFG-to-energy (LFGTE) or other methane utilization project.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter - DCN-EPA-HQ-OAR-2014-0451-0194 (page 11). This response is for both of these comments.

See response to DCN EPA-HQ-OAR-2003-0215-0096.1 Comment Excerpt Number 8 under comment Code 4b.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

We agree that the BSER for a municipal solid waste (MSW) landfill GCCS should not include any reference to collection efficiency because the accurate determination of collection efficiency remains an elusive goal. Basing GCCS functionality on the operating standards of negative pressure and surface emission monitoring (SEM) remains the best way to show compliance. This is consistent between XXX and WWW.

**Comment Response:**

We thank the commenter for their support.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 70

**Comment Excerpt:**

*Narrower well density.* Narrow gas collection well density is vital to effective gas capture, yet the space between wells has only increased since the landfill air rule's promulgation in 1996. Today they are often 350 feet apart, while conservatively operated facilities still use 150 feet separation. That should be the mandate.

**Comment Response:**

The EPA has not specified distance between gas collection wells in the final NSPS or Emission Guidelines. The landfill owner or operator is required to submit a site-specific design plan for all gas collection and control systems and obtain approval from the Administrator based on their review of the submitted plan. The gas collection and control system as described in the design plan must meet the criteria in the landfills regulations, which includes capacity to handle the maximum expected gas flow rate from the entire area of the controlled portion of the landfill, collection at a sufficient extraction rate, and designed to minimize off-site migration of subsurface gas.

### **4.3 GCCS-Destruction Efficiency-Energy Recovery**

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 7

**Comment Excerpt:**

In Pennsylvania, control systems must be designed to achieve and maintain either a destruction/removal efficiency of at least 98%, by weight of NMOCs or an outlet NMOC concentration of less than 20 parts per million, by volume, dry basis, as hexane, corrected to 3% oxygen, whichever is less stringent. As required in the DEP's "Best Available Technology and Other Permitting Criteria for Municipal Solid Waste Landfills" guidance document<sup>1</sup>, the following conditions are set forth on page 3:

*(2) The collected landfill gas should be treated in accordance with 40 CF.R. Part 60, Subpart WWW for subsequent use or sale, or controlled by one of the following technologies:*

- a. A horizontal incinerator;*
- b. A boiler;*
- c. An enclosed flare;*
- d. An internal combustion engine;*
- e. Combustion turbine;*
- f. Carbon adsorption system; or*
- g. Other technologies approved by DEF.*

*Please note that open or candlestick flares are appropriate only when installed and operated within the limitations set forth in this document.*

*(3) The control system will be designed to achieve and maintain the less stringent of*

- a. A destruction/removal efficiency of at least 98%, by weight, of non-methane organic compounds (NMOC), or*
- b. An outlet NMOC concentration of less than 20 parts per million, by volume, dry basis, as hexane, corrected to 3% oxygen.*

Therefore, all control technologies for landfill gas must meet a 98% destruction/removal efficiency (DRE). This practice, which has been implemented and enforced in Pennsylvania for more than 20 years, demonstrates that a 98% DRE is achievable.

[Footnote]

(1) <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-75264/7.10%20Best%20Available%20Technology%20and%20Other%20Permitting%20Criteria%20for%20Municipal%20Solid%20Waste%20Landfills.pdf>

**Comment Response:**

The EPA appreciates the commenter's support for and demonstration of a 98 percent destruction/removal efficiency.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

Republic also agrees with EPA that a control system designed and operated to achieve 98% destruction or an outlet concentration of 20 ppmvd of NMOC is still the BSER for landfills. 79 Fed. Reg. at 41803. Republic supports this component of EPA's proposal and agrees that there is no available information to suggest that a revision to the BSER for control systems is warranted at this time.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169 Comment Excerpt Number 7 under Comment Code 4c.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 171

**Comment Excerpt:**

WM supports EPA's Subpart XXX proposal to maintain the Subpart WWW performance standard of 98 percent reduction by weight of NMOC, or an outlet concentration of 20 ppmvd of NMOC as hexane, as the appropriate BSER for a well designed and operated landfill gas control system.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169 Comment Excerpt Number 7 under Comment Code 4c.

#### **4.4 GCCS-Destruction Efficiency-Open Flares BSER**

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 35

**Comment Excerpt:**

Prevalence of flaring. Flaring is a universal requirement under state rule (NR 506.08(6)) for all licensed MSW landfills, either for full gas flow or for bypass gas from energy recovery engine plants. This includes 34 active landfills, plus a larger number of closed landfills.

Number & types of flares used. The flares used are all non-enclosed flares. The number of flares installed is a case-by-case design issue, based on the capacity of the engine plant, gas flow rate and flow rate variability, site layout, etc. Owners sometimes use multiple flares to make for more efficient gas header pipe layouts. State rules do not specify the number of flares on a site, just that gas has to be destroyed by flaring. Non-enclosed flares are also used at closed landfills that use gas extraction for remediation of subsurface gas migration or VOC contamination of groundwater. The number of non-enclosed flares in service at MSW landfills is not certain, but likely well over a hundred.

Waste characteristics - flow rate, composition, and heat content. Flow rate is directly proportional to the in-place waste mass, or, for landfills with engine plants, based on a design bypass flow rate. Landfill operators sample gas at or before the blower and report certain parameters on a frequency that varies from monthly to semiannually. Based on those data, landfill gas generally has a CH<sub>4</sub> content of about 50 to 55%. Heat content is not a required parameter. Given the CH<sub>4</sub> concentrations, landfill gas is assumed to have half the heating value of pipeline-quality natural gas.

Use of flare emission minimization practices. At least at some sites, blower controls are set to shut off flow to the flare if heat sensors detect that the flame is out.

**Comment Response:**

We appreciate the commenters' input. Based on the review of your comments and all information we received in response to our request, we have concluded that an open flare should remain part of BSER and an available compliance option. Open flares that are properly designed and operated can achieve reduction of NMOC by 98 weight-percent and are cost-effective control option.

The rule establishes that flares must be operated and maintained according to the manufacturer's specifications and establishes specific requirements to ensure it is operating properly.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1  
**Comment Excerpt Number:** 32

**Comment Excerpt:**

EPA should not consider open flares to be part of the BSER for landfills, given well-documented issues with their performance in reducing emissions. California has already made essentially this finding and is phasing out open landfill gas flares.<sup>63</sup> Other environmental agencies have made similar findings about open landfill gas flares. The British Columbia Ministry of the Environment explains that open flares are not reliable ways of combusting landfill gas: their combustion temperature is difficult to control, and their actual efficacy is difficult to measure.<sup>64</sup> The Irish EPA notes open flares' "inability to combust trace components of landfill gas," as well.<sup>65</sup>

The United Kingdom's Environment Agency says bluntly: "open flares are inefficient, resulting in very poor emissions compared with those from enclosed flares."<sup>66</sup> Although the Environment Agency notes that open flares also are inferior because it is very difficult to monitor their actual performance, it says that when monitoring is performed, it finds that the flares perform poorly: "Sampling within or close to the flame will give high levels of unburned hydrocarbons and carbon monoxide. Recent measurements have demonstrated levels of 8–15% methane and 2% carbon monoxide."<sup>67</sup> Thus, far from reliably destroying the methane that is manifestly flammable, open flares leave significant amounts unburned and cannot represent BSER.

[Footnotes]

(63) Calif. Air Resources Bd., *Staff Report: Initial Statement of Reasons for the Proposed Regulation to Reduce Methane Emissions from Municipal Solid Waste Landfills V-4* (2009), available at <http://www.arb.ca.gov/regact/2009/landfills09/isor.pdf> ("Open flares cannot be easily source tested and are not considered to be best available control technology.").

(64) British Columbia Ministry of Env't, *Landfill Gas Management Facilities Design Guidelines 116* (2010), available at <http://www.env.gov.bc.ca/epd/mun-waste/waste-solid/landfills/pdf/Design-guidelines-final.pdf>.

(65) EPA (Ireland), *Estimates of Methane Recovery in Landfill Gas Flaring and Utilisation 37* (2009), available at [http://www.epa.ie/pubs/reports/research/climate/CCRP\\_3\\_Timoney\\_MethaneLandfill\\_web.pdf](http://www.epa.ie/pubs/reports/research/climate/CCRP_3_Timoney_MethaneLandfill_web.pdf).

(66) Env't Agency (U.K.), *Guidance on Landfill Gas Flaring 22* (2002),<sup>66</sup> available at <https://cdm.unfccc.int/filestorage/I/1/Q/I1QGOF15CVN430N9A7NM6C0JPFWW88/Attachment%203%20landfill%20gas%20flaring%202002.pdf?t=d218bmJqeHZxfDBtMVLHf4ZInXMUtQYUuT9HP>.

(67) Id.

### **Comment Response:**

Based on the review of all information we received in response to our request, we have concluded that an open flare should remain part of BSER and an available compliance option. Open flares that are properly designed and operated can achieve reduction of NMOC by 98 weight-percent and are cost-effective control option. The rule requires that flares be installed, maintained and operated according to the manufacturer's specifications and establishes specific criteria, including a performance test, to ensure flares are working properly.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 33

### **Comment Excerpt:**

Open flares are not protected from the wind under EPA's rules, which only exacerbates concerns about their performance. The New York State Energy Development Authority funded a flare efficiency estimator tool, based on the research of the University of Alberta's Flare Research Group, that shows that open, unassisted flares do not meet EPA's 98% efficiency threshold. The tool applies specifically to "low BTU, moist waste gases from anaerobic digesters and landfills."<sup>69</sup> This conclusion about the impact of wind is supported by the 2012 flaring efficiency report EPA prepared. That report found that high winds "can reduce flare performance," and acknowledged that the results of the "wind analysis" should apply to "non-assisted" flares (the type EPA assumes are used at MSW landfills) just as it does to the assisted flares studied.<sup>70</sup>

[Footnotes]

(69) John Willis et al., Water Env't Research Found., *Flare Efficiency Estimator and Case Studies 2-1* (2013), available at <http://www.nyserda.ny.gov/-/media/Files/EERP/Commercial/Sector/Municipal-Water-Wastewater-Facilities/flare-efficiency-estimator.pdf>.

(70) EPA, *Parameters for Properly Designed and Operated Flares 1-2, 7-1* (Apr. 2012).

### **Comment Response:**

Based on the review of all information we received in response to our request, we have concluded that an open flare should remain part of BSER and an available compliance option. Open flares that are properly designed and operated can achieve reduction of NMOC by 98 weight-percent and are a less costly option. We recognize that wind variances would have effects on the performance of flares, however, we require that these be operated and maintained properly in accordance with the manufacturer's specifications.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 34

### **Comment Excerpt:**

Enclosed combustion does not suffer from these defects and thus may continue to be BSER. However, the 98% reduction of NMOC by weight requirement is no longer BSER. California calls for at least 99% destruction efficiency of methane by weight.<sup>71</sup> Documentation from other environmental agencies and vendors of landfill gas control equipment indicates that this level of destruction is achievable.<sup>72</sup>

[Footnotes]

(71) Cal. Code Regs. tit. 17, § 95464(b)(2)(A)(1), (b)(3)(A)(1).

(72) British Columbia Ministry of Env't, *supra*, 114; John Zink Hamworthy Combustion, ZULE® Ultra Low Emission Enclosed Flare, <http://www.johnzink.com/products/landfill-biogas/zule-landfill-gas-flare/> (last visited Sept. 8, 2014) (advertising flare for landfill gas that "achieves a destruction efficiency rate greater than 99.5 percent"); ABUTECH, Landfill Gas



Combustor, <http://abutech.com/products/landfill/landfill-gas-combustor/> (last visited Sept. 8, 2014) (advertising "Low Emission Flare" with "99.99% Destruction Efficiency" and "High Temperature Flare" with "Greater than 99.99% Destruction Efficiency").

**Comment Response:**

Based on the commenter's input and other information we received in response to our request, we have concluded that a non-enclosed flare should remain part of BSER and an available compliance option. We are allowing this control technology as an option recognizing that this is a more expensive option when compared to open flares or perhaps other control options.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 4

**Comment Excerpt:**

However, even though EPA has not proposed to alter the BSER for landfill gas control systems, EPA has requested comment on whether open flares (now renamed "non-enclosed" flares in the proposed rule) are capable of achieving that BSER. But, as EPA recognizes in the preamble to the proposed rule, "[a]lthough the standards are based on the identified BSER, the EPA may not require the use of a particular technology to comply with a performance standard unless the Administrator determines that it is not feasible to prescribe or enforce a standard of performance." 79 Fed. Reg. at 41800-801 (citing CAA Section 111(b)(5), 42 U.S.C. 7411(b)(5).) Therefore, the Clean Air Act requires EPA's proposed Subpart XXX, like the current Subpart WWW, to allow landfills to comply with the NSPS through use of open (non-enclosed) flares. As such, Republic fails to see how any information that EPA may receive in response to its request for comment could be relevant for the proposed rule. The impetus for EPA's request for comment on open/non-enclosed flares appears to be based entirely on a recent study of a completely different type of flares used only in other industries. 79 Fed. Reg. at 41803. EPA cites that study for the proposition that flare performance could be monitored to ensure good combustion, but fails to explain how that study is relevant to the proposed rule since it does not address landfills or even the type of flares used at landfills. Therefore, the study cited by EPA should not present a basis upon which to question whether open/non-enclosed flares are capable of achieving EPA's performance standard.

In any event, Republic's experience with open/non-enclosed flares confirms that those control devices are not only widely utilized in the landfill industry, but also fully capable of achieving the performance standard that EPA has established. Republic provides additional information below to assist EPA in its review of the technology available for minimizing landfill emissions through the use of open/nonenclosed flares:

**1. OPEN/NON-ENCLOSED FLARES**

At present, Republic has approximately 160 non-enclosed flares and 110 enclosed flares in operation. The smallest of our non-enclosed flares combust as little as 100 standard cubic feet

per minute (scfm) of LFG, while the largest enclosed flares in our inventory can combust up to 6,000 scfm. The composition of the LFG burned varies from site to site, but generally is within the range of 40 to 60% methane. It is important to note that landfills in arid climates and older closed landfills can have methane concentrations below 30% by volume. The decision to utilize an open/non-enclosed flare versus an enclosed flare or other control device is typically based on a number of site-specific criteria including but not limited to the following:

- Reliability and ease of operation
- Turndown limitations of the flares
- LFG flow rate
- Fluctuations in flow rate
- Heat (i.e., BTU) content of the gas
- Other constituents in the gas stream
- Proximity to neighbors and structures
- Cost

More specifically, the following provides a summary of the benefits that an open/non-enclosed flare can provide, which could make an open/non-enclosed flare the most appropriate control device in certain circumstances:

**Reliability, Minimal Maintenance, & Ease of Operation** – Because they are simpler, open/nonenclosed flares are generally easier and less expensive to operate. Open/non-enclosed flares rely on relatively few components for proper operation: a pilot to start the flare and thermocouples to measure flame temperature and to ensure the flare is lit when gas is sent to the flare tip. With fewer parts involved, there are fewer components that require regular maintenance or repairs, thus minimizing downtime of the flare for maintenance. The simple design is typically more reliable as well, which is critical for remote closed sites without on-site personnel, as well as for landfills that utilize the flare as a back-up for an energy project, where consistent operation is paramount to maximizing beneficial use of the gas. In contrast, enclosed flares are more complex – they include a pilot assembly, multiple thermocouples, ultraviolet or infrared sensor for flame detection, air dampers (some or all of which may be electrically actuated and controlled by the control panel's programmable logic controller), a purge blower, and a series of burner tips (which have flame arrestors built into them that can become clogged and require disassembly for cleaning). Insulation is also applied to the interior of the flare stack, which must be periodically inspected, repaired, and replaced. Each of these components of an enclosed flare has an expected life, and a malfunction or failure of any of them can cause either improper operation or a shutdown. In addition, due to the number of pieces of equipment involved in their operation, enclosed flares require the PLC to be properly programmed with correct operating parameter set points to ensure proper combustion of the LFG.

- **Turndown Capability** – Flare turndown is defined as the ratio of the maximum to minimum flow rate at which a flare can operate. For example, a flare sized to accommodate a maximum flow rate of 3,000 scfm and a minimum flow rate of 300 scfm has a 10:1 turndown ratio.

Open/nonenclosed flares typically can achieve a turndown of 10:1, whereas enclosed flares may only be able to reach a turndown of 8:1, depending on the design. Ultra-low emission enclosed flares have the narrowest range of operating flow rates, resulting in a turndown of only 6:1. Turndown is an important consideration when designing a GCCS and flaring system for the life of a site including the post-closure care period. For an active site with flow rates projected to increase until closure, the flare must be able to handle current LFG flow rates and the projected maximum future flow rate. After the site closes, however, the flare must also be able to continue operating as flow rates decline. High turn down ratios help landfills minimize the number of flares, whereas low turn down ratios may require the installation of multiple flares to ensure sufficient flexibility is available to accommodate all future flow rates. For example, two 2,000 scfm flares may be needed instead of a single 4,000 scfm flare if that 4,000 scfm flare cannot turn down to low flow rates expected in the future. Installing multiple flares not only results in higher capital and operating costs, but also adds unnecessary complexity to the entire system.

Since open/non-enclosed flares have the highest turndown ratios, those flares may be the most appropriate control device depending on expected changes in flow rates in light of the issues noted above.

- **Integration with LFG Energy Projects** – Open/non-enclosed flares often play a vital role in ensuring consistent GCCS operation at landfills with an LFG energy project for several reasons. First, the superior turn-down capability of open/non-enclosed flares makes them better equipped to burn the relatively small amounts of gas that exceed the capacity of the energy project. An enclosed flare may not be able to turn down as low, and therefore would require a larger diversion of landfill gas from the energy project for the sole purposes of maintaining a stable operating condition in the flare, thus reducing the environmental benefits of the energy project. Second, open/non-enclosed flares are able to start up more quickly and provide a better backup option in the event an energy project must shutdown. Enclosed flares, on the other hand, require a purge period before ignition and a longer cool-down period after shutdown and before the next startup, which makes them less desirable as a backup system for an energy project. The quick startup of open/non-enclosed flares also helps maintain a consistent vacuum on the wellfield by avoiding extended periods when no control device is in operation, which requires a shutdown of the blower system.

Cost – For many of the reasons noted above, open/non-enclosed flares have significantly lower capital and operating costs compared to enclosed flares. Replacing an existing open/nonenclosed flare with an enclosed flare would represent a significant expense – Republic estimates that it would cost between \$50 million and \$100 million to replace all of our open/non-enclosed flares with enclosed flare systems. Because of the benefits open/non-enclosed flares provide, and the proven ability of those flares to achieve EPA’s established performance standard, EPA should not have any reason to question whether open/non-enclosed flares represent an appropriate method for demonstrating compliance with the landfill NSPS.

### **Comment Response:**

The commenter is correct that as a general matter, once EPA establishes performance standards based on the use of BSER, owners or operators are free to use whatever approach to achieving those performance standards they deem appropriate. The commenter is also correct that under

subpart WWW the use of an open/non-enclosed flare is an available option for complying with the performance standard for MSW landfills. EPA did not change that in the new subpart XXX; however, there has been some question regarding the destruction efficiency of open/non-enclosed flares, so EPA felt it appropriate to seek additional information regarding that destruction efficiency in order to evaluate whether an open/non-enclosed flare should remain a part of BSER and an available compliance option. We appreciate the commenter's input in that regard. Based on the commenter's input and other information we received in response to our request, we have concluded that an open/non-enclosed flare should remain part of BSER and an available compliance option.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 172

**Comment Excerpt:**

We are troubled with EPA's request for information on non-enclosed flares to determine if they continue to represent BSER. 79 Fed. Reg. at 41803. EPA also solicits comment on non-enclosed flares in the ANPRM. 79 Fed. Reg. at 4178815 EPA clearly states in the preamble to Subpart XXX and the ANPRM that they have no new information to suggest nonenclosed flares at MSW landfills that comply with 40 CFR 60.18(b) will not achieve at least 98 percent reduction by weight of NMOC. Further, John Zink, one of the main manufacturers of non-enclosed flares for the LFG industry, reiterates that the non-enclosed flare technology meets the 98 percent destruction efficiency requirement for BSER. John Zink is also unaware of any test data on LFG-fired non-enclosed flares that would indicate otherwise. See attached manufacturer's letter. (See Attachment 15 [of DCN EPA-HQ-OAR-2003-0215-0100.1]).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 173

**Comment Excerpt:**

Below is additional information on non-enclosed flares to support that non-enclosed flares continue to meet BSER. WM operates 227 landfill gas collection and control systems (GCCS) across the U.S. LFG is controlled using non-enclosed flares, enclosed flares, and beneficial use projects employing reciprocating engines, turbines, boilers, fuel conversion (gas to diesel, gas to CNG) and high-BTU fuel generating plants. Each GCCS consists of at least one flare. Flares serve as backup control devices for when the LFG energy plant is unable to utilize all of the

collected gas, is offline due to utility demand, or is running at partial capacity for maintenance or other activities. EPA recognized the importance of flare operations in its June 2014 Economic Impact Analysis for Proposed New Subpart to the New Source Performance Standards:

"Flares are the most common control device used at landfills. Flares are also a component of each energy recovery option because they may be needed to control LFG emissions during energy recovery system startup and downtime and to control any gas that exceeds the capacity of the energy conversion equipment. In addition, a flare is a cost-effective way to gradually increase the size of the energy recovery system at an active landfill. As more waste is placed in the landfill and the gas collection system is expanded, the flare is used to control excess gas between energy conversion system upgrades (e.g., before addition of another engine)."

EIA at p. 2-26. WM operates approximately 200 non-enclosed flares and 100 enclosed flares. The smallest flare capacity is designed to combust maximum 220 standard cubic feet per minute (scfm) of LFG, while the largest enclosed flare in our inventory can combust up to 6,000 scfm. The composition of the LFG burned varies from site to site, but generally is within the range of 40 to 60% methane; however, landfills in arid climates and older closed landfills can have methane concentrations between 20 and 30% by volume. LFG non-enclosed flares meet 40 C.F.R. 60.18 requirements to maintain a minimum of 200 btu/scf.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 175

**Comment Excerpt:**

Non-enclosed flares have significantly lower capital costs compared to enclosed flares. As previously stated, capital costs for non-enclosed flares are typically half the cost of an enclosed flare and 25-35% less than an enclosed flare meeting the lowest achievable emission rate. Replacing an existing non-enclosed flare with an enclosed flare is a significant expense; WM would incur capital cost of approximately \$100 million to replace all of our non-enclosed flares with enclosed flares.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 176

**Comment Excerpt:**

Operation and Maintenance - Non-enclosed flares rely on relatively few components for proper operation: a pilot to start the flare and thermocouples to measure flame temperature and to ensure the flare is lit when gas is sent to the flare tip. On the other hand, enclosed flares are more complex and include a pilot assembly, multiple thermocouples, ultraviolet (UV) or infrared (IR) sensor for flame detection, air dampers (some or all of which may be electrically actuated and controlled by the control panel's programmable logic controller (PLC)), purge blower, and a series of burner tips (which have flame arrestors built into them that can become clogged and require disassembly for cleaning). Insulation is also applied to the interior of the flare stack, which must be periodically inspected, repaired, and replaced. In addition, due to the number of pieces of equipment involved in their operation, enclosed flares require the PLC to be properly programmed and correct operating parameter set points to be input to ensure proper combustion of the LFG.

The maintenance of non-enclosed flares is fairly straightforward and is generally limited to the pilot and thermocouples. Enclosed flare maintenance involves the pilot, thermocouples, insulation, flare and the UV or IR sensor. The GCCS must be shut down in order to perform maintenance for non-enclosed flares so less frequent and shorter maintenance times result in less downtime.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 177

**Comment Excerpt:**

Turndown - Flare turndown is defined as the ratio of the maximum to minimum flow rate at which a flare can operate. For example, a flare sized to accommodate a maximum flow rate of 3,000 scfm and a minimum flow rate of 300 scfm has a 10:1 turndown ratio. Most recently a prominent flare vendor announced it guarantees a 20:1 turndown ratio for nonenclosed flares; however, non-enclosed flares typically can achieve a turndown of 10:1. Based on our experience, the standard turndown ratio for enclosed flares is 6:1. Ultra-low emission enclosed flares have the narrowest range of operating flow rates, resulting in a turndown of 4:1 based on our experience.

Turndown is an important consideration when designing a GCCS and flaring system for the life of a site and into the post-closure care period. For an active site with initial gas generation, the flow rates and gas quality are usually low which requires a high turndown ratio in order to accommodate for projected future flow rates and methane quality. After the site closes, the flare

must be able to continue operating as flow rates decline. If a flare does not have a high turndown ratio it is then necessary to install multiple flares with lower individual flow capacities (e.g., two 2,000 scfm flares instead of a single 4,000 scfm flare) in order to properly handle flaring needs over the life of a site. This approach results in higher capital cost (multiple flares, piping, valves, greater footprint of the flare station, more valves, etc.) and higher operating costs. Multiple flares also require more advanced PLC and control equipment to coordinate the staging and operation of multiple flares so they work in unison or independently of each other.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 178

**Comment Excerpt:**

Integration with LFG Energy Projects - When a LFGTE project is present at a landfill, nonenclosed flares often play a vital role in ensuring consistent GCCS operation. This is due primarily to the following factors:

- o Non-enclosed flares consistently have superior turndown compared to enclosed flares. The flare must be able to handle the entire gas flow to the energy plant. The flare must also be able to accommodate low flow conditions. For example, when one engine is down for maintenance or when there is not enough gas to sustain an additional engine (i.e., less than 300 scfm). If an enclosed flare were required, the landfill owner would be forced to divert a larger quantity of gas from the energy project to the enclosed flare to maintain proper flare operation. By doing this, environmental benefits and revenue are both reduced.

- o Non-enclosed flares have faster start-up and a shorter time between shutdown and startup than enclosed flares. Enclosed flares that require a purge period before ignition and a longer cool-down period after shutdown and before the next startup. The quick startup of open / non-enclosed flares also helps maintain a consistent vacuum on the wellfield by avoiding extended periods of downtime.

- o Enclosed flares that are used as backup may have additional maintenance problems since during inactivity, the insulation in the flare gets wet due to weather events and when the flare is activated, the resulting heat can make the insulation sluff off the interior of the flare. The flare stack cannot be covered to prevent this from happening during times of non-use because the backup flare needs to have the potential for immediate lighting of the flare and cannot wait to have someone remove the cover before the flare can begin operation.

Because of the cost effective benefits non-enclosed flares provide and the proven ability of those flares to achieve EPA's established BSER, as supported by a major flare manufacturer, EPA must continue to consider non-enclosed flares as BSER for the landfill gas control system.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 20

**Comment Excerpt:**

Open flares provide the greatest flexibility of operation due to their higher turndown ratios. These flares provide flexibility when LFG generation is ramping up in new waste placement areas, allow flexibility during beneficial use to serve as a back-up device with wide operating ranges, and provide flexibility after closure when LFG production is declining. In 1995, EPA published the background information document for Air Emissions from Municipal Solid Waste Landfills (EPA-453/R-94-021). This document explains EPA's reason for listing open flares as the best demonstrated technology (BDT) at that time, and the reasoning still stands today. Specifically, EPA states:

*The BDT for landfills is a collection system and a combustion device. The combustion control device must be capable of reducing NMOC emissions by 98 percent or to an outlet concentration of 20 ppmv, dry basis, as hexane, at 3 percent oxygen. Both open flares and enclosed combustion devices that achieve this performance level are BDT and can be used to meet the standards. Although performance testing is the norm under section 111, it is impractical to require testing of percent reduction from open flares, because outlet concentration is infeasible to measure. EPA developed 40 CFR 60.18 to address this problem. The provisions for open flares in § 60.18 resulted from extensive testing by EPA demonstrating that properly operated open flares achieve 98 percent destruction efficiency. This testing would, however, be too expensive for an individual owner or operator.*

Because of the benefits open/non-enclosed flares provide, and the proven ability of those flares to achieve EPA's established BSER, EPA should remain consistent with its previous findings that open/non-enclosed flares represent an appropriate method for demonstrating compliance with the landfill NSPS and represent BSER for controlling landfill gas.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1



**Comment Excerpt Number: 10**

**Comment Excerpt:**

The BDT for landfills is a collection system and a combustion device. The combustion control device must be capable of reducing NMOC emissions by 98 percent or to an outlet concentration of 20 ppmv, dry basis, as hexane, at 3 percent oxygen. Both open flares and enclosed combustion devices that achieve this performance level are BDT and can be used to meet the standards. Although performance testing is the norm under section III, it is impractical to require testing of percent reduction from open flares, because outlet concentration is infeasible to measure. The EPA developed 40 CFR 60.18 to address this problem. The provisions for open flares in § 60.18 resulted from extensive testing by the EPA demonstrating that properly operated open flares achieve 98 percent destruction efficiency. This testing would, however, be too expensive for an individual owner or operator.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 11

**Comment Excerpt:**

Open flares are used prevalently across the country. Therefore a change to BSER determination will have substantial negative effects to many facilities.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 31

**Comment Excerpt:**

TXSWANA specifically reiterates its position that non-enclosed flares represent BSER. We reach this conclusion because non-enclosed flares provide the greatest flexibility of operation due to their higher turndown ratios. This provides flexibility at the beginning of operation when

LFG generation is ramping up, provides flexibility during beneficial use when it can serve as a back-up device with wide operating range, and provides flexibility after closure when LFG production is declining. The continued use of non-enclosed flares is essential for landfill owners and operators in Texas as they provide the most efficient option for controlling LFG. Given the wide range of climate, waste acceptance, size, and age of landfills in Texas, there is a need for a LFG control device that is reliable, and can meet the various conditions in Texas. Non-enclosed flares have been proven to be the most reliable with the ability to provide the most flexibility in the varying conditions that exist with landfill generation through the state. We specifically support the continued use of nonenclosed flares as BSER.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 32

**Comment Excerpt:**

TXSWANA is not aware of any new information that exists that establishes or even suggests that non-enclosed landfill flares cannot satisfy the requisite criteria. Nor are we aware of any data that suggests non-enclosed flares are not as effective as enclosed flares, the apparent alternative that EPA is considering.

TXSWANA is aware that there has been a study of flares in other industries (primarily oil refining). If and when EPA or any reputable entity conducts a study of landfill flares, then those results may drive different conclusions about BSER or suggest improved operational methods. So far as TXSWANA is aware no "apples to apples" study has been undertaken. The other industry study is not sufficient to cause a potential expensive mandatory shift to enclosed flares.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 59

**Comment Excerpt:**

We reiterate our comments from last year on the efficacy of open flare to control NMOC emissions. Open flares provide the greatest flexibility of operation due to their higher turndown ratios. This provides flexibility at the beginning of operation when LFG generation is ramping up, provides flexibility during beneficial use when it can serve as a back-up device with wide operating range, and provides flexibility after closure when LFG production is declining. In 1995, EPA published the background information document for Air Emissions from Municipal Solid Waste Landfills (EPA-453/R-94-021). This document explains EPA's reason for listing open flares as the best demonstrated technology (BDT) at that time, and the reasoning still stands today. Specifically, EPA states:

*The BDT for landfills is a collection system and a combustion device. The combustion control device must be capable of reducing NMOC emissions by 98 percent or to an outlet concentration of 20 ppmv, dry basis, as hexane, at 3 percent oxygen. Both open flares and enclosed combustion devices that achieve this performance level are BDT and can be used to meet the standards. Although performance testing is the norm under section 111, it is impractical to require testing of percent reduction from open flares, because outlet concentration is infeasible to measure. EPA developed 40 CFR 60.18 to address this problem. The provisions for open flares in § 60.18 resulted from extensive testing by EPA demonstrating that properly operated open flares achieve 98 percent destruction efficiency. This testing would, however, be too expensive for an individual owner or operator.*

Because of the benefits open/non-enclosed flares provide, and the proven ability of those flares to achieve EPA's established BSER, EPA should remain consistent with its previous findings that open/non-enclosed flares represent an appropriate method for demonstrating compliance with the landfill NSPS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 52

**Comment Excerpt:**

WM also supports the Agency's decision to retain the option for landfills to comply with the proposed EG by using an open flare operated in conformance with 40 C.F.R. 60.18(b) of the general provisions. As we noted in our comments on the proposed NSPS and ANPRM, this is the appropriate determination as EPA stated that it had no new information to suggest that open flares at MSW landfills that comply with 40 C.F.R. 60.18(b) will not achieve at least 98 percent reduction by weight of NMOC. Open flares serve a vital role in the landfill industry and are favored because they are straightforward to operate and maintain, and can operate properly even when LFG flow and gas quality varies over the life of the landfill. Open flares are also an

important component of any LFG-to-energy project, as they provide backup control of LFG during periods when the primary combustion units (engines/turbines) are offline.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 5

**Comment Excerpt:**

Republic also supports the decision to retain the option for landfills to comply with the proposed emission guidelines by using an open flare operated in conformance with 40 C.F.R. § 60.18(b) of the Subpart 60 general provisions because open flares will achieve at least 98 percent reduction by weight of NMOC. Like EPA, Republic is not aware of any information to suggest otherwise. Furthermore, the primary manufacturer of open flares used in the landfill industry, John Zink, was also unaware of any new test data on LFG-fired open flares that would indicate any concern over whether open flares can meet 98 percent destruction efficiency. Open flares serve a vital role in the landfill industry because they are straightforward to operate and maintain and can operate properly even as landfill gas flow and quality vary over the life of the landfill. Open flares are also an important component of any LFG-to-energy project, as they provide critical backup control of landfill gas during periods when the primary combustion units (engines/turbines) are offline.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1 Comment Excerpt Number 4.

## 4.5 GCCS-Other

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**Commenter Name:** Comment submitted by Dave Heitz

**Commenter Affiliation:** Geosyntec Consultants

**Document Control Number:** EPA-HQ-OAR-2003-0215-0102.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

As specified in §60. 762(b)(2)(iii), "control systems" must meet the requirements in either §60.762 (b)(2)(iii)(A) [non-enclosed flare] ; (B) [A control system which reduces NMOC by 98 percent or an enclosed combustion device which reduces NMOC by 98 percent or reduces the outlet NMOC concentration to less than 20 ppm; or (C) [a treatment system]. Although it isn't specified in this section, other references in the preamble seem to imply that the control system is

some type of device that combusts the landfill gas to reduce the NMOC. There may be situations that other equipment, such as an NMOC absorption scrubber, may be used to reduce the NMOC in the landfill gas by 98 percent. In this situation, the monitoring of the absorption scrubber would be established in accordance with §60. 766( d). I request that EPA clarifies that this type of control system may be used as long as it meets all the requirements specified under Subpart XXX and future Subpart WWW rulemaking.

**Comment Response:**

The final landfills rules require control of the landfill gas through a control system as described at 60.762(b)(2)(iii). The landfill gas may be controlled by a non-enclosed flare meeting the requirements of 60.18, an enclosed combustion device, or a treatment system. If an NMOC absorption scrubber were used as a control device, the owner or operator must conduct a performance test of the device to demonstrate that it reduces NMOC by 98 percent or reduces the outlet concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 4

**Comment Excerpt:**

It would be wise for EPA to design the landfill methane rules to rely on approaches that require minimal ongoing fine tuning to maintain high rates of capture; and to rely on technologies that, when they fail, prompt immediate repair, rather than depending on state or federal inspectors to notice and enforce against the violation.

**Comment Response:**

The landfills regulations are design and operational standards. The final regulations identify the BSER as a well designed and well operated landfill GCCS and a control device capable of reducing NMOC in the collected gas by 98 percent by weight. The combination of design and operational criteria in subpart WWW continue to ensure that the collection system efficiently collects landfill gas and that a gas collection and control system meeting these criteria continues to represent BSER for MSW landfills. The regulations identify operational standards such as wellhead operating parameters and surface emissions monitoring to ensure that the gas collection and control system is well operated. To meet these operational standards, the landfill gas collection system must be fine tuned on an ongoing basis to ensure maximum collection of the landfill gas. If there are exceedances of the operational standards, the landfill owner or operator must take corrective action within a specific timeframe. And, if the gas collection and control system is not operating, the gas mover system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within 1 hour.

**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 3

**Comment Excerpt:**

As will be the case after promulgation of the newly proposed rules, facilities will continue to be left with the very real duty of self implementing corrective actions and maintaining high quality collection through routine replacement of components as needed to ensure adequate collection of the landfill gas generated by the decomposing waste. This will continue to happen without intervention by USEPA or state agencies.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0116.1 Comment Excerpt Number 4 under Comment Code 4z.

## **5.0 ALTERNATIVE CONTROLS AND PRACTICES**

### **5.1 Biocovers-Performance and Applicability**

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**Commenter Name:** Comment submitted by Michael Rice, Past President  
**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1  
**Comment Excerpt Number:** 35

**Comment Excerpt:**

The TXSWANA appreciates EPA's willingness to recognize the role that methane oxidation plays in mitigating methane and NMOC emissions from landfills and for soliciting information regarding the potential use of cover systems to achieve emissions reductions. The use of biocovers and biofilters is promising. Some information on the performance of biocovers and biofilters at controlling methane and other volatile organic compounds has been reported in the scientific literature. A small number of field-scale demonstrations have also been published but the long term effectiveness of these project are still unknown.

As these types of project are still in the research and development phase we do not recommend requiring the use of biocovers and biofilters, but rather allow there use until they become a viable proven option.

**Comment Response:**

As stated in the preamble to the proposed rule (80 FR 52115) we recognize that the effectiveness of the use of oxidative covers and biofilters in reducing emissions is site-specific and, in some cases, may rely on careful control of site-specific conditions such as soil porosity, microbial

activity, and temperature. There are small-scale field studies of these practices but their effectiveness has not been demonstrated in large-scale. Therefore, we do not consider these to constitute BSR and are not prescribing specific cover practices in the final rule. However because of the rule flexibility allowing the use of site-specific surface emissions measurements in determining when the installation of a regulatory compliant GCCS is required, we expect at least some landfill owners or operators may utilize these practices as BMPs in order to minimize surface emissions.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 16

**Comment Excerpt:**

Cover type can also enhance methane oxidation. In particular, EPA's proposal notes that biocovers may help reduce methane emissions, and we agree that available data strongly support this conclusion. Several studies examining biocovers report methane oxidation rates of 200 g/m<sup>2</sup>/d.<sup>30</sup> Initial research into breathing biocovers suggests that, at low flow rates, the biocover may come close to 100 percent oxidation.<sup>31</sup> While long-term performance of biocovers is not yet established,<sup>32</sup> these systems show promise for both active landfills seeking emission reductions in intermediate cover areas as well as smaller, closed landfills without landfill gas collection systems.

[Footnote]

(30) SCS Engineers, Technology and Management Options for Reducing Greenhouse Gas Emissions from Landfills 78 (2008); Cal Recycle, Biocovers for Landfills for Methane Emission Reduction Demonstration 70 (Oct. 2010) ("Results from laboratory and field tests indicated both fresh and aged green material could oxidize CH<sub>4</sub> at high rates, up to 100-200 g CH<sub>4</sub>/m<sup>2</sup>/day in field tests.").

(31) Capenema et al, A 6-year Old Experimental Biocover (2013); Wen-Jing Lu et al, Can a Breathing Biocover Enhance Methane Emission Reduction from a Landfill? 191 J. Hazardous Materials 228 (2011).

(32) See Cal Recycle, Biocovers for Landfills for Methane Emission Reduction Demonstration, *supra* note 27.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 35, under comment code 5a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 19

**Comment Excerpt:**

Republic does not have performance data or related information on the use of biocovers or biofilters that is not already available to EPA in the published research and/or literature form. We recognize the positive effect that biocovers and soil could potentially have on reducing surface emissions through oxidation of methane and other organics as they vent through the surface of a landfill. At this time, however, the technology and methodology has not been sufficiently demonstrated to support a mandatory regulatory requirement under Section 111, which requires EPA to determine all performance standards based on adequately demonstrated technology. therefore, we agree with EPA that these options should not be included in the final rule nor considered to be the BSEER at this time.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 35, under comment code 5a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 23

**Comment Excerpt:**

We agree with EPA that these potential technologies [technologies that increase methane oxidation] are not BSEER and cannot yet be applied to new or existing landfills or incorporated into the proposed Subpart XXX or a revised EG.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 35, under comment code 5a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 24

**Comment Excerpt:**

There are numerous articles detailing information on the ability of biocovers and biofilters to control methane and other volatile organic compounds in the scientific literature (see list of references). [Refer to pages 55-56 of the original comment letter at DCN EPA-HQ-OAR-2003-0215-0100.1 for references.] A small number of field-scale demonstrations have been published



that discuss long-term performance. Additional articles have been published on selecting appropriate materials for biocover installation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 35, under comment code 5a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 76

**Comment Excerpt:**

The use of biocovers and biofilters is promising. Information on the performance of biocovers and biofilters at controlling methane and other volatile organic compounds has been reported in the scientific literature. A small number of field-scale demonstrations have been published that discuss long-term performance.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 35, under comment code 5a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 78

**Comment Excerpt:**

Additional information has been published on selecting materials for biocover installation.

As with many other aspects of industry comments, we do not recommend requiring the use of biocovers and biofilters. They have not yet been used full-scale at a facility. However, we request that the agency provide flexibility to the industry to allow for greater development of alternatives to reduce emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 35, under comment code 5a.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 48

**Comment Excerpt:**

**Oxidizing covers require unrealistic hot house conditions.** EPA acknowledges that oxidization relies upon hothouse conditions that depend upon careful control of cover porosity, microbes and temperature. Nothing indicates, however, that these ideal conditions prevail in the real world across a large population of landfills of widely varying operational competencies and in different locations, with LFG generation for decades after the sites are closed and abandoned. We believe that EPA must carefully study the effect of oxidation measures under actual conditions before proposing oxidation as BSER.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 35, under comment code 5a.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 30

**Comment Excerpt:**

WDNR agrees that the activity of methane oxidizing microbes is well demonstrated in soils and organic materials such as compost or yard waste. Related to daily cover and intermediate cover thicknesses, there needs to be better definition of how vigorous the methane oxidation activities are for landfills located in climates colder than California. Landfill gas is produced continuously in the waste mass below daily or intermediate cover, but the biological activity in those cover layers will be significantly reduced due to cold or frozen conditions, hot weather that dries out the cover, and weather wet enough to saturate the cover materials.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 35, under comment code 5a.

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**Commenter Name:** Amanda B. (no surname provided)

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2003-0215-0189

**Comment Excerpt Number:** 6

**Comment Excerpt:**

Research has shown that a soil layer on top of landfill waste can also be an effective mitigation strategy. A soil layer can act as a “biocover,” providing habitat for methanotrophic bacteria. This type of bacteria metabolizes methane as a source of carbon and energy. If methane travels through intermediate soil cover (approximately 20cm - 30cm) it is oxidized by these bacteria and does not get released into the atmosphere (Wang et al., 2015). When comparing landfill plots covered in soil and plots not covered, a significant difference was found in the LFG fluxes. Plots covered with soil showed significantly lower fluxes and NMOC concentrations were lower above plots with soil cover (Wang et al., 2015). This surprising difference in NMOC fluxes is due to co-metabolic transformations that are facilitated by the same enzyme responsible for methane mitigation (Wang et al., 2015). These transformations degrade or oxidize NMOCs. This is a plausible control and mitigation measure for both methane and NMOCs (Wang et al., 2015, Albanna et al., 2010). A negative aspect of this as a control method is that mitigation of these gasses is dependent upon soil temperature, moisture content and nutrient availability. Methanotrophic bacteria metabolize the most methane at 25 to 35 degrees Celsius (Wang et al., 2015). This method requires the least engineering and planning, but would not be effective in cold or dry climates.

Research has found that, in favorable conditions, an embankment of waste and soil covered with one meter thick top cover of soil and clay performed nearly as well as an underground gas collection system consisting of perforated pipes, geocomposite grid, geo-textile layer, HDPE-membrane, and layers of soil (Scheutz et al., 2008). With the second mitigation method, using the gas collection system, methane present in the air above the soil was mitigated, not only the methane seeping up from underground (Scheutz et al., 2008). This means that sections of the landfill that utilize this technology will actually have negative methane output. Currently, the collection methods most commonly used are able to capture 60% to 80% of LFG (Albanna et al., 2010). To improve mitigation of methane and NMOCs landfills could combine attenuation methods.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 35, under comment code 5a.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 46

**Comment Excerpt:**

**Oxidizing covers increase methane releases.** EPA seeks comment on the use of a oxidizing covers instead of the standard composite cover designs as a means to both minimize infiltration and maximize gas collection, stating:

“EPA is aware of several technologies that increase the methane oxidation rate, thereby reducing the amount of methane that could escape through the surface of the landfill. The principle of

these technologies is the use of methanotrophic bacteria, commonly found in most soils and compost, to oxidize methane into water, carbon dioxide, and biomass.”

EPA indicates that oxidation methods may also increase gas collection efficiency by 35 to 50%. Evidence indicates, however, that oxidizing covers may not increase GCCS performance.

**Oxidizing covers preclude effective landfill top sealing, an essential step to functional gas collection.** By definition, oxidizing covers do not have the kind of effective seal maintained by a geomembrane, which is eliminated in these covers to allow sufficient gas diffusion through the compost layer for oxidation to occur. But absent an effective geomembrane, the functionality of vacuum-based gas collection systems is reduced because efforts to draw out the gas surrounding the collection pipes by means of negative (or vacuum) pressures also pull air from the surface. Moreover, when oxygen infiltrates the waste mass from the surface above certain levels, regulations require the operator to damp down the system until oxygen levels recede below the limit to avoid explosive conditions that can start an underground landfill fire. That is to say, in order to create an effective oxidizing cover, the landfill sacrifices significant collection capacity.<sup>53</sup>

[Footnote]

<sup>53</sup> Goldsmith, Douglas, *Methane Emissions from 20 Landfill Across the United States Using Vertical Radial Plume Mapping*, 62 *Journal of the Air & Waste Management Association* 183 (2012) at 195 (attached).

**Comment Response:**

As stated in the preamble to the proposed rule (80 FR 52115) we recognize that the effectiveness of the use of oxidative covers and biofilters in reducing emissions is site-specific and, in some cases, may rely on careful control of site-specific conditions such as soil porosity, microbial activity, and temperature. There may also be conditions under which these oxidative covers do not serve to reduce methane emissions, such as those described by the commenter. The EPA is not considering oxidizing covers to constitute BSER and are not prescribing specific cover practices in the final rule.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 34

**Comment Excerpt:**

In our ANPRM Comments, we address a number of proposals we believe EPA should not implement. Because we believe that oxidizing covers decrease the efficacy of gas collection systems, EPA should not require the use of oxidizing covers or otherwise endorse covers that affect GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0121, excerpt number 46, under comment code 5a.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 31

**Comment Excerpt:**

Wisconsin rules do not explicitly address biocover using compost or yard waste, but there is exemption authority to allow it. However, use of yard waste or compost for daily or intermediate cover would violate a ban on landfilling yard waste in our state's recycling statutes. Use of compost or yard waste for daily or intermediate cover has not been approved or put into practice yet. There are plenty of other industrial wastes or treated soils that landfill operators can use instead for alternative daily cover, and the operator gets paid to accept them, whereas compost would have a cost to obtain.

**Comment Response:**

Thank you for your comment. The EPA has not mandated the use of biocovers in its final actions.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 32

**Comment Excerpt:**

A default methane oxidation rate needs to be consistent with climate and season. From the information WDNR has, higher methane oxidation rates in a biocover soil are achieved with a material thickness of 24 inches or more, since the methane oxidation zone is several inches below the surface. If a biocover has to be thicker than current requirements for daily or intermediate cover, and has to meet specific targets for organic matter to assure effectiveness, there is no incentive for landfill operators to use biocover.

**Comment Response:**

As stated in the preamble to the proposed rule (80 FR 52115) we recognize that the effectiveness of the use of oxidative covers and biofilters in reducing emissions is site-specific and, in some cases, may rely on careful control of site-specific conditions such as soil porosity, microbial activity, and temperature. There may also be conditions under which these oxidative covers do not serve to reduce methane emissions, such as those described by the commenter. The EPA is

not considering oxidizing covers to constitute BSER and are not prescribing specific cover practices in the final rule.

## 5.2 Biofiltration Cells-Performance and Applicability

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 22

### Comment Excerpt:

#### *Biofilters*

The use of a biofilter bed for methane oxidation seems to be practical only for treating landfill gas from passive gas vents or from blowers operated at a low level of gas flow. EPA should provide more specifics on when and where this oxidation method can be used.

### Comment Response:

As stated in the preamble to the proposed rule (80 FR 52115) we recognize that the effectiveness of the use of oxidative covers and biofilters in reducing emissions is site-specific and, in some cases, may rely on careful control of site-specific conditions such as soil porosity, microbial activity, and temperature. There may also be conditions under which these oxidative covers do not serve to reduce methane emissions. The EPA is not considering oxidizing covers to constitute BSER and are not prescribing specific cover practices in the final rule.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 33

### Comment Excerpt:

#### Biofilters

The use of a biofilter bed for methane oxidation for treating landfill gas from blowers operated at high gas flow rates would easily blow out via cracks that form in the biofilter media. WDNR's information is that biofilters are used for treatment for some industrial discharges and can successfully oxidize methane and other organic vapors. However, they require some maintenance to maintain moisture and to eliminate cracks that form as the filter media settles. Cracks in the media are detrimental because they act to short-circuit gas flow to the top of the media, thus bypassing contact with the oxidizing microbes. Given the need for maintenance, biofilters may need more attention than is practical for small and/or remote landfills.

### Comment Response:

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, **comment** excerpt number 22, under comment code 5b.

### 5.3 Biocovers and Biofiltration Cells: Costs

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 29

**Comment Excerpt:**

The concept proposed by EPA is a two layer design, the lower layer being a gas distribution layer and upper layer of soil, mulch, compost, or other organic media to act as a methane oxidation layer. Landfill operators try hard to minimize costs of obtaining and placing intermediate cover, as it produces no revenue and will likely have to be removed prior to placing final cover. Intermediate cover in Wisconsin is specified to be one foot or more of soil, and this is a commonly recommended thickness by other states. If the total thickness of the distribution and oxidation layers needs to be more than one foot, it is also an additional cost over current requirements. Plus, effort to place and grade two thin layers of material instead of one, and to do it consistently and effectively, seems grossly excessive for EPA's stated intent.

**Comment Response:**

As stated in the preamble to the proposed rule (80 FR 52115) we recognize that the effectiveness of the use of oxidative covers and biofilters in reducing emissions is site-specific and, in some cases, may rely on careful control of site-specific conditions such as soil porosity, microbial activity, and temperature. There may also be conditions under which these oxidative covers do not serve to reduce methane emissions or are too costly to install as described by the commenter. The EPA is not considering oxidizing covers to constitute BSER and are not prescribing specific cover practices in the final rule.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 21

**Comment Excerpt:**

*Biocovers*

Any biocover designs, considered by EPA as a BMP should acknowledge costs and construction difficulties for an oxidation biocover by keeping the design simple, using one layer only, and using a thicker layer of a single material rather than two layers of different materials.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1 Comment Excerpt Number 21, [under comment code 5c](#).

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 179

**Comment Excerpt:**

A recent study from a project in the Netherlands provides estimated costs for a biocover designed to control emissions for an entire landfill (Danish study). [Refer to pages 55-56 of the original comment letter at DCN EPA-HQ-OAR-2003-0215-0100.1 for references.]

**Comment Response:**

Thank you for your comment about this Danish study on biocovers.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 77

**Comment Excerpt:**

A recent study from a project in the Netherlands provides estimated costs for a biocover designed to control emissions for an entire landfill.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 179, under comment code 5c.

## 5.4 Biocovers-Measurement

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 79

**Comment Excerpt:**



Methane oxidation in cover media is controlled by factors that include moisture, temperature, nutrient supply and the availability of methane and oxygen. The physical properties of the cover or filter media such as particle size and compaction strongly determine the water holding capacity and gas permeability of the cover media. This in turn controls the gas filled porosity of the media which is important in controlling the amount of oxygen and methane entering the zone of oxidation as well as its depth. Methane loading to the cover is an important determinant in the fraction of methane that will be oxidized in the cover. A variety of materials such as composted plant and food wastes as well as mixtures of compost and soil have been used as media in biocovers and methods for predicting the performance of various mixtures have been reported.

If the objective of performance monitoring is to demonstrate that covers designed to promote methane oxidation are controlling emissions below the regulatory threshold, then the use of a portable flame ionization detector (FID) to monitor surface methane emissions would be sufficient.

More sophisticated and expensive analyses would be required if the objective is to determine the fraction of methane oxidized in the cover material. Determining the total amount of methane oxidized in a biocover or biofilter system is challenging because they would likely encompass large areas (thousands of square meters in the case of covers) and operate passively. A research method of determining the relative proportion of carbon isotopes in the methane passing through the cover can be used to determine the fraction of methane oxidized.

**Comment Response:**

Thank you for your comments regarding appropriate monitoring methods and instrumentation for landfills that have oxidizing covers. As stated in the preamble to the proposed rule (80 FR 52115) we recognize that the effectiveness of the use of oxidative covers and biofilters in reducing emissions is site-specific and, in some cases, may rely on careful control of site-specific conditions such as soil porosity, microbial activity, and temperature. There may also be conditions under which these oxidative covers do not serve to reduce methane emissions, such as those described by the commenter. The EPA is not prescribing specific cover practices in the final rule.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 25

**Comment Excerpt:**

Methane oxidation in cover media is controlled by a combination of factors which include moisture, temperature, nutrient supply and the availability of methane and oxygen. The physical properties of the cover or filter media such as particle size and compaction strongly determine the moisture retention capacity and gas permeability of the cover media. This in turn controls the gas filled porosity of the media which is important in controlling the amount of oxygen and methane entering the zone of oxidation as well as its depth. Methane loading to the cover is an important determinant in the fraction of methane that will be oxidized in the cover (Rachor et al, Abichou et al ). A variety of materials such as composted plant and food wastes as well as

mixtures of compost and soil have been used as media in biocovers and methods for predicting the performance of various mixtures have been reported (see list of references). [Refer to pages 55-56 of the original comment letter at DCN EPA-HQ-OAR-2003-0215-0100.1 for references.]

[References]

Rachor I, Gebert J, Grongroft A, Pfeiffer EM. (2011), Assessment of the methane oxidation capacity of compacted soils intended for use as landfill cover materials. *Waste Management* 31: 833-42.

Abichou, T., Mahieu, K., Yuan, L., Chanton, J., Hater, G., (2009), Effects of compost biocovers on gas flow and methane oxidation in a landfill cover. *Waste Management* 29: 1595-1601.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 79, under comment code 5e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 26

**Comment Excerpt:**

If the objective of performance monitoring is to demonstrate that covers designed to promote methane oxidation are controlling emissions below the regulatory threshold, then the use of a portable FIO to monitor surface methane emissions would be sufficient. More sophisticated and expensive analyses would be required if the objective is to determine the fraction of methane oxidized in the cover material. Determining the total amount of methane oxidized in a biocover or biofilter system is challenging because they would likely encompass large areas (1,000's of square meters in the case of covers) and operate passively. A research method of determining the relative proportion of carbon isotopes in the methane passing through the cover can be used to determine the fraction of methane oxidized (Chanton et al 2008).

[References]

Chanton, J.P., Powelson, D.K., Abichou, T., Fields, D., Green, R., 2008a. Effect of temperature and oxidation rate on carbon-isotope fractionation during methane oxidation by landfill cover materials.

*Environ. Sci. Technol.* 42 (21),7818-7823.

Chanton, J.P., Powelson, D.K., Abichou, T., Hater, G., 2008b. Improved field methods to quantify methane oxidation on landfill cover materials using stable carbon isotopes. *Environ. Sci. Technol.* 42 (3), 665-670.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 79, under comment code 5a.

## 5.5 Biocovers-RCRA Jurisdiction

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 17

### Comment Excerpt:

Despite these manifest benefits, the agency declines to propose enhanced cover practices as part of the BSER on the grounds that "final cover practices are currently addressed under Subtitle D of the Resource Conservation and Recovery Act (RCRA) and not under the CAA." Importantly, RCRA's implementing regulations establish certain final cover requirements that apply *once a landfill is closed*.<sup>34</sup> RCRA also includes requirements for daily cover,<sup>35</sup> but includes no provisions concerning intermediate cover nor does it prohibit earlier installation of final cover.

[Footnote]

(34) 40 C.F.R. § 258.60(a).

(35) Id.

### Comment Response:

Promulgated in 1991, the EPA's RCRA, Subtitle D (40 CFR Part 258) provides standards to state and local governments with information, guidance, policies, and regulations to help these entities make better decisions in dealing with waste issues, promote source reduction and recycling of solid wastes, and require upgrading or closure of disposal units, including municipal solid waste landfills. State and local governments are considered the primary planning, regulating, and implementing entities for the management of non-hazardous solid waste.

Federal municipal solid waste landfills standards include guidance in the following areas, including location restrictions, composite liner requirements, leachate collection and removal systems, operating practices (such as compacting and covering waste), operating practices, groundwater monitoring requirements, closure and post-closure care requirements, corrective action provisions and financial assurance (providing funding for environmental protection after closure). Specifically, Subtitle D provides guidance on daily cover, final cover, and post-closure procedures. The purpose of daily cover is to control disease, fires, odors, litter, and scavengers. Subtitle D provides guidance on types of daily cover and use of alternate daily cover (such as yard waste and other biocover) as well as waivers from daily cover requirements. For the implementation of final cover, Subtitle D provides also provides information on developing final cover guidance documents, closure schedule, any corrective actions, if needed, and post-closure care.

The EPA agrees with the comments that enhanced cover practices, such as the use of different types of biocovers as well as early installation of final cover can improve methane oxidation and improve gas collection efficiency. However, the EPA continues to maintain that guidance on daily and final cover is addressed under RCRA Subtitle D and therefore is not considered BSER

under the CAA. The EPA also maintains that the primary responsibility for regulating and implementing specific aspects of Subtitle D lies with states and local governments. While we also agree that intermediate cover practices, which can improve methane oxidation and enhance collection efficiency, are not covered under Subtitle D, we are aware of several states (e.g., Texas, California) that require the use of intermediate cover. The EPA maintains the position that early installation of cover and use of covers that enhance methane oxidation (such as biocovers) are considered BMPs and will encourage the practice of these types of BMPs through its voluntary programs as well as the Tier 4 mechanism, which will encourage a more widespread use of BMPs and alternative technologies.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1  
**Comment Excerpt Number:** 18

**Comment Excerpt:**

We urge EPA to incorporate enhanced cover practices into its BSER determination for both the NSPS and EG. In particular, the agency currently requires facilities that exceed the 50 Mg NMOC threshold to submit a gas collection and control design plan, which must include several criteria to "ensure that owners and operators design, construct, and operate gas collection systems to maximize collection and minimize emission of landfill gas."<sup>36</sup> The agency could supplement these criteria by adding a requirement that cover systems must be installed and operated in a way that maximizes gas collection. Such a requirement would allow landfill operators to appropriately account for post-closure plans consistent with RCRA, which must be filed at the time of initial waste acceptance.<sup>37</sup> This approach would also provide operators with flexibility to integrate cover system design into the landfill in a way that would maximize emission reductions.

[Footnotes]

(36) 79 Fed. Reg. at 41,802.

(37) 40 C.F.R. § 258.60(c)(4).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 17, under comment code 5f.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director  
**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1  
**Comment Excerpt Number:** 28

**Comment Excerpt:**

EPA's proposal is not specific, but this seems mostly applicable to daily and intermediate cover, not final cover. A final cover with a composite barrier layer of geomembrane and compacted fine-grained soil is a highly effective barrier to landfill gas, as shown by the performance increase of gas extraction systems once a composite cap is placed. Oxidation of methane will occur in the cover soils over the composite cap, but presence of methane in that situation should be seen as evidence of a defect in the barrier layer that, upon detection, requires repair.

Under RCRA Sub D rules, the function of final cover is to prevent percolation of water into the waste mass. What oxidation of methane that occurs is a minor benefit, but an effective final cover will still be a formidable impediment to landfill gas movement, whether with a composite barrier layer, clay barrier layer, or an alternative cap using thick soil layers for evapotranspiration effects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 17, under comment code 5f.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 27

**Comment Excerpt:**

The Agency points out that landfill cover standards are prescribed in RCRA Subtitle D Criteria for MSW landfills, but that emissions performance is not currently addressed. Landfill cover materials need to perform multiple purposes (controlling odors, vectors, fires, blowing litter, shedding stormwater, reducing infiltration and supporting vegetation and compaction). As a practical matter, biocovers or soil covers intended to optimize methane oxidation will also need to perform these functions. The landfill owner/operator in choosing materials for construction and in designing the cover intended to promote methane oxidation will need to take into consideration these additional performance objectives.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 17, under comment code 5f.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 80

**Comment Excerpt:**

The agency points out that landfill cover standards are prescribed in Subtitle D of the Resource Conservation and Recovery Act but that emissions performance is not currently addressed. Landfill cover materials need to perform multiple purposes (vector deterrence, shedding moisture, supporting vegetation and compaction). As a practical matter biocovers will also need to perform these functions. The materials of construction and cover designs that are intended to promote methane oxidation will need to also take these additional performance objectives into consideration.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 17, under comment code 5f.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 8

**Comment Excerpt:**

The proposed NSPS requires landfill owners to operate the methane collection system at negative pressure unless the landfill experiences a fire or a well shutdown, or the landfill is covered with a geomembrane or synthetic cover.<sup>10</sup> The benefits of a geomembrane are clear; EPA's own 2011 synthesis of landfill methane capture technologies noted that geomembranes can deliver up to 95% capture of landfill gas, well above any other cover.<sup>11</sup> Since the NSPS applies prospectively, we recommend that EPA make the use of geomembranes or synthetic covers in new landfills mandatory, not simply an option that allows an operator to forego negative pressure in the collection system. This is another case of administrative efficiency: once built, a landfill with a geomembrane cover will limit methane emissions by default, while negative pressure requires constant pumping.

[Footnotes]

10 79 Fed. Reg. 41796, at 41834, proposed 40 CFR §60.763(b)(2).

11. US EPA, *Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from Municipal Solid Waste Landfills*, June 2011.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 17, under comment code 5f.

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## 5.6 BMP-General

**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 53

**Comment Excerpt:**

WM supports the EPA determination that BMPs should not be considered components of BSER.

EPA carefully considered, in the context of the proposed NSPS and ANPRM, a suite of emission reduction techniques and best management practices (BMPs) used within the landfill sector to determine if they should be incorporated as components of BSER. We support EPA's decision to encourage their use when appropriate, but to decline including them as components of BSER. In previous comments, WM explained that mandating BMPs would be inconsistent with the Agency's use of a design and operating standard for GCCS, which recognizes that proper operation is driven by site-specific factors. In the same way, BMPs and other emission reduction techniques cannot, and should not, be applied as a one-size-fits-all standard. While WM supports and utilizes many of the techniques and BMPs reviewed by EPA, we evaluate and implement them on a site-specific basis. We believe EPA has made a well-considered decision in not incorporating the techniques and BMPs as necessary components of BSER, while still encouraging their evaluation and use where appropriate.

**Comment Response:**

The EPA maintains its position that BMPs are not considered BSER. The EPA recognizes the site-specific nature of GCCS design and operation and that the effectiveness of any particular BMP, therefore, depends on the site-specific circumstances of a particular MSW landfill (80 FR 52115, August 27, 2015). To this end, while the EPA strongly encourages the use of appropriate BMPs to ensure the best possible design and operation of each GCCS, the EPA does not consider any particular BMP to constitute BSER and, is therefore not finalizing provisions that would require the use of BMPs. As EPA noted in the preamble to the proposed Emission Guidelines, alternative technologies and BMPs can achieve additional reductions in some circumstances, the performance, cost, and technical feasibility of these BMPs can vary greatly from site to site as well as from cell to cell even within the same site (80 FR 52115, August 27, 2015). The EPA encourages landfill owners and operators as well as other stakeholders to avail themselves of tools and resources to implement BMPs, such as the EPA's Landfill Methane Outreach Program.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 6

**Comment Excerpt:**

EPA's emission guidelines should not require specific BMPS.

Republic supports EPA's decision not to include best management practices (BMPs) as a component of the BSER. We agree that the emission guidelines should remain flexible because BMPs and other emission reduction techniques cannot be applied as a one-size-fits-all standard.

Thus, Republic supports EPA's policy of encouraging the use of BMPs on a case-by-case, site-specific basis, as appropriate.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt 53, under comment code 5g.

## 5.7 BMP-Costs

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

Costs to connect the GCCS to the LCRS for gas collection depend on whether the tie-in is made before or after waste filling has commenced. If the decision to connect the GCCS to the LCRS is made at the time the cell and LCRS riser are constructed, costs to connect the GCCS to the LCRS will only include a tee on the riser (approximately \$500), lateral gas collection pipe (reasonably at a minimum of 200 ft of pipe at approximately \$20-\$25 per ft), the wellhead (approximately \$250 to \$500), and connection to the main gas collection header (cost varies depending on header size). In contrast, if the tie-in is made after waste has been placed, a straightforward tie-in to an existing LCRS riser would be more expensive--assuming the riser is less than 12" in diameter and minimal excavation is required, the minimum additional cost would be at least an additional \$1,000 to \$5,000. This additional cost does not include any costs for sealing portions of the LCRS to prevent the inflow of ambient air once vacuum is applied, excavation behind pump station headwalls, excavations deeper than 4 feet, additional health and safety measures in the event hydrogen sulfide exposure is possible, or other incidentals, construction quality assurance, engineering design, record drawings, or other related work. More complicated installations can approach or even exceed \$10,000 per connection.

**Comment Response:**

The EPA thanks the commenter for the background information on LCRS costs. The EPA did not adjust the impacts analysis for this rule to reflect costs related to best management practices, as these practices are not required by the final rule. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114) for discussion of best management practices.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 7

**Comment Excerpt:**



Connecting to the LCRS for gas collection can add significant cost. The cost to connect to the leachate system is approximately \$1800 per connection when header is installed in the gravel drainage layer. However, when connections are made at higher points in the leachate system the costs escalate to about \$25/linear foot, or roughly \$60,000 per cell.

**Comment Response:**

The EPA thanks the commenter for the background information on LCRS costs. See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 6, under comment code 5i.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 31

**Comment Excerpt:**

In addition, the SCS Engineers report also noted that collecting landfill gas from the leachate collection and removal system has "medium to high GHG emissions reduction potential early in a cell's life" and that such systems are "not costly" and are "easy to implement."<sup>59</sup>

[Footnote]

(59) See SCS Engineers, Technologies and Management Options at 30 (indicating costs would include the costs of a LFG wellhead and above grade piping with a cost of \$10-15 per foot).

**Comment Response:**

The EPA thanks the commenter for the background information on LCRS costs. See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 6, under comment code 5i.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 11

**Comment Excerpt:**

Depending on the characteristics of the liquid removed (e.g., pH, amount of sediment, BOD/COD, etc.), some landfills must segregate the liquids extracted from LFG wells from leachate in order to prevent precipitates from clogging force mains or to facilitate treatment or disposal. In that case, separate manholes or wet wells may be required, as well as separate force mains to onsite storage tanks.

Consequently, the EPA's reference to a cost of \$3,000, which is merely the typical cost of a pump, is a significant understatement of the true cost of infrastructure for LFG extraction well dewatering. That estimate does not include costs for the items listed above, nor does it account for pump maintenance and repair (which can vary from multiple times per month to annually),

air compressor electrical consumption, air compressor maintenance, force main cleaning, and other recurring costs.

**Comment Response:**

The EPA thanks the commenter for the background information on pumping costs to dewater wells. The EPA did not adjust the impacts analysis for this rule to reflect costs related to best management practices, as these practices are not required by the final rule. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114) for discussion of best management practices.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 14

**Comment Excerpt:**

The design and installation of a dewatering system is very costly. A typical pneumatic or electric pump installation will double the capital cost of a well and add significant operational and maintenance costs with no guarantee of any additional LFG recovery. A pneumatic pump typically costs \$4,000 to \$5,000. A liquids management system is an additional cost of approximately \$1,000 per well. A pumping system also requires an air compressor set which runs around \$20,000 and air/discharge lines installation at roughly \$5.00/linear foot. These capital and line only installation costs are significantly higher than the \$3,000 cost identified by EPA as the cost of infrastructure for LFG extraction well dewatering, and do not include the costs associated with constant operation and maintenance required to properly maintain the pumping system. Based on our experience, electric pumps are typically limited to wells with temperatures less than 125°F as well as power source availability.

**Comment Response:**

The EPA thanks the commenter for the background information on pumping costs to dewater wells. See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 11, under comment code 5i.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 16

**Comment Excerpt:**

Gas collection using horizontal collectors is usually significantly more expensive than with vertical extraction wells due to the length and number of horizontal collectors required for a given area. Costs vary depending on design criteria and materials used, but in general horizontal collectors cost \$50 to \$75 per foot. Given that they must be installed every 40 ft vertically and no more than 150 ft apart, a horizontal collector system can easily cost many times more than

vertical wells, even though they do not provide a consistent or significant improvement in performance.

**Comment Response:**

The EPA thanks the commenter for the background information on costs of horizontal wells. The EPA did not adjust the impacts analysis for this rule to reflect costs related to best management practices, as these practices are not required by the final rule. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114) for discussion of best management practices.

## 5.8 BMP-Enhanced Redundant Seals BSER

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 13

**Sort Order:** 100

**Comment Excerpt:**

Prescribed seals should not be a component of BSER. A site-specific approach is more effective in ensuring proper sealing than any prescriptive requirements for a specific type or number of seals. Landfills already have sufficient interest and incentive to ensure the seals they use are effective and appropriate for the design of the GCCS in question. Also, to the extent the seals utilized by a landfill are insufficient, the surface monitoring requirement already contained within the current NSPS are sufficient to identify any potential excess emissions concerns.

**Comment Response:**

As discussed in Section V.A of the 2014 Proposed NSPS Preamble (79 FR 41802) and Section IV.2.ii of the 2014 EG ANPRM (79 FR 41786), best management practices for GCCS may achieve greater reductions in landfill gas emissions than a well-designed and well-operated system alone. Specifically, the use of advanced seals at wellheads may help to ensure that the well can apply sufficient vacuum to the landfill to facilitate gas extraction while preventing leaks of landfill gas to the atmosphere. However, the EPA believes that a site-specific approach is more effective than prescribing the use of a particular number of seals or the use of a particular type of sealing material, and the EPA has determined that the use of advanced seals is not a component of BSER. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114) for discussion of best management practices.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 17

**Sort Order:** 101

**Comment Excerpt:**

Our sites are highly incentivized to install good seals to prevent air intrusion down the side of the well casing, minimize potential for surface emissions and to enhance recovery of the landfill gas. WM already requires redundant seals as that consists of two bentonite seals. Proper hydration of the bentonite above ground improves the seal within the borehole. Current surface emissions monitoring under Subpart WWW is sufficient for identifying leaks from improperly sealed wells. However, there is no evidence to indicate that the existing well seals are inadequate to prevent surface emissions in the immediate vicinity of a well. Where surface emissions monitoring may indicate possible surface emissions, then a site-specific approach is more effective than prescribing a particular number of seals or the use of a particular type of sealing material. There are a number of remediation options available such as improved tuning or soil cover, repair of existing well seal tears with geomembrane boots in closed areas dewatering, installation of well pipe perforations at greater depth and installation of interim/temporary shallow collectors.

WM continues to conduct research and development on other types of seals. We are currently testing an expanding foam product, which is more expensive than the standard bentonite seals. It is still too early to determine effectiveness of this product. We also sometimes employ enhanced seal technology in closed areas with geomembrane cap elements using a Fernco type flexible connection versus bentonite where site conditions dictate results may be favorable. This flexible connection accommodates settlement without tearing.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 13, under comment code 5k for EPA's response to employing site-specific approaches instead of prescribed seals.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 19

**Sort Order:** 102

**Comment Excerpt:**

We agree with EPA that prescribed seals should not be a component of BSER. Based on our experience with GCCS operations, the design of well seals is best left to the design engineer based on site-specific conditions and other design parameters. Redundant/advanced seals are one tool in the tool box available to site operations to address potential emissions in vicinity of wells and improve system performance.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 13, under comment code 5k for EPA's response to employing site-specific approaches instead of prescribed seals.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 75

**Sort Order:** 103

**Comment Excerpt:**

EPA requested comments on whether the use of advanced (wellbore) seals to reduce emissions around cover penetrations should be a component of BSER. Current SEM already identifies leaks from wells regardless of the type of seal. There is no evidence to indicate that the existing well seals are inadequate based on existing SEM testing at wells.

In the event that SEM testing indicates exceedances at wells, then a site-specific approach to address the issue is better than prescribing a particular number of seals or the use of a particular type of sealing material. These approaches could include tuning the well, adding additional soil to address erosion, repair existing well seal, or dewatering the well among others. Therefore, we recommend that redundant seals and enhanced sealing materials at wellhead should not be prescribed.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 13, under comment code 5k for EPA's response to employing site-specific approaches instead of prescribed seals.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 39

**Sort Order:** 104

**Comment Excerpt:**

EPA references the use of an infrared camera to view leaks at wellheads. DSWA has not had the opportunity to review the study that is referenced however we have worked with our state regulators using a camera of this type to view emissions. We are pleased to report that no emissions were observed from wellhead seals. DSWA is concerned about overly prescriptive broad requirements that are not cost effective and do not make sense when applied to all facilities. The GCCS is operated under vacuum so even if the well seal had a small leak, it would not result in emissions, rather it would contribute to increased oxygen in the well (not in the waste mass) and could be easily remedied.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 13, under comment code 5k for EPA's response to employing site-specific approaches instead of prescribed seals.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 10

**Sort Order:** 105

**Comment Excerpt:**

EPA should regard the operation and monitoring of the gas collection system to be sufficient for the control of non-methane organic compounds (NMOCs) loss. Wisconsin's longstanding practice is to emphasize demonstration of vacuum (negative pressure) measured at the wellhead to control loss of landfill gas. The need for repair of seals is a consequence of detecting oxygen in the extracted gas.

WDNR needs more information about what an enhanced seal is to be certain, but the standard design used by Wisconsin landfills has been used for years with little change. The annular space in the well borehole has a bentonite seal around the riser pipe. In placing the barrier layer, clay is compacted around the riser and a geomembrane boot is fabricated to fit around the pipe. Similarly, without more detail WDNR hesitates to comment on use of multiple seals. Generally, more complicated designs are not conducive to effective field construction and lasting control of NMOCs.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 13, under comment code 5k for EPA's response to employing site-specific approaches instead of prescribed seals.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 27

**Sort Order:** 106

**Comment Excerpt:**

*Multiple and redundant seals.* The EPA should mandate its proposals for requiring redundant and enhanced sealing materials on wellheads.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 13, under comment code 5k for EPA's response to employing site-specific approaches instead of prescribed seals.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 62

**Sort Order:** 107

**Comment Excerpt:**

*Multiple seals around gas wellheads.* The annulus between the point where the vertical collection pipe breaks the surface and the surrounding landfill cover needs to be effectively and durably sealed in order to prevent the collection system from drawing air into the waste mass through cracks. Using a set of three different types of seals in tandem lessens the chance for recurring seal failure, and this measure too should be mandated.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 13, under comment code 5k for EPA's response to employing site-specific approaches instead of prescribed seals.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 5

**Comment Excerpt:**

Enhanced Cover Around Wells. US EPA is considering a BMP of requiring redundant seals and enhanced sealing materials on wellheads. In addition to considering seals at the wellhead to minimize leakage of landfill gas, Ohio EPA suggests considering employment of enhanced local cover around the wellhead to minimize infiltration of air since the immediate area around the wellhead is subject to the greatest vacuum.

**Comment Response:**

As discussed in Section V.A of the 2014 Proposed NSPS Preamble (79 FR 41802) and Section IV.2.ii of the 2014 EG ANPRM (79 FR 41786), best management practices for GCCS may achieve greater reductions in landfill gas emissions than a well-designed and well-operated system alone. Specifically, the use of advanced seals at wellheads may help to ensure that the well can apply sufficient vacuum to the landfill to facilitate gas extraction while preventing leaks of landfill gas to the atmosphere. However, the EPA believes that a site-specific approach is more effective than prescribing the use of a particular number of seals or the use of a particular type of sealing material, and the EPA has determined that the use of advanced seals is not a component of BSER. The EPA has clarified that all cover penetrations must be monitored during quarterly surface emission monitoring for surface methane emissions, as described in Section IV.B.1 of the 2015 Proposed EG Preamble (80 FR 52111) and Section VIII.D of the 2014 Proposed NSPS Preamble (79 FR 41817) for a more detailed discussion on surface monitoring.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 18

**Comment Excerpt:**

We are concerned that EPA appears to rely on the ARCADIS report to suggest that "landfill gas wellheads and other surface penetrations present high potential for concentrated leaks of organic compounds" (*See* 79 Fed. Reg. 41804). Based on WM review of the report and our lengthy experience with methane measurement techniques, we expressed our concerns with the report quality in a September 28, 2012 letter (*See* Attachment 16 [of DCN EPA-HQ-OAR-2003-0215-0100.1]). In addition, the data collection was extremely biased as the set up for some of the measurement resulted in the retroreflectors being placed adjacent to existing wells (see Figure 2-3 in ARCADIS report). These wells had been scanned and were known to be emitting significant amounts of methane. This configuration could not help but result in abnormally high emissions. The EPA cannot rely on this report for purposes of regulatory development.

**Comment Response:**

As discussed in Section V.A of the 2014 Proposed NSPS Preamble (79 FR 41802) and Section IV.2.ii of the 2014 EG ANPRM (79 FR 41786), the use of advanced seals at wellheads may help to ensure that the well can apply sufficient vacuum to the landfill to facilitate gas extraction while preventing leaks of landfill gas to the atmosphere. However, the EPA believes that a site-specific approach is more effective than prescribing the use of a particular number of seals or the use of a particular type of sealing material. Therefore, the EPA has determined that the use of advanced seals is not a component of BSER and this rule does not require the use of advanced seals at wellheads. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114), for discussion of best management practices.

## **5.9 BMP-Preventing Waterlogged Wells: Monitoring**

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 24

**Sort Order:** 100

**Comment Excerpt:**

Operators in Wisconsin are required to measure gas flow rates, and the data often are used to identify non-producing wells. Flow rate measurement is an established technology and can be performed without taking apart the wellhead. Measuring depth to liquid level may require removing the wellhead, thus taking the well out of service temporarily. The operator should have the flexibility of deciding how to investigate loss of gas flow and possibility of high liquid levels and what to do about them.

**Comment Response:**



As explained in section V.A. of the August 27, 2015 EG Preamble, the EPA concluded that the various emission reduction techniques and best management practices the Agency reviewed as part of the rule amendment process should not be considered to be components of BSER and, therefore, is not requiring their use. The EPA believes that the techniques and BMPs can, however, be useful in minimizing emissions in appropriate circumstances.

The EPA is finalizing two provisions in the final NSPS and EG rules that will help identify inoperable wells which could be due to flooding. First, the EPA is finalizing requirements that each owner or operator of an MSW landfill operate the gas collection system with a negative pressure at each wellhead except under specific conditions as indicated in the rules. A positive pressure exceedance could indicate flooding of the well. Second, the EPA is finalizing surface emissions monitoring requirements for all cover penetrations as noted in the rules. An elevated methane emission level at a wellhead could indicate an issue with well flooding.

The EPA is not finalizing a provision in the final NSPS and EG rules that would require flowrate monitoring at the wellheads. The EPA has determined that flowrate monitoring, in addition to the provisions requiring monitoring for pressure and surface emissions in the vicinity of cover penetrations, is not necessary to effectively indicate a flooded well.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 26

**Sort Order:** 101

**Comment Excerpt:**

If EPA establishes dewatering of waterlogged wells as a BMP, EPA should include a provision to allow the operator to demonstrate that continuous zones of highly decomposed MSW do not have significant gas potential, and that either a well can be terminated above the zone or that an existing well not be required to remove liquids below the elevation of the top of the zone.

Wisconsin landfill rules require that gas extraction wells be installed to a depth of 10 feet above the top of the leachate collection layer, which means that they get to be deep in large landfills. Landfill operators have observed that in older landfills, the waste mass at this depth is highly decomposed, amorphous, saturated, and low in permeability. They have used this evidence to argue that if they encounter deep zones of this type of saturated waste mass, they should be allowed to terminate drilling at the top of this zone and not have to try to extract landfill gas from it. WDNR has agreed to this on a well by well basis and, in a few cases, as part of landfill plan of operation.

From what Wisconsin has observed of well drilling cuttings in highly decomposed waste, WDNR believes that the gas generation potential of such layers has declined dramatically, and that gas permeability is so low that wells are ineffective in pulling much gas from those zones.

*Dewatering gas wells.* When vertical perforated gas collection pipes flood out, they are no longer able to pull gas. BMPs typically recommend that pipes be monitored for flooding and pumped

out when flooding is detected. This practice should be a required part of maintenance protocols, and short monitoring intervals should be mandated so the problem can be detected early.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 51.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 36

**Sort Order:** 102

**Comment Excerpt:**

It is important to consider that, although the presence of leachate in gas wells (vertical or horizontal) can impede LFG collection, the best way of determining if this is the case is through SEM, wellhead monitoring and when necessary, depth to water measurements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 51.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 10

**Sort Order:** 103

**Comment Excerpt:**

Based on over 20 years of experience operating and maintaining GCCS across the U.S., the current combination of monitoring pressure at the wellhead and surface emissions monitoring in proximity to the well will identify if LFG collection is sufficient and identify inoperable wells (or wells that are not operating at sufficient capacity to minimize surface emissions below regulatory thresholds). However, the temperature and oxygen/nitrogen wellhead operating parameters are not good indicators for identifying wells that are underperforming. Further, surface emissions monitoring that indicates a well may not be operating at sufficient capacity does not mean dewatering is the solution.

LFG wells are each very unique with respect to age and nature of the waste encountered, which is the primary determinant of LFG production in a well. Prevention of waterlogged wells is a fallacy as all pumps will stall or otherwise fail to pump. When this occurs the liquid level may or may not rise. Even if it were to rise, sufficient LFG flow can often occur through unsubmerged openings. Therefore the presence of liquid in a well does not, in itself, warrant remedial action.

Whether or not to remove the liquid should be decided on a case-by-case basis based on surface emissions and wellhead monitoring data. If surface emission concentrations do not exceed the operating criteria, there may not be a need to dewater the well or to take other remedial steps. We have found that many wells yield no more LFG when dewatered.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 51.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 8

**Sort Order:** 104

**Comment Excerpt:**

The current combination of wellhead monitoring and surface emissions monitoring requirements is sufficient to identify inoperable wells or wells that are not operating at sufficient capacity to meet surface emissions thresholds. Landfill owners/operators can choose to periodically measure liquid levels in wells to confirm if pumping is required, but routine wellhead and surface emission monitoring data already provide significant insight into whether wells are functioning properly or are impacted by excess liquids.

The presence of liquid in a well does not necessarily suggest that corrective action is warranted. If the perforated section of a well is completely submerged in liquid, it might be appropriate to pump down the liquid, but that is not always the case. Instead, whether or not to remove the liquid should be decided on a case-by-case basis based on surface emissions and wellhead monitoring data. If surface emission concentrations do not exceed the operating criteria, it may not be necessary to dewater the well or take other steps.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 51.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 72

**Sort Order:** 105

**Comment Excerpt:**

EPA requests comments on dealing with waterlogged wells. NW&RA and SWANA maintain that the best method of reducing emissions from a landfill is by maintaining negative pressure at wellheads to ensure compliance and using SEM as verification.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 26

**Sort Order:** 106

**Comment Excerpt:**

*Dewatering gas wells.* This best management practice should be a required part of the maintenance protocol. We also believe that the current combination of wellhead monitoring and surface emission monitoring is insufficient to identify inoperable wells, and thus urge EPA to adopt well dewatering requirements. EPA should also require periodic measurements of liquid levels in gas wells so that inoperable wells are identified early.

When vertical perforated gas collection pipes flood out, they are no longer able to pull gas. BMPs typically recommend that pipes be monitored for flooding and pumped out when flooding is detected. This practice should be a required part of maintenance protocols, and short monitoring intervals should be mandated so the problem can be detected early.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 5

**Sort Order:** 107

**Comment Excerpt:**

The proposed rule considers the addition of flowrate monitoring at the wellheads. We have two concerns associated with monitoring flowrate. The first is that the flowrate measurements using either an orifice plate or a pitot tube will only provide relatively accurate results within a limited range. For example, using an orifice plate is dependent on the size of the orifice plate. Flows that

fall outside the range (either above or below) or are influenced by condensate will be inaccurate and unrepresentative of the actual flowrate. Also, all wells would have to be outfitted with orifice plates, which represent a capital cost for many landfills that do not currently use them.

Technology beyond orifice plates and pitot tubes, such as installing individual flow meters on each well, is technically and economically not feasible due to the required power source which is normally electricity. Running electricity to each well is not only cost prohibitive but also poses a safety concern. Solar powered devices may be an option but are very costly and could be unreliable due to weather and landfill traffic. This would be especially problematic if a site must also collect and store the flow data. The costs associated with flow monitoring were not included as part of the regulatory impact analysis and would be a substantial burden to the industry.

The second concern is that inaccuracies associated with the flow meters will multiply over the entire landfill. Flows from all the wells are not read at the exact same time as the flow meter to the control device(s). Therefore, it is important that the flows not be aggregated and compared with the flow at the control device. This might make it appear that the flows based on wellhead readings are significantly higher or lower than at the control device.

While we agree that flowrate measurements can be taken and utilized to gauge performance of the GCCS as a whole, we request that EPA make clear that the flows should not be compared to total flows because significant difference will occur which could lead to incorrect conclusions. Ultimately, however, this information is not necessary for successful GCCS operation. Therefore, due to the potential to increase confusion, we do not recommend that wellhead flow measurement be required or presented by EPA as an optional best management practice (BMPs).

**Comment Response:**

The EPA thanks the commenter for the detailed information regarding their experience with wellhead flow rate monitoring. See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 51.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 35

**Sort Order:** 108

**Comment Excerpt:**

**WM Does Not Support Adding a Wellhead Operating Parameter for Flowrate.**

EPA is requesting input on whether it should add a requirement to monitor wellhead flowrate to help ensure a well-operated GCCS, on the basis that monitoring wellhead flow rate would allow the landfill owner or operator to detect low gas flow and whether a well is waterlogged, clogged, or pinched. The EPA is also requesting comment on any other wellhead monitoring parameters that would help ensure a well-operated GCCS. *See 80 Fed. Reg. at 52138.*

We have two concerns associated with monitoring flowrate. The first is that the flow is dependent on the size of the orifice plate, which only provides accurate results within a limited range. With an orifice plate, the pressure on both sides of the orifice plate can be measured, and Bernoulli's equation can be used to calculate a possible flow rate with this well. This option can be used with the standard two-inch well design that is used for normal and high flows, but it could not work with flows associated with low-producing areas. This is because the Bernoulli's equation does not work when the ratio of size diameters between the well and orifice plates is less than 0.4. Therefore, when using the standard two-inch well head, installing a small orifice (i.e., a 0.25 inch plate) plate does not allow for the calculation to properly work. Wells in low-producing areas must employ a very small orifice plate to allow for a minimal vacuum to be applied to the well for it to maintain compliance with the negative pressure well head standard.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5I.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 37

**Sort Order:** 109

**Comment Excerpt:**

It is important to clarify that flow from all wells are not read at the exact same time and are not read at the exact same time as the flow meter to a control device. Therefore, wellhead flows cannot be aggregated and compared with the flow routed to a control device. Aggregated flows based on wellhead readings could be higher or lower than flowrate readings at the control device; they will never exactly match.

While we agree that flowrate measurements can be taken and utilized to gauge performance of the GCCS as a whole, this information is not necessary for successful GCCS operation. Therefore, we do not recommend EPA include a wellhead flowrate monitoring requirement, or any other wellhead monitoring parameter. Maintaining negative pressure and surface emissions below 500ppmv are sufficient and protective requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5I.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 24

**Sort Order:** 110

**Comment Excerpt:**

Based on comments received during the ANPRM, EPA has specifically requested additional comments on whether landfills should monitor well head flowrate to determine if a gas well is flooding. However, EPA's proposal remains unclear regarding the criteria that EPA would expect landfills to use in determining flowrate. Based on our knowledge and experience, Republic does not agree that a flowrate monitoring requirement is needed to ensure proper operation of a GCCS, for several reasons.

First, gas flow measurement at the wellhead is likely to be highly inaccurate. The measurement devices such as pitot tubes, venturis, and orifice plates have limited accuracy and can be difficult to use at individual wellheads, resulting in numerous flow measurement and reporting errors. Second, even an accurate flowrate estimates are an unreliable means of determining whether a well is flooded because low flowrates can also be caused by low gas generation in a particular area. Due to the challenges associated with both accurately measuring and interpreting flowrates at the wellhead, Republic believes that flowrate monitoring should not be required because it will not facilitate proper GCCS operation.

In addition, a flowrate monitoring requirement would force many landfills to purchase new monitoring equipment and retrofit or replace numerous existing GCCS components, the cost of which has not been included in EPA's regulatory impact analysis. Because a flowrate monitoring requirement would impose additional cost with no benefit, Republic asks EPA to eliminate that requirement from the proposed emission guidelines.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 36

**Sort Order:** 111

**Comment Excerpt:**

We are also concerned with how EPA would define the flow rate parameter, given that flow rate is highly dynamic from well to well and fluctuates based on site specific conditions. Additionally, EPA has not described what standard test method/procedure must be followed to obtain the flow rate and what monitoring devices would be acceptable to obtain flow rate information. The flow rates may provide additional information to diagnose well performance, but due to the highly dynamic field conditions, a flowrate standard is not practical. Additionally, the current negative pressure well head parameter ensures that vacuum is being applied to the well.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills

**Document Control Number:** EPA-HQ-OAR-2014-0451-0145

**Comment Excerpt Number:** 13

**Sort Order:** 112

**Comment Excerpt:**

Foth and the BOW Group do not support discussion of adding a requirement to monitor wellhead flowrate. While monitoring wellhead flowrate can provide information to landfill owners, there could be various operation reasons that flowrate is reduced, including declining gas flow in older areas of landfills. Although flow may be monitored using the same equipment as other wellhead parameters, not all wellheads are properly set up for flow monitoring, adding burden to landfill owners with limited benefit.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 68

**Sort Order:** 113

**Comment Excerpt:**

In addition to EPA's request for comment on a requirement to monitor wellhead flowrate, discussed above, EPA has also requested comment on any other wellhead monitoring parameters that may help to ensure GCCS are well-operated. Republic has not identified any additional measurement or monitoring parameters that would improve GCCS performance. On the contrary, Republic believes that additional requirements are not necessary and would not result in any meaningful improvement in emissions control performance. The requirement to monitor and maintain records of oxygen/nitrogen and temperature will serve as useful guidance for landfill operators and beneficial use projects to assess the performance of the GCCS and enhance operation conditions on a site specific level that will promote greater emission reductions in a safe manner without imposing additional burdens. In addition, the negative pressure and surface monitoring requirements contained in the proposed rule are sufficient to ensure proper operation of the GCCS and minimize emissions. Republic also asks that, before EPA decides to adopt new measurement or monitoring requirements, that it provide notice of its intention to do so and



allow the public an opportunity to comment on any proposal to add new monitoring requirements.

**Comment Response:**

The EPA thanks the commenter for this additional information. See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 51.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 33

**Sort Order:** 114

**Comment Excerpt:**

*In the proposed rules, USEPA requested comments on whether it should add a requirement to monitor wellhead flowrate to help ensure a well-operated GCCS.*

In short, more data does not mean better data. Again, the surface emission scan tells the story regarding whether a GCCS is properly functioning. Flow is yet another parameter that is lower on the hierarchy of useful information. Flow measurement is used by the industry as another tool in the tool box. Flow data can be very misleading and inaccurate and its value is really dependent upon the ability of the technician reading individual wells. We do not support the addition of adding a requirement for monitoring wellhead flow. There is no meaningful standard to evaluate the flow data quality such as exists for methane, carbon dioxide and oxygen pods in a gas meter. While it flow data can be useful data for a landfill operator to detect low gas flow, this should not be a requirement at every well on a monthly basis. Operators are aware of the usefulness of flow measures at wellheads and will use this data when needed to ensure the GCCS is operating at optimal standards. This does not need to be required, as it will be another administrative requirement which would not lower emissions from the landfill.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 51.

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**Commenter Name:** Lynn Fieder, Division Chief, Air Quality Division

**Commenter Affiliation:** State of Michigan Department of Environmental Quality (MDEQ)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0183

**Comment Excerpt Number:** 2

**Sort Order:** 115

**Comment Excerpt:**

In order to verify whether a GCCS is operating properly, we recommend additional wellhead operating parameters (in addition to oxygen, temperature and pressure) be monitored on a monthly basis including percent methane, percent carbon dioxide, calculated balance gas, initial

and final pressure (static and differential) and flow. This monitoring data should be recorded and maintained on site for review by the regulating agency.

**Comment Response:**

The EPA appreciates the commenter's suggestions for additional wellhead monitoring parameters, but the EPA concluded that additional wellhead monitoring requirements were not BSER. See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5I.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 4

**Sort Order:** 116

**Comment Excerpt:**

KDAQ supports monitoring wellhead flow rate to help ensure a well-operated GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0088.1, excerpt number 24, under comment code 5I.

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**Commenter Name:** Lynn Fieder, Division Chief, Air Quality Division

**Commenter Affiliation:** State of Michigan Department of Environmental Quality (MDEQ)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0183

**Comment Excerpt Number:** 3

**Sort Order:** 117

**Comment Excerpt:**

Many times collection wells become watered-in, silted-in, or pinched. Without requiring action levels for wellhead monitored parameters, some landfill owners/operators may be compelled to overlook these issues which can affect the overall collection efficiency of the system. It is recommended that landfill owners/operators be required to monitor wells on a quarterly basis (at a minimum) to determine if the wells are plugged. Wells with less than 50 percent available perforations should be required to conduct further monitoring for the presence of water or other materials that limit the collection efficiency of the well.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5I.

## 5.10 BMP-Preventing Waterlogged Wells: Recordkeeping

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 11

**Sort Order:** 101

**Comment Excerpt:**

Additional prescriptive requirements for measurements and record keeping are not necessary and would be overly prescriptive, because in many cases it would not result in any measurable increase in emissions control. Landfill owners/operators can choose to periodically measure liquid levels in wells to confirm if pumping is required, but routine wellhead and surface emission monitoring data already provide significant insight into whether wells are functioning properly and if they are impacted by excessive liquids.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l regarding wellhead and surface emissions monitoring in relation to flooded wells. The EPA is not finalizing new recordkeeping requirements related to identifying flooding wells.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 9

**Sort Order:** 102

**Comment Excerpt:**

Additional requirements for measurements and recordkeeping to identify waterlogged wells are not necessary, would be overly prescriptive, and would not result in any meaningful increase in emissions control.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 11, under comment code 5m.

## 5.11 BMP-Preventing Waterlogged Wells-Pumps

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 12

**Sort Order:** 100

**Comment Excerpt:**

The intent or context of the phrase "especially in cases where wells have been installed for a significant amount of time" is unclear to us in terms of how this relates to the evaluation or prevalence of liquid in wells. The older the well the less likely it will produce LFG if pumped.

**Comment Response:**

In the July 2014 ANPRM for the Emissions Guidelines, the EPA sought input on whether the existing combination of wellhead monitoring and surface emissions monitoring requirements in subpart WWW were sufficient for identifying inoperable wells and as part of that request for input, requested any input if the response could vary based on well age, in particular for wells installed more than 15 years.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 12  
**Sort Order:** 101

**Comment Excerpt:**

Although EPA suggests that wells that have been installed for a significant amount of time may be at greater risk for becoming watered in, that is not the case. As noted elsewhere in these comments, the movement of liquids through the waste is a complex process that can be affected by many factors, and the age of the well does not necessarily suggest an increased likelihood that the well will become waterlogged.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 12, under comment code 5n.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 10  
**Sort Order:** 200

**Comment Excerpt:**

The presence of liquid in a well does not necessarily suggest that corrective action is warranted. If the perforated section of a well is completely submerged in liquid, it might be appropriate to pump down the liquid, but that is not always the case. Instead, whether or not to remove the liquid should be decided on a case-by-case basis based on surface emissions and wellhead monitoring data. If surface emission concentrations do not exceed the operating criteria, it may not be necessary to dewater the well or take other steps.

In its text, the EPA describes two methods of dewatering waterlogged wells. The first approach is with a portable pump, which the EPA correctly points out is a labor intensive method. This method is only appropriate for wells that become waterlogged intermittently or rarely. An alternate approach is a dedicated pumping system in which pumps are permanently installed down the well casing. These systems are generally pneumatically powered and include the following components:

- Dedicated pumps in each affected well.
- Modified wellheads to accommodate both gas and liquid extraction from the well.
- Pump components at each well, including:
  - Pump cycle counter or flow meter to verify operation of each pump
  - Air regulator
  - Fittings, shutoff valves, force main check valves
- Air compressor and dryer, usually located at the blower/flare station. Compressors are sized based on the pressure requirement and current and future compressed air flow rates.
- Air supply lines from the compressor to the wellfield. This usually consists of 2-inch or 3-inch diameter high density polyethylene (HDPE) pipe (or electric power for systems using electric pumps).
- Force main from the pumps to the leachate storage tanks or manholes. Depending on design and regulations, these force main lines may be standard single-wall pipes or dual contained pipe, and are typically 3-inch to 6-inch diameter, depending on expected flow rates.
- Isolation valves on the force main and to 1,000 ft.
- Air supply line blow-off valves, which are installed at the same location as isolation valves.
- Force main air release valves.
- Cleanouts (typically installed every 500 to 1,000 ft) for periodic jet cleaning of the force main pipes.

**Comment Response:**

The EPA thanks the commenter for the detailed listing of pumping system components. See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5L.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 13

**Sort Order:** 201

**Comment Excerpt:**

In its text, the EPA describes two methods of dewatering wells. The first approach is with a portable pump, which the EPA correctly points out is a labor intensive method. It is also only appropriate for wells that become waterlogged intermittently. An alternate approach is a

dedicated pumping system in which pumps are permanently installed down the well casing. These systems are generally pneumatic pumping systems but in some cases can be electric systems.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 25

**Sort Order:** 202

**Comment Excerpt:**

The larger MSW landfill operators in Wisconsin not infrequently install pumps and discharge lines in gas extraction wells, to remove liquids and improve gas extraction rates. Vendors who supply the technology offer a few alternatives, including hardware based on pneumatic or electric power. Usually, removed liquids are discharged either to dedicated drain lines or into gas header lines, which can then route the liquid to be discharged into the leachate collection piping.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 37

**Sort Order:** 203

**Comment Excerpt:**

The installation of a pump in every well would require significant investment. In addition to the pump itself, the operator would need to install either compressed air or electric to operate the pump and also a leachate discharge line to drain the liquid that is removed. Mandating this installation would require significant capital investment and considerations must be made for operational conditions at different facilities. A "one size fits all" approach does not make sense when it comes to MSW landfills.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 74

**Sort Order:** 204

**Comment Excerpt:**

If landfills were forced to use pumps, they would be less likely to utilize horizontal wells due to the expense of dewatering the wells leading to fewer landfills employing early collection methods. Well dewatering is not necessary in many cases, can be seasonal, and should be allowed to be applied on an as-needed basis at the discretion of the site engineer or LFG system operator. As such, this technique is not a good candidate for universal application in the rule, and the cost of installing dewatering equipment on all wells at a landfill would be very expensive and not cost effective for the small percentage of wells that actually require it.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 15

**Sort Order:** 205

**Comment Excerpt:**

At some landfills it is necessary to segregate the dewatering liquid from leachate to prevent precipitates from clogging force mains and to facilitate treatment. If this is the case, separate manholes or wet wells may be required, as well as separate force mains to onsite storage tanks. Forced dewatering of wells will have a negative impact on leachate quality at a landfill to the extent that existing leachate treatment may not handle the increased flow and concentration or loading of this additional liquid. Surface emissions monitoring should be the means for evaluating performance. Dewatering is but one tool that may or may not be useful at specific locations to increase GCCS performance.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 5l.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 27

**Sort Order:** 206

**Comment Excerpt:**

Waterlogged wells can occur for several reasons and should not be subjected to a predetermined solution. Any remediation efforts should be a BMP under the RCRA Sub D MSW landfill program, not the NSPS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 24, under comment code 51.

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## 5.12 BMP-Preventing Waterlogged Wells-Surface Collector

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 38

**Comment Excerpt:**

With respect to surface collectors, it would not be prudent to require the installation and operation of surface collectors at every facility as a part of normal LFG well installation. Operation of surface collector typically also requires installation of a geomembrane cover. Installation of a geomembrane does not always occur as wells are installed. Depending on the operational needs of the facility, this may occur much later in the future. This is another topic that requires acknowledgement of the operational variability of landfill facilities. The need for and operation of design elements such as surface collectors should be determined by the design engineer, not mandated by the regulation.

**Comment Response:**

As discussed in Section IV.2.ii of the 2014 EG ANPRM (79 FR 41786), best management practices for GCCS may achieve greater reductions in landfill gas emissions than a well-designed and well-operated system alone. Specifically, the use of surface collectors at waterlogged wells can help to collect gas from wet landfills where traditional horizontal and vertical wells fail due to water infiltration. However, the EPA believes that a site-specific approach is more effective than prescribing the use of a surface collector, and the EPA has determined that the use of surface collectors is not a component of BSER. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114) for discussion of best management practices.



### 5.13 BMP-LFG from Leachate Collection Data

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 5

**Sort Order:** 100

**Comment Excerpt:**

Republic extracts LFG from the leachate collection and removal system (LCRS) at several of our facilities. However, we would like to clarify that the decision to extract LFG from the LCRS is not exclusively determined by whether the landfill recirculates leachate. There is not an exclusive correlation between leachate recirculation and extracting LFG from the LCRS. There are a number of landfills that do not recirculate leachate or that have recirculated relatively little leachate that nevertheless have connected the GCCS to the LCRS.

While it is possible to collect LFG from the LCRS at some landfills, it is not always feasible or necessary, and sometimes it is not advisable. The decision is based on engineering judgment after considering a number of site-specific conditions, including the design of the LCRS. Landfill gas may be collected from the LCRS in order to minimize the accumulation of gas in LCRS cleanouts, sump risers, and pump stations, or simply to maximize LFG extraction efficiency and to supplement the primary gas collection provided by vertical extraction wells and horizontal collector trenches.

It is often difficult for these locations to meet NSPS wellhead operating standards, since: 1) they were not designed to be air tight; 2) they are not “in” refuse, but are instead below or adjacent to the refuse; and 3) when the leachate collection system contains liquids (as it was designed to do), the piping that conveys the leachate (and the landfill gas) may be unable to collect enough gas until the liquids are removed. Therefore, when vacuum is applied, ambient air can be pulled into riser pipes, resulting in elevated oxygen concentrations, which can result in an exceedance of the NSPS operating criteria. Consequently, landfill owners/operators frequently must request HOVs or other alternative operating procedures from the applicable regulatory agency due to potentially high oxygen levels at these wellheads. Regulatory agencies have proven extremely reluctant to grant such alternatives due to unfamiliarity with LFG control technology and existing site conditions. As a result, landfill operators often do not tie the GCCS into the leachate system.

Connecting an LCRS to a GCCS also presents a risk of pulling ambient air into the waste mass from across the cell or from nearby cells if any of the other LCRS pipes are open to the atmosphere. This concern is significant because it increases the potential for subsurface oxidations, particularly given the proximity of the LCRS to the bottom liner system.

**Comment Response:**

The EPA is not finalizing provisions that require landfills to connect the leachate collection and removal system (LCRS) to a GCCS. The EPA continues to believe that while this BMP may achieve additional emissions reductions, its effective implementation is site-specific and dependent on technical considerations related to the GCCS. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114) for discussion of best management practices.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 5  
**Sort Order:** 101

**Comment Excerpt:**

While it is possible to collect LFG from the LCRS at some landfills, it is not always feasible or advisable; it has and remains a very site-specific engineering decision. It is important that design plans provide flexibility to allow LFG collection from the LCRS, but it should not be mandatory under any circumstance. Sites connect to the LCRS, where feasible, to mitigate potential for odors and provide additional source of LFG to supplement beneficial use projects.

Before making connections between the LCRS and GCCS, each connection must be individually evaluated. LFG is not always available in leachate risers. Because of the fluctuations of leachate levels, it is typical to have erratic landfill gas availability. Further, the LCRS design may not accommodate for connections to collect LFG. It is therefore inappropriate to mandate such connections.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 5, under comment code 5o.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 8  
**Sort Order:** 102

**Comment Excerpt:**

WM recommends that compliance with surface emissions criteria and wellhead pressure monitoring remain the focus of demonstrating emission minimization in the NSPS. The decision of whether this can be accomplished using standard wells and collectors or if supplemental gas collection via the LCRS is necessary should be addressed by the design engineer and site management.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 5, under comment code 5o.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 4

**Sort Order:** 103

**Comment Excerpt:**

WM connects to leachate collection and removal systems (LCRS) at several of our facilities, both with and without leachate recirculation. We do not agree with EPA's statement that "references suggest that connection of these systems is not common at landfills that do not employ leachate recirculation". *Id.* We have not found the distinction of whether a site practices leachate recirculation as a factor worthy of consideration when evaluating whether to make such connections at landfills.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 5, under comment code 5o for site-specific considerations involved in connecting LCRS to a GCCS.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 7

**Sort Order:** 104

**Comment Excerpt:**

EPA should not implement a one-size-fits-all approach that would require LFG collection from leachate collection systems. That decision should be left to the discretion of the design engineer as to whether the GCCS requires supplemental LFG collection from the LCRS to meet the NSPS surface emissions criteria.

**Comment Response:**

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 5, under comment code 5o.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 63

**Sort Order:** 105

**Comment Excerpt:**

*Connect gas to leachate collection.* Gas flows along paths of least resistance, and that often includes along the gravel packs that surround the leachate lines at the bottom of the landfill. To

prevent the gas that flows along this path from escaping into the atmosphere at the take outs, best practice is to connect a gas collection pipe to the leachate end. This best practice should be codified as well.

**Comment Response:**

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 5, under comment code 5o.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 4

**Comment Excerpt:**

Landfill gas collection from leachate collection lines and cleanout pipes is common in Wisconsin VISW landfills, to control odor and to allow extension of leachate recirculation and use of non-free liquids wastes before enough waste is in place to support vertical gas wells. Supplemental shallow piping at more or less horizontal orientation is commonly used for odor control and gas capture, as well as seep repair that might occur on side slopes before final cover is placed. Usually these need to be installed in short time frames, and are commonly tied into leachate collection system cleanouts rather than gas header piping.

EPA should recognize that such piping is an essential tool for correcting routine landfill problems such as seeps and odor. Operators need to respond to seeps and odors much faster (hours or days) than is practical to obtain variances from operating limits on gas extraction wells. Particularly for odor control, it should be expected that the piping will be shallow, that enough vacuum will be applied to create an inward gradient toward the pipe, and that some fraction of ambient air will be pulled into the piping as part of short-circuiting the flow of odorcausing landfill gas to the surface of the cover. Piping placed for leachate seep control will similarly be shallow and may not be able to exclude entry of ambient air.

**Comment Response:**

In the final rule, the EPA is removing the operational standard for oxygen/nitrogen at the wellhead (see Section VI.A.1 of the final NSPS preamble and see Section VI.A.1 of the final Emission Guidelines preamble). Owners or operators must continue to monitor nitrogen/oxygen on a monthly basis, but will not be required to take corrective action for exceeding a nitrogen/oxygen operational standard. This will allow owners or operators to employ practices such as supplemental shallow piping at a horizontal orientation to control odor and capture gas, when site-specific circumstances justify the use of this best practice, without risking an exceedance for nitrogen/oxygen. The EPA is not mandating the use of this best practice in the final rules. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114) for discussion of best management practices.

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**Commenter Name:** Matt Lamb, Scientist, Smith Gardner, Inc.  
**Commenter Affiliation:** Smith Gardner, Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0190  
**Comment Excerpt Number:** 6

**Comment Excerpt:**

**Leachate Cleanout Connections:** Leachate cleanout connections may not be able to be operated under negative pressure without exceeding oxygen limitations. Connecting the LFG collection system to the leachate collection system provides many benefits, including odor reduction, and increased methane collection rates. However, it must be recognized that leachate collection systems are not designed to meet the operational criteria of LFG collection systems. The intended purpose of collecting leachate periodically will result in blocked cleanouts until the leachate is pumped from the leachate sumps. This pumping is typically performed on an automated schedule, or when triggered by a pressure transducer. In the meantime, LFG cannot be collected from the cleanout.

If wellhead monitoring occurs during this period, any applied vacuum will likely pull in ambient air through the cap at the end of the cleanout pipe [which is designed to be periodically removed for routine system jet cleaning, and therefore is not air tight]. This can be minimized by reducing vacuum through the wellhead. When the leachate level in the sump is pumped down, however, the stored LFG in the collection system behind the sump typically exceeds the minimal wellhead vacuum. If the cleanout is not connected to the LFG collection system, or the wellhead is closed, this pressure may result in emissions through the leachate cleanout cap. Historically, landfills have placed small spark-ignited flares on cleanouts as needed to control odors. Neither of these scenarios are optimal for a landfill with a LFG collection system.

S+G recommends that, for cleanouts that have these emissions, the best option is to allow the wellhead to remain under vacuum during periods when leachate in the sump may be blocking LFG flow, resulting in some oxygen [possibly over 5%] being monitored. Monitored oxygen is coming from the cleanout cap above the landfill surface, and not from ambient air infiltrating the landfill waste mass. When the sump is pumped down, this allows the stored LFG to enter the LFG collection system, instead of venting to the atmosphere through the cap.

**Comment Response:**

In the final rule, the EPA is removing the operational standard for oxygen/nitrogen at the wellhead (see Section VI.A.1 of the final NSPS preamble and see Section VI.A.1 of the final Emission Guidelines preamble). Owners or operators must continue to monitor nitrogen/oxygen on a monthly basis, but will not be required to take corrective action for exceeding a nitrogen/oxygen operational standard. This will allow owners or operators to employ best practices such as connecting the LFG collection system to the leachate collection system, when site-specific circumstances justify the use of this best practice. The EPA is not mandating the use of this best practice in the final rules. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114) for discussion of best management practices.

## 5.14 Horizontal Collectors: Practical Considerations

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 8

**Sort Order:** 100

### Comment Excerpt:

WDNR doubts the utility of horizontal wells particularly for landfills that practice leachate recirculation and/or can accept free-liquids wastes under an RD&D permit. While Wisconsin has limited experience with horizontal gas collection, the experience does not support using horizontal wells as a means of expediting gas collection or installing wells earlier. The longer the horizontal piping, the harder it is to tune the extraction rate and to find zones of oxygen intrusion. More significantly, after a horizontal pipe is placed, it is in place for good. Drilling locations for gas extraction wells can be shifted around based on the judgment of the landfill operator. We know from operators' experience with horizontal piping placed for leachate recirculation purposes that the pipe often will settle preferentially and flood in the interior of a pipe run, which compromises the ability to recirculate leachate and to extract landfill gas from the same pipe. WDNR expects that horizontal piping placed principally to extract landfill gas would be subject to the same problems. From experience, horizontal piping is often impractical to access, and any excavation for repair exposes large areas and volumes of decomposing waste to surface air which is counter to the desired goal.

### Comment Response:

As explained in section V.A. of the August 27, 2015 EG Preamble, the EPA concluded that the various emission reduction techniques and best management practices the Agency reviewed as part of the rule amendment process should not be considered to be components of BSER and, therefore, is not requiring their use. The EPA believes that the techniques and BMPs can, however, be useful in minimizing emissions in appropriate circumstances.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 10

**Sort Order:** 101

### Comment Excerpt:

Wet landfill practice is to install flexible horizontal drain pipe in each lift in order to inject recirculated leachate throughout the wastes. This watering process has to be periodically interrupted to avoid exceeding the field capacity of the waste mass. The operator can intermittently disconnect the pump and connect the injection system to a blower in reverse during that down time to create mild negative pressure through the piping and call it a gas collection system<sup>10</sup>. EPA countenances this,<sup>11</sup> but, substantively, the charade challenges one's

credulity to understand how it could ignore reality. In addition to the fact that no gas collection can be functional until later when the cell is full and a low permeable cover is installed, those flexible horizontal tubes collapse, become water logged and flood out, silt up and, even when they do work well, only extend a zone of influence around the pipe a third as wide as standard rigid vertical wells. In the real world, distinct from EPA's rules, horizontal gas collection system cannot by any stretch of the imagination be deemed a Best System of Emission Reduction – especially when, at the same time, organics diversion is not.

Footnotes:

10 Debra Reinhart and Timothy Townsend, *Landfill Bioreactor Design & Operation* (Lewis, 1998), at p. 132.

11 40 CFR §60.755(a)(iii).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 8, under comment code 5p.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 15

**Sort Order:** 102

**Comment Excerpt:**

Another approach to collecting LFG from active fill areas is to use horizontal collectors, which are stone-filled trenches with perforated pipes installed in them. The design criteria for horizontal collectors vary based on waste type, density, waste moisture content and other factors. However, as a general rule, horizontal collectors have a horizontal radius of influence of approximately 50 to 75 ft and a vertical influence of 20 ft. Therefore, they are usually installed approximately 100 to 150 ft apart horizontally and every 30 to 40 ft vertically so that the radii of influence of each collector barely overlaps the zone of influence of neighboring collectors.

While horizontal collectors do not necessarily present the same level of risk associated with vertical wells, horizontal collectors have other disadvantages. First, because they are installed along and just under the active face, horizontal collectors typically have minimal slope (i.e., less than 5%). If they become watered in, there is no way to effectively pump them dry to restore gas flow. Second, to prevent pulling air into the landfill, horizontal collectors cannot be operated until at least 30 to 40 ft of waste is placed on top of them. Third, because they are installed in freshly placed waste, horizontal collectors cannot be operated until anaerobic decomposition has begun.

Installing LFG collection infrastructure in the active face of the landfill also increases workers' exposure to potential hazards as they are forced to monitor and maintain systems in the midst of filling operations.

**Comment Response:**

The EPA thanks the commenter for their practical experience in using horizontal well technology. See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 8, under comment code 5p.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 73

**Sort Order:** 103

**Comment Excerpt:**

One method of early collection is to use horizontal wells. As landfilling proceeds above these horizontal wells, the wells may experience differential settlement creating low points towards the center of the well that could become waterlogged. These horizontal wells tend to be much longer than vertical wells, extending hundreds of feet into the waste. Dedicated pumps are not possible and the costs outlined by EPA do not consider these types of wells. LFG from that area would need to move upwards or outwards in order to reach the atmosphere. Another well, perhaps at a higher level, could intercept that LFG. SEM would verify this.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 8, under comment code 5p.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 30

**Sort Order:** 104

**Comment Excerpt:**

EPA itself recognizes in the preamble to the proposed NSPS that horizontal collection systems can alleviate many of the practical implementation concerns traditionally associated with early gas collection. Horizontal gas collection is a well-established technology that has been used in the United States since at least 1982, and that saw widespread use in southern California by the early 2000's.<sup>54</sup> These collection systems are already being used in at least 18 landfills in the dataset EPA assembled for this rulemaking. A 2008 report prepared by SCS Engineers for the California Integrated Waste Management Board (now CalRecycle) confirms that horizontal gas collection is "in use at many sites in California" and that these systems "can provide a valuable level of gas collection during the interim period before the cell or landfill reaches a final or interim grade. . . ."<sup>56</sup> SCS Engineers concluded that the "relative cost for implementation of



horizontal collectors is expected to be low," because the installation of horizontal collectors often reduces the need for vertical wells and other costly capital investments in the landfill gas collection system.<sup>57</sup> As further evidence of their feasibility and efficacy, horizontal collection systems have also been proposed as "best available control technology" by landfill operators for facilities subject to Prevention of Significant Deterioration (PSD) permitting requirements.<sup>58</sup>

[Footnotes]

(54) See Gregory McCarron, Darrin Dillah, & Owen Esterly, *Horizontal Collectors: Design Parameters, Mathematical Model, and Case Study*, Proceedings from the Solid Waste Association of North America's 26th Annual Landfill Gas Symposium (Mar. 2003).

(56) SCS Engineers at 21-22

(57) SCS Engineers at 23 (reporting 2008 unit costs of \$40-55/ft for horizontal collectors).

(58) See Hyland Facility Associates, Title V Permit Modification Application, Proposed 49 Percent Annual Acceptance Rate Increase, Additional Application Requirements (Aug. 2011) (See submitted for Appendix A).

**Comment Response:**

The EPA thanks the commenter for the references to landfills using horizontal wells. See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 8, under comment code 5p. Regarding the commenter's input on horizontal collection use at facilities subject to PSD permitting requirements, BACT analysis are site-specific and may be appropriate in certain circumstances.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 28

**Sort Order:** 105

**Comment Excerpt:**

*Installation of Horizontal collectors.* EPA should make the installation of horizontal collection systems as used in California mandatory.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 8, under comment code 5p.

## 5.15 BMP-Early Cover

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 14

**Sort Order:** 100

**Comment Excerpt:**

We support including rigorous requirements for cover systems in the NSPS and EG. Cover systems are an integral part of a well-designed, efficient gas capture and control system.<sup>25</sup> Different types of cover – daily, intermediate, and final – can substantially impact gas collection efficiency, and under current practice, landfill operators tend to leave intermediate cover in place for years or even decades, meaning that intermediate cover frequently applies to the majority of the landfill surface. Studies and data, however, strongly support increased efficiency of gas capture in landfills with final cover.<sup>26</sup> Below, for instance, we have reproduced a recently published synthesis chart including collection efficiencies for landfills with daily, intermediate, and final cover.<sup>27</sup>

**Table 3**

Average LFG collection efficiency based on operation methods (compiled from US EPA, 2008a; SWANA, 2007; SCS Engineers, 2008)

Description
Active landfill with active LFG collection system of vertical wells and daily cover only
Active landfill with active LFG collection system of vertical wells and intermediate cover
Active landfill with active LFG collection system of vertical wells and engineered final soil cover or active LFG collection system of vertical wells and horizontal trenches and intermediate cover
Active landfill with active LFG collection system and geomembrane, subtitle D or equivalent cover

[Footnotes]

(25) Amini, *Comparison of first-order-decay modeled and actual field measured municipal solid waste landfill methane data* ("The efficiency of LFG collection systems depends on many factors, including design and operation of the system; climate; and *the composition, thickness, and integrity of the cover material.*")(emphasis added).

(26) See Goldsmith et al., *Methane Emissions from 20 Landfills Across the United States Using Vertical Radial Plume Mapping*, 62 J. Air & Waste Mgmt. Ass'n 183, 197 (2012); Green, *Quantifying Landfill Methane Emissions Using Novel Field Measurement Techniques* at 12 (Mar. 21, 2012).

(27) Amini, *supra* note XX; see also Bogner et al *Seasonal Greenhouse Gas Emissions (Methane, Carbon Dioxide, Nitrous Oxide) from Engineered Landfills: Daily Intermediate, and Final California Soil Covers* 40 J. Environ. Qual. 1010, 1010 (2011) (describing methane flux for daily, intermediate, and final cover and concluding northern California intermediate cover had the highest CH<sub>4</sub> flux).

**Comment Response:**

The EPA is not finalizing provisions to require early installation of final cover. While the EPA recognizes the effectiveness of early installation of final cover in reducing emissions and encourages the practice where appropriate, it also acknowledges that cover practices are site-specific. As the EPA noted in the 2015 Proposed EG Preamble (80 FR 52115), the timing of

final cover installation depends on the filling sequence and cell design of the particular landfill. For these reasons, the EPA does not consider early installation of final cover to constitute as BSER and is not finalizing provisions that prescribe the installation of early final cover. See Section V.A.3 of the 2015 Proposed EG Preamble (80 FR 52114) for discussion of best management practices.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 68

**Sort Order:** 101

**Comment Excerpt:**

*Earlier installation of final cover.* Reducing the time to install the final cover, an essential ingredient in functioning gas collection, is critical so that the final cover is installed when most of a landfill's lifetime gas is generated. This should include cover installation within 6 months of when the cell fills up and rigorous enforcement of this requirement. It also includes setting a maximum time (such as 2 years from first waste emplacement in the cell) that a cell may be uncovered. EPA itself has noted compliance failures and must act to prevent them: "Despite these rules, landfill operators often leave intermediate cover in place for years or even decades and intermediate cover frequently is the only cover on the majority of the landfill surface. Recent studies indicate that installation of intermediate and final cover has a direct and significant effect on LFG emissions. Intermediate cover significantly reduces emissions compared to daily cover on working faces. Final cover has the ability to reduce emissions even further compared to intermediate cover. By installing these more rigorous cover systems sooner, significant emissions may be prevented from being released."

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 14, under comment code EG10.

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**Commenter Name:** Edgard Chow, TS&D Manager

**Commenter Affiliation:** Kuraray

**Document Control Number:** EPA-HQ-OAR-2014-0451-0152

**Comment Excerpt Number:** 1

**Sort Order:** 102

**Comment Excerpt:**

[The following is a compilation of relevant excerpts from a technical paper provided by the commenter. Please see DCN EPA-HQ-OAR-2014-0451-0152 for associated references, figures, and tables.]

Methodology to directly control CH<sub>4</sub> emissions is warrant[ed] for landfill areas that have reached interim or final grades and have not received a final cover. Interim cover can be an effective method placed over a landfill area that controls odor, vermin, infiltration, and LFG emissions (19-40 Tg/yr) (Bogner and Matthews 2003). One of the methods for interim covers is to incorporate a geomembrane (GM) within the interim cover layer (Fig. 22) (Aitchison 1993; Boeckx et al. 1996).

A multilayer geomembrane produced with a layer of EVOH which has the potential to substantially reduce the diffusion of methane, is here proposed as a discrete layer within a multilayer GM to enhance cover performance. Co-extruded geomembranes (GMs) with an ethylene-vinyl alcohol (EVOH) layer sandwiched between other Polyethylene (PE) layers have been introduced as a means to reduce the flux of non-polar organic contaminants in barrier systems. Polar EVOH has outstanding barrier properties to reduce nonpolar gases transport such as oxygen, nitrogen, volatile compounds, and helium due to polarity of the alcohol group in the polymer (Zhang et al. 1999; Zhang et al. 2000; Byun et al. 2007; McWatters and Rowe 2010, 2011). Hence, co-extruded EVOH GM is expected to allow less migration of CH<sub>4</sub> through interim covers employing the GM.

Based on this comparison [presented in the technical paper by the commenter, the commenter concludes that], the cover employing the EVOH GM showed much better performance in mitigating the migration of methane. Therefore, the application of co-extruded EVOH GM on interim cover in landfill site can promise to reduce the emissions of CH<sub>4</sub>. Based on rough calculation as considering total emission of LFG per year ( 30 million tons a year), the emission of CH<sub>4</sub> might be reduced to 75000 tons a year when co-extruded EVOH GM with 200 times lower diffusion coefficient is used for interim covers.

EVOH GMs are already providing practical solutions to landfill owners in the US that have been subject to class action lawsuits by municipal or state government bodies due to complaints for noxious odors by the residents living nearby these landfills. In addition to the containment of greenhouse gases like CH<sub>4</sub>, EVOH has an inherent property of having excellent barrier to noxious gases like hydrogen sulfide (H<sub>2</sub>S).

**Comment Response:**

The EPA appreciates the information provided by the commenter. See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 14, under comment code EG10.

**5.16 Alternative Controls-Other**

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 21

**Comment Excerpt:**

Since the publication of the original NSPS/EG rules, there have been many advances in how LFG collections systems are operated. As new technologies emerge it is important for the

regulations to support the integration of new technologies into existing collection systems. The State of Delaware supports the development of technical assistance documents to address implementation of emerging technologies.

**Comment Response:**

The EPA plans to explore the use of various supplemental tools to support these final regulations. We thank the commenter for their comment.

## 6.0 DATA SOURCES AND CORRECTIONS

### 6.1 Projection of New and Modified Units

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**Commenter Name:** Kelly Dixon, Director

**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0195

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Oklahoma is predominantly a rural state, consisting of many small, municipally owned and operated landfills. Of the 40 MSW landfills in Oklahoma, 15 are owned and operated by municipal or county governments or public authorities. Of these 15 municipal, county or public landfills, 5 are currently subject to Subpart WWW and will be subject to Subpart Cf. Of the remaining 10 municipal, county and public landfills, 8 are projected to undergo expansion and become subject to Subpart XXX within the next 10 years.

Another 6 landfills are independently owned and operated by small private companies and not public corporations. Of these 6 landfills, one is currently subject to Subpart WWW and will be subject to Subpart Cf. Of the remaining 5 landfills, 3 are projected to become subject to Subpart XXX within the next 10 years.

Of the remaining 19 landfills, owned and operated by public corporations, 11 are currently subject to Subpart WWW and will be subject to Subpart Cf. Five are projected to expand and become subject to Subpart XXX within the next 10 years.

Of the 40 MSW landfills in Oklahoma, DEQ projects 33 to be subject to either Subpart Cf or Subpart XXX by 2025. EPA only estimated 785 landfills would be affected by Subpart Cf by 2025. If the projected impacts in other states are similar to those in Oklahoma with over 80% of the existing landfills affected, DEQ is concerned EPA's revised estimation of the number of MSW landfills affected by Subpart Cf is still too low.

**Comment Response:**

Based on the final docketed databases, the EPA estimates 21 landfills in Oklahoma would be affected by either Subparts Cf or XXX based on the design capacity information reported to GHGRP Subpart HH data, other data made available to the EPA through public comment or other research on modified landfills. Of these 21 landfills, 17 landfills are estimated to control in

2025 under either Subpart Cf or Subpart XXX. The number of controlling landfills were based on modeled emissions using the latest GHGRP Subpart HH data or other data made available to the EPA. While these numbers differ from the numbers provided by the commenter, the commenter did not provide specific data updates for individual landfills that would allow for revisions to be made to the dataset. The EPA's estimates are based on the latest data it has available to analyze the impacts.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 6

**Comment Excerpt:**

Even if 2.5 MMT landfills were relevant, EPA's modeling is dubious. EPA avers that its modeling shows that lowering the 50 MT threshold to 34 MT will reduce methane emissions by 7.8%. However, the predicted methane reductions in the RIS are not based on hard numbers, but dubious modeling whose problems are legion. This means that even the claim of a minor benefit is not supported. The RIS describes the process of constructing its model as follows:

“To assess the impacts of the proposal, the EPA drew upon a comprehensive database of existing landfills, derived from a landfill and LFG energy project database maintained by the EPA's Landfill Methane Outreach Program (LMOP) and data from the Greenhouse Gas Reporting Program (GHGRP). Unfortunately, this dataset was missing some landfill data for recent years (2010-2014) and included incomplete data for many landfills. To better represent landfills from recent years, model landfills were created. These model future landfills were developed by evaluating the most recently opened existing landfills and assuming that the sizes and locations of landfills opening in 2010-2014 would be similar to the sizes and locations of landfills that opened in the most recent complete 5 years of data (2005-2010). Based on this assessment, the EPA created a total of five model landfills to represent landfills opening during 2010-2014, which combined with the five landfills for which construction was already planned, led to ten projected future landfills that would be subject to the Emission Guidelines. In addition, 11 model landfills were created that would be subject to the NSPS discussed in Chapter 7.”<sup>8</sup>

The model is based on artificial groupings that have not been validated. Right at the outset of the analysis in the RIS, there is a problem with the methodology. As indicated in the italicized segments above, the underlying data base is reported to be incomplete, and the models that have been subjectively created to compensate for that omission do not use actual landfill data. Instead, to work around the missing values, general categories of landfills were subjectively grouped together, which aspired, but have not been validated, to accurately represent the behavior of the whole population, such as by back-testing. Essentially, then, the explanation above is a rather long-winded way of stating that all the model can be relied upon to produce is a string of digits – but with no necessary relationship to a valid, or even to a reasonable, number.

Footnote:

8 RIS, at PDF p. 71 (emphasis added).

**Comment Response:**

In order to better approximate the number of greenfield landfills the EPA requested information from EPA regions on new anticipated landfills to be constructed. These data, coupled with the model landfills, are the best available approximations of new greenfield landfills expected to be constructed during the 2014-2018 time period. As noted in Chapter 2.3 of the RIA, permitting and opening a new greenfield landfill has become increasingly difficult especially in metropolitan areas, due to the urbanization of suitable sites, permitting barriers, elevated land costs, and other factors. If a new landfill is proposed or when expansion plans for existing landfills are announced, adjacent communities may mount opposition that can hinder issuance of required permits and thus development of the landfill. While the number of new greenfield landfills included in the regulatory analysis is small, the EPA believes that the number of new landfills is based on best available data and is consistent with recent industry trends.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 7

**Comment Excerpt:**

Key local conditions are ignored by the model. Mistaken model driven conclusions are also inevitable here because it fails to contemplate the many key conflicting local conditions. In the landfill case, these local variations are so substantial, even a very large population would be insufficient to average them out. Here, the data set of truly affected landfills is a small fraction of the population such that there is virtually no chance of those variations offsetting each other.

**Comment Response:**

The EPA has based the dataset used to approximate the national impacts of the final Subparts Cf and XXX on the latest available GHGRP Subpart HH data, other data made available to the EPA through public comment or other research on modified landfills and the EPA disagrees with the commenter that the data set represents a small fraction of the population of landfills affected by the rules. In addition, the modeling of LFG emissions and costs in the final rules has taken into account local climatic and energy market data that could influence the analysis.

## 7.0 GAS MODELING METHODOLOGY

### 7.1 General-Modeling

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 95

**Comment Excerpt:**

Our research with EPA studied emissions from four closed landfills in Indiana and Ohio. The landfills received waste from the late 1960s and early 1970s and ceased waste acceptance by

1995. The landfills range from 44 to 56 acres and have approximately 1.7 to 2.2 million tons of waste in place. All four landfills are required to report under EPA's mandatory GHG Reporting Program (GHGRP) based on their modeled LFG generation and modeled emissions. EPA and WM measured surface emissions using a vehicle-mounted cavity ring down spectrometer, employing the tracer correlation approach, which measures both methane and an acetylene tracer gas. WM and EPA performed the measurement campaign over several weeks from September 16 to November 10, 2010. (Abstract attached at Attachment 3).

The analysis compared measured emissions to modeled emission rates using the EPA Greenhouse Gas Reporting Rule methodology in the 2010 rule, which used a default value for methane oxidation of 10 percent. The measured emissions were also compared to modeled emissions using the Solid Waste Industries for Climate Solutions ("SWICS") methodology, which uses a higher methane oxidation value of 30 percent (EPA has since adopted a higher range of oxidation values from 10% to 35% in the GHG Rule in 2013.). The study results, illustrated in Figure 1, showed that modeled emissions are two to four times higher than the measured emissions at the four closed landfills, indicating that EPA's modeled emissions are overly conservative. This finding is important because landfills can only manage the LFG they generate. If the models over-predict the amount of LFG produced at a site, the emission benefits of lowering the design capacity threshold would be overstated and the costs will likely be understated.



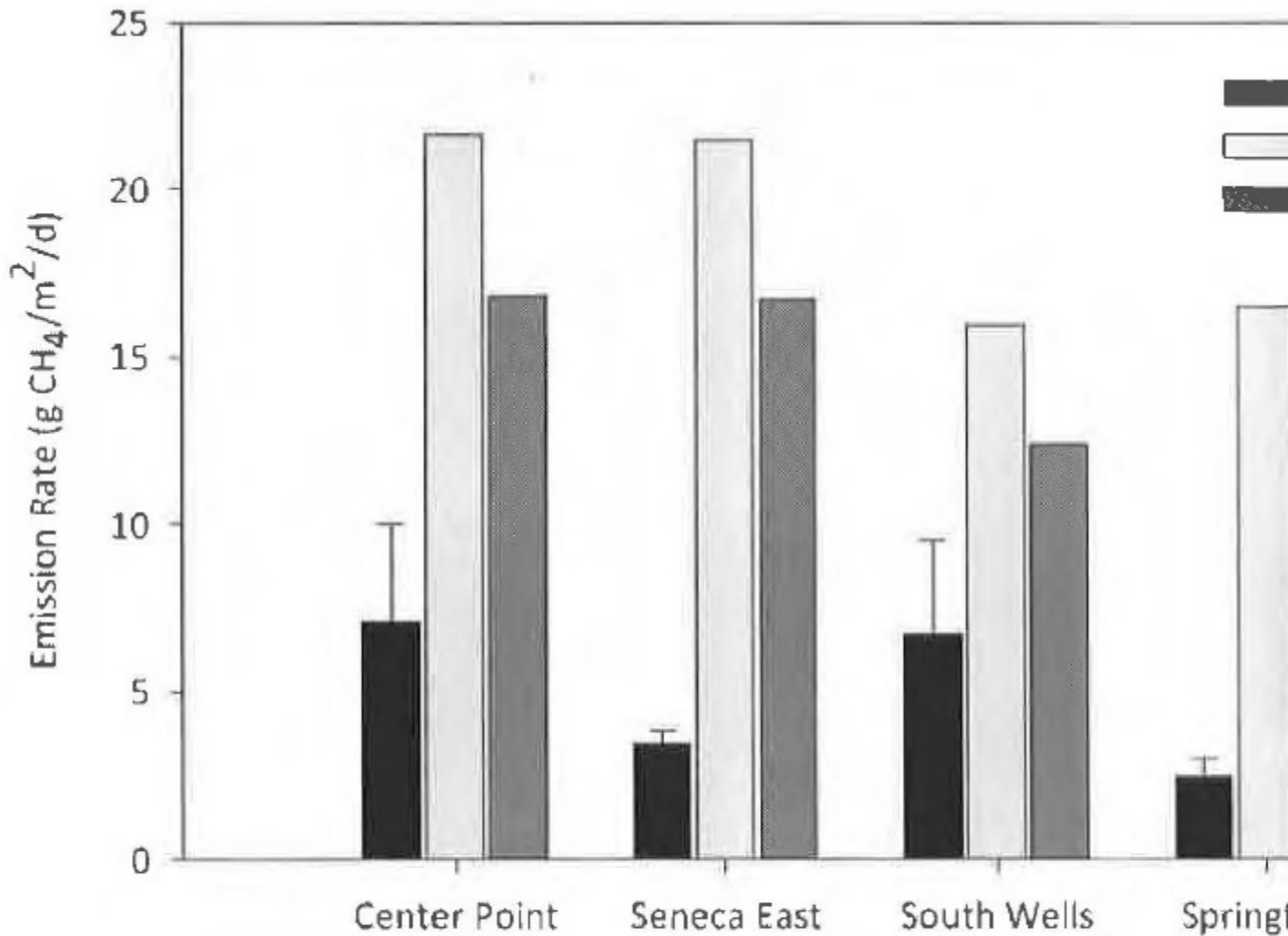


Figure 1. Comparison of Methane Emission Results from CRDS Measurements (error bars represent 1sd)

**Comment Response:**

The EPA recognizes the uncertainty with modeling of LFG emissions. As noted in the NSPS preamble section VI.B, emerging technologies such as the CRDS with mobile tracer correlation are under investigation and still being developed by EPA for field application. At this time these methods are not ready for use for rule compliance and are not suitable for estimating the impacts of the final rules. As a result, the EPA based its impacts analysis on modeled NMOC emission rates over time, using the established equations for LFG generation in the existing MSW landfill rules which have been in use for 20 years.

**Commenter Name:** Comment submitted by Charlie Sedlock, Director

**Commenter Affiliation:** Hamm, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0084.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The major environmental benefit that the proposed rule provides is based on a reduction of the 50 Mg/year threshold to 40 Mg/year. Because of all the difficulties operating a landfill with limited landfill gas production, it seems as if the costs are underestimated. Based on industry experience, the modelling overestimates landfill gas production. Therefore, the benefits are overstated. Accordingly, the threshold should not be lowered.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 95, under comment code 7a for overstated reductions from modeling approach. See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 9, under comment code 8b for estimating costs at landfills with limited gas production.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 24

**Comment Excerpt:**

The modeling used to determine landfill emissions are conservative and consistently overestimate emissions landfills are already installing GCCS well before actual emissions exceed 50 Mg/yr. With the same modelling process and an even lower threshold, landfills will be required to install systems even earlier to meet a de facto threshold lower than 40 Mg/yr and at an even higher expense accounted in EPA's cost analysis.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 95, under comment code 7a for overstated reductions from modeling approach. See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 9, under comment code 8b for estimating costs at landfills with limited gas production. In addition, as discussed in the NSPS preamble section VI.B the EPA has finalized an alternative surface-based emissions criteria "Tier 4" for determining the timing of GCCS installation.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 100

**Comment Excerpt:**

The Agency has not proposed an effective criterion for determining when to install or cease operation of a gas collection system, despite the clear acknowledgement in its preamble discussion that modeled NMOC emissions are overly conservative. *See* 79 Fed. Reg. at 41805. The difficulty posed by the conservative Tier 1 and Tier 2 modeling required to predict NMOC generation is that it can trigger earlier installation of GCCS than is warranted or appropriate. The model over predicts the generation of landfill gas and underestimates the amount of methane oxidation that occurs in daily and intermediate cover. Lowering the threshold only makes this problem more pronounced.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 95, under comment code 7a for overstated reductions from modeling approach. In addition, as discussed in the NSPS preamble section VI.B the EPA has finalized an alternative surface-based emissions criteria "Tier 4" for determining the timing of GCCS installation.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 6

**Comment Excerpt:**

WM has Significant Concerns Regarding the Methodology EPA has Used to Model Methane Emissions, Which we Conclude is Likely to Significantly Overestimate NMOC and Methane Emission Reductions and the Associated Benefits Quantified in the Proposed NSPS/EG.

WM believes that the methane and NMOC equations developed by EPA improperly treat methane generation estimates as methane emission estimates. Because methane generation is higher than methane emissions, overestimate of methane and NMOC emissions would result in more landfills triggering the 34 Mg/year (and the 40 Mg/year) NMOC emission threshold.

In the Eastern Research Group (ERG) memo "Updated Methodology for Estimating Costs and Emission Impacts of MSW Landfill Regulations," EPA describes the emission equations used to determine key methane and NMOC levels.<sup>1</sup> We have significant concerns with ERG's approach based on our review of their memo.

The goal of ERG's analysis was to generate annual emission estimates for the period 2014 – 2039 for landfills in EPA's dataset. To perform the analysis, ERG used a first-order decay equation to estimate annual methane emissions from each landfill for each year. The specific equation was:

$$\text{Eq. 1: } CH_4t = k \times LO \times M \times e^{-kt}$$

Where:  $CH_4t$  = Methane, ft<sup>3</sup> in year t

k = Methane generation rate, year<sup>-1</sup>

LO = Potential methane generation capacity, ft<sup>3</sup> CH<sub>4</sub>/ton

M = Mass of waste accepted in year t, tons

t = Analysis year (year 1 through year 50), year

This equation is not consistent with the LandGEM approach EPA finalized in the 1996 NSPS/EG, which includes the contribution of all waste disposed of in a landfill (e.g., from the first year to the final year under evaluation)<sup>2</sup>. EPA's Equation 1, however, does not clearly indicate that the contribution of all waste disposed in a landfill is being included in the calculation for each year's methane generation. Instead, it appears that annual methane generation is determined based on the mass of waste disposed in year "t" (e.g., the current year). If this was ERG's approach, the equation will significantly underestimate methane generation. If ERG did sum methane generated from each year's waste input when developing their estimates for 2014 – 2039, the equation should be corrected to indicate this summation.

We also find EPA's description of the methane term in Equation 1 to be ambiguous, where the term CH<sub>4</sub>t is defined as "Methane, ft<sup>3</sup> in year t." EPA certainly understands that methane generation and emissions are not identical in landfills because there is always some amount of methane that is oxidized to CO<sub>2</sub> as it passes through the landfill cover. The destruction of methane via oxidation can range from 10 to 35 percent for landfills reporting under Subpart HH of the GHG Reporting Program, an amount that must be subtracted from methane generation to quantify methane emissions. Thus, the term "CH<sub>4</sub>t" must be defined as "methane generation" because this variable is calculating the total amount of methane generated in a landfill on a yearly basis. EPA's failure to do so, and potentially to compound that error by failing to account for methane oxidation via the landfill cover, will lead to overestimation of both NMOC and methane emissions, and overinflate the emission reductions potentially achievable at the landfills brought into the NSPS/EG due to the lower NMOC emission threshold.

Equations 4a and 4b, which calculate "methane emissions" based on "the volume of methane produced at the landfill,"<sup>3</sup> clearly highlight the problem we have identified. In Equation 4a, EPA calculates the mass of methane emissions using variable CH<sub>4</sub>t "from Equation 1," which is properly viewed as an estimate of methane generation. Similarly, in Equation 4b, EPA multiplies the mass of methane emissions from Equation 4a to compute the mass of methane emissions in carbon dioxide equivalents.

[Footnote 1] ERG, "Updated Methodology for Estimating Cost and Emission Impacts of the MSW Landfill Regulations," June 2015, pp. 3-4.

[Footnote 2] 61 Fed.Reg. 9922-9923, March 19, 1996.

[Footnote 3] ERG, *ibid.*, p. 4.

### **Comment Response:**

Regarding the comment on Equation 1 in the methodology memorandum, the underlying calculations for methane generation do take into account emissions from all waste disposed in a landfill. The database calculates methane emissions from each year of waste disposal. To estimate the LFG generated in the target years of the gas emissions analysis (2014-2063), the database sums the emissions from each year of waste disposal, including waste from historical years. While this does not change the underlying calculation approach, the presentation of

Equation 1 in the revised methodology memorandum for the final rule has been edited to clearly reflect this.

The final rules point to the 1998 MSW Landfill AP-42 Chapter 2.4 for modeling landfill gas emissions for the purposes of comparing them to the emission rate thresholds in the rules. Neither the 1998 final AP-42 nor the draft 2008 AP-42 for MSW landfill account for oxidation. The commenters reference oxidation factors available in the GHGRP Subpart HH rulemaking. The EPA disagrees with applying those factors in the analysis for the final NSPS/EG rule because it would be inconsistent with how landfills are instructed to compare their modeled emissions to the final rule thresholds if they were using Tiers 1 or 2 to determine the timing of controls. While the EPA recognizes that oxidation factors could impact the total quantity of actual emission reductions estimated to be achieved by the final rules, the EPA recognizes that oxidation factors carry significant uncertainty depending on numerous site-specific factors. The GHGRP Subpart HH data allows for oxidation factors as the emissions reported under that rule are for a single reporting year and reflect known cover types and methane flux measurements. In contrast, the analysis for the final rules project emission reductions in future years out through 2063, with a focus on year 2025 in the preambles. Because the cover types change over the lifetime of a landfill, as more of the surface area converts to final cover, the EPA did not want to arbitrarily apply oxidation factors for future year methane emissions for the national analysis of emission reduction impacts.

**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 7

**Comment Excerpt:**

WM Concludes that EPA has Improperly Modeled the Expected NMOC Emission Reductions Used to Determine if the NMOC Emission Threshold is Reached, Which Leads to Overestimation of the Benefits Associated with the Proposed NSPS/EG.

Per the ERG memo, each landfill that exceeds the NMOC emission threshold in the model scenarios is assumed to install and operate collection equipment. Once GCCS start-up occurs, LFG collection rates were estimated based on LFG generation and the assumed GCCS expansion schedule. Surprisingly, it appears that EPA did not account for the impact of LFG collection efficiency in this step. In fact, the ERG memo states "[o]nce the landfill reached the maximum gas production and the gas production started to decrease, the analysis assumed that the GCCS would collect all of the emitted gas."<sup>4</sup>

Table 1 further demonstrates EPA assumed that NMOC emissions and NMOC collected were identical (or nearly so).

Year	NMOC <sub>NSPS/EG</sub>	NMOC <sub>AP-42</sub>	Collected NMOC

1-3	Yr 1: 50.2 – Yr 3: 50.6	Yr 1: 27.7 – Yr 3: 28.0	0.0
4-7	Yr 4: 50.8 – Yr 7: 51.3 -50.8	Yr 4: 28.3 – Yr 7: 28.6	28.2 (all years)
8-11	Yr 8: 51.5 – Yr 11: 51.9	Yr 8: 28.7 – Yr 9: 29.1	28.7 (all years)
12 – 15	Yr 12: 52.0 – Yr 15: 52.3	Yr 12: 52.0 – Yr 15: 52.3	29.2 (all years)

A comparison of the "NMOC<sub>AP-42</sub>" column and the "Collected NMOC" column confirms that the amount of collected NMOC is nearly identical to the amount of NMOC emissions generated using AP-42 inputs, during each of the 4-year expansion periods.

WM believes that this approach is inaccurate, as no GCCS is capable of collecting all emitted gas and to do so would likely result in serious operational problems at the site. Based on our review, it is clear that emission reductions under the NSPS/EG were calculated without applying any discount based on collection efficiency. EPA simply applied 98-percent destruction efficiency to the amount of emitted LFG.

This flawed approach results in significant overestimation of both emission reductions and associated benefits under the proposed rule. In general, LFG collection efficiency starts low, and increases over time as waste is added and the collection system expanded. During the first years of waste disposal in landfill cells, collection efficiencies are likely to be zero. As more waste is deposited, collection efficiencies increase from 50 percent to 75 percent, to as high as 95 percent when a cell is under final cover. In a study of landfill gas collection efficiency by Barlaz et al., typical collection efficiencies were 0 percent in years 1 and 2 of waste disposal; 50 percent in year 3; 75 percent in year 4; 75 percent in years 5-10; and 95 percent from year 11 on.<sup>5</sup>

It is our view that EPA should review and revise its modeling approach, because it is essential that EPA properly evaluate the level of emission reductions attainable under the various control scenarios. The present analysis clearly overestimates collected emissions, apparently based on a fundamental misunderstanding of how landfill gas collection systems operate. As a result of this mistake, the benefits described in the rule are certainly overestimated and EPA cannot present a reasoned basis for the proposed threshold. NMOC and methane emission reductions, along with benefit estimates should be recalculated.

WM recommends that EPA follow the collection efficiency approach provided in Subpart HH of the Greenhouse Gas Reporting Program. Under that rule, landfills can either use a default collection efficiency of 75 percent or calculate a site-specific annual emission factor for all areas with installed GCCS, based on the number of acres under different cover types (daily, intermediate, and final), and the default collection efficiencies for each type of cover.

[Footnote 4] ERG, *ibid.*, p. 5.

[Footnote 5] Barlaz et al., "Controls on Landfill Gas Collection Efficiency: Instantaneous and Lifetime Performance," *Journal of the Air and Waste Management Association*, December, 2009, Volume 59, p.1402, Table 3, Case 3.

**Comment Response:**

The EPA has incorporated a collection efficiency factor of 85 percent in the impacts analysis for the final rules. Refer to Section 3.3 of the Regulatory Impact Analysis for the Final Revisions to the Emission Guidelines for Existing Sources and The New Source Performance Standards in the Municipal Solid Waste Landfills Sector for a detailed description of the basis for selecting the 85 percent collection efficiency factor. The discussion and equations have also been updated to reflect the collection efficiency adjustments in the final docketed memorandum *Revised Methodology for Estimating Cost and Emission Impacts of MSW Landfills Regulations. 2016*.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 11

**Comment Excerpt:**

Cover dependent. As another example, an even more egregious example of local conditions that defeats EPA's modeling stems from the Agency's refusal to confront the critical finding of the IPCC. The panel concluded that gas collection is also not functional prior to the installation of the cover in dry tomb landfills either.

This is because gas collection only works properly when the site is, and for as long as it remains, sealed. Without that seal, the vacuum forces will draw oxygen from the surface, mix with the methane in the pipes, and create explosive conditions that require the operator to short circuit the system.<sup>12</sup> Unfortunately, this is also the time when most of the landfill's lifetime gas is generated because rainfall can freely infiltrate an open cell and the moisture will sustain decomposition and gas production.

After the site is covered, gas collection becomes functional, but, by also blocking precipitation, the site quickly dehydrates and gas generation largely ceases. Yet, even though EPA's model could be adjusted to use GHG Report data on cover status as was done in the Nature article, the Agency's collection efficiency assumptions by cover type assumes strong gas capture of 60%<sup>13</sup> based entirely upon unsupported landfill industry claims,<sup>14</sup> even though, in fact, as the IPCC demonstrated, it will be less than 20%.<sup>15</sup>

Footnotes:

12 40 CFR §755(a)(iii)(5). Susan Thornloe (EPA/NRMRL), Innovative Air Monitoring at Landfills Using Optical Remote Sensing with Radial Plume Mapping (February 22, 2007), at 4. Debra Reinhart, First Order Kinetic Gas Generation Model Parameters for Wet Landfills (EPA-600/R-05/072)(June 2005), at p. 5.2.

13 40 CFR Part 98 Subpart Part HH, Table HH-3.

14 SCS Engineers, Current MSW Industry Position and State-of-the-Practice on LFG Collection Efficiency, Methane Oxidation, and Carbon Sequestration in Landfills (July 2007).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 7, under comment code 7a regarding collection efficiency assumptions in the final rules analyses. Regarding the effects of cover on collection efficiency, the EPA analysis factors in the lag times of the final MSW rules as part of the timing of GCCS expansions. After a landfill cell reaches final grade, landfills install soil covers and/or geomembrane covers and the GCCS is able to operate more efficiently in those areas. Further, the 20 percent collection efficiency cited by the commenter reflects a lifetime collection efficiency at the landfill, including periods when the GCCS is not installed. A lifetime collection efficiency factor approach was not used to reflect the gas collection efficiency in the individual years of analysis presented in the impacts of the final rules.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 8

**Comment Excerpt:**

### **EPA Also Appears to Rely on Incorrect Assumptions for Gas Collection and Control System Efficiency**

Finally, EPA's error in not using AR5 GWP factors in its impact analyses for the proposed Emission Guidelines (i.e., EPA's failure to recognize the increased severity – global warming potential – of landfill methane in its impact analyses) is underscored by the recognition of the IPCC and other independent experts that gas collection and control system (GCCS) efficiencies have been overstated in the United States. Thus, EPA's GHG reporting rule, 40 C.F.R. part 98, subpart HH, assumes collection efficiencies of 95% (final cover), 75% (intermediate cover) and 60% (daily cover). On the other hand, EPA acknowledges that it is not technically feasible to quantify the volume of gas available for collection, and the IPCC advises that lifetime recovery efficiencies may be as low as 20%. <http://www.ipcc.ch/pdf/assessmentreport/ar4/wg3/ar4-wg3-chapter10.pdf> at 600; *see also Nature Climate Change, supra* (“[T]he efficacy of these systems [GCCS] are limited” due in part to delay in their installation and operation). In fact, the German government's analysis of MSW management in OECD nations, *supra*, concluded that the overall collection efficiency of U.S. landfills in 2010 was only 57%, and that 50% is the maximum effective collection efficiency that is technically feasible. *See Climate Change Mitigation Potential* at 97; *see also Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010*, USEPA, 430-R-12-001, April 15, 2012, <http://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2012-Main-Text.pdf>.

Putting these points in context, reliance on inaccurate GWP factors understates the magnitude of the adverse environmental impact of landfill methane, while overstated GCCS efficiencies assume mitigation that is not, in fact, occurring.

### **Comment Response:**

See responses in code 8k regarding the GWP of methane used in the final rules. Regarding collection efficiency, see response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 7, under comment code 7a.



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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 5

**Comment Excerpt:**

### **EPA Overestimates the Efficiency of LFG Collection and Combustion Systems**

In its benefits analysis, EPA states that LFG can be used as vehicle fuel, a raw material in chemical manufacturing processes, or injected into natural gas pipelines. It makes no sense, however, to generate LFG in landfills in order to use it for these purposes, given the low efficiency of LFG collection systems.<sup>21</sup> In order to be as efficient as WTE, using a methane global warming potential of 28 (over 100 years), a LFG collection and combustion system would have to be greater than 80% efficient.<sup>22</sup> The European Environment Agency assumes that LFG collection and combustion system efficiency is typically 45%.<sup>23</sup> The authors of “The Climate Change Mitigation Potential of Waste Management,” who analyzed landfill management in the OECD, USA, India, and Egypt, conclude that the maximum effective LFG efficiency to be technically possible is 50%.<sup>24</sup>

[FOOTNOTES]

(21) There are no data on effective LFG collection efficiencies over the entire storage period which should be considered to last 100 years. “*The Climate Change Mitigation Potential of Waste Management*,” Regine Vogt, Cassandra Derrezza-Greeven, & Jurgen Giegrich, IFEU Institut Heidelberg for the Federal Ministry for the Environment, February 2015 at 95 available at [http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/texte\\_56\\_2015\\_the\\_climate\\_change\\_mitigation\\_potential\\_of\\_the\\_waste\\_sector.pdf](http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/texte_56_2015_the_climate_change_mitigation_potential_of_the_waste_sector.pdf). (Climate Change Mitigation Potential).

(22) This calculation uses EPA’s assumption that a WTE plant emits slightly less CO<sub>2</sub>e (328 kg CO<sub>2</sub>e per metric ton MSW) than a controlled landfill with methane gas collection and combustion (335 kg). Technical Appendix N: Assessing Emissions from Waste-Derived Biogenic Feedstocks. But, according to the IPCC’s Fifth Assessment Report, one ton of methane is equivalent in Global Warming Potential to 28 tons of CO<sub>2</sub>; thus, a controlled landfill can emit less CO<sub>2</sub>e than a MSW plant only if the LFG collection system efficiency is greater than 80%.

(23) Climate Change Mitigation Potential at 96.

(24) Id. at 97.

### **Comment Response:**

Regarding collection efficiency, see response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 7, under comment code 7a.

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**Commenter Name:** S. Woodson

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0148

**Comment Excerpt Number:** 5

**Comment Excerpt:**

Alternative methods of controlling LFG emissions, with or without GCCS systems, are described by Jin-Won Park and Ho-Chul Shin. Park and Shin utilized a flux chamber measuring system to estimate methane and carbon dioxide gas flow. The apparatus captures methane and NMOC gas emissions and assesses those concentrations in an efflux apparatus. Based on the concentration rate of both gases, Park and Shin were able to assume total yearly efflux rates. Using a graphical integration method, Park and Shin calculated a 30% reduction in LFG, and also found an easier method of detection and capture of LFG. The data and methodological techniques were then used to generate total LFG emissions estimates (Park and Shin, 2001).

**Comment Response:**

As noted in the NSPS preamble section VI.B, emerging technologies such as the CRDS with mobile tracer correlation are under investigation and still being developed by the EPA for field application. At this time these methods are not ready for use for rule compliance and are not suitable for estimating the impacts of the final rules. As a result, the EPA based its impacts analysis on modeled NMOC emission rates over time, using the established equations for LFG generation in the existing MSW landfill rules which have been in use for 20 years.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 12

**Comment Excerpt:**

The largest factor that makes the entire RIS process a farce is the blind eye it turns to the complete collapse of landfill regulation that has occurred at the state, in parallel to the federal, level. Over the past 35 years under a withering attack from right wing ideologues, state environmental agencies including their waste units have repeatedly and relentlessly been defunded, understaffed, demoralized and, were they do step up and act responsibly, undercut.

In consequence, in the majority of states, regulation of landfills no longer substantively exists, other than in the special case where noxious odor or fire crisis percolate into the public consciousness causing an uproar that cannot be ignored. Since methane is both invisible and odorless, that last option does not exist to roust regulators to engage and implement minor changes to the emissions threshold. All of this is ignored by EPA's modeling that blithely assumes every regulatory change is fully implemented, when, in fact, in most parts of the country, the change – if it actually had any effect – is more likely to be largely ignored than followed.

With so many shortcomings and problems modeling what is a very subtle difference in a marginal factor with ambiguous impacts, no stock can be placed in the output table that EPA produced to purportedly estimate methane reductions from the proposed threshold change. <sup>16</sup>

Footnote:

16 Notice, at Table 3, at PDF p. 113

**Comment Response:**

The approach taken to model incremental impacts associated with the tightened emission threshold standards in the final rule, relative to the current regulatory baseline, is consistent with the procedures that the EPA applies in other NSPS and Emission Guidelines standards development. Oversight in enforcement or compliance with the standards, once implemented, is outside the scope of the regulatory analysis presented for the final rules.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 53

**Comment Excerpt:**

**EPA should Not Promote Landfill Gas to Energy Projects.** Landfill gas to energy (“LFGTE”) is an appealing concept, but it does not appear to be ready for implementation. LFGTE is driven at least in part by the desire to increase profits from landfill operations; that in turn is driven in part by the fact that EPA measures the cost efficiency of control measures by subtracting compliance costs from landfill revenues. But that analysis rests on an artificial constraint of accepting current revenues as the revenue ceiling. Once revenue constraints are changed, even in a cost/benefit model that keeps landfill operations profitable without accounting for the steep externalities of greenhouse gas emissions, successful LFGTE is not necessary to make a landfill profitable.

**Comment Response:**

The revenue selected for the impacts analysis reflects standard assumptions of a landfill’s behavior if the landfill was required to install a GCCS. Based on data reported to the Greenhouse Gas Reporting Program Subpart HH and data reported to the Landfill Methane Outreach Program, the EPA is aware of many landfills that have installed landfill gas energy projects. By subtracting the revenues at landfills where LFG energy is expected to be profitable (based on available gas recovery rates and local electricity prices), the EPA is able to better estimate a realistic net cost on each affected landfill. The EPA similarly considered LFG energy revenue in its analysis of the 1996 final rules, and LFG energy remains a viable technology for landfills affected by today’s final rules.

## 7.2 Modeling Parameters

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 83

**Comment Excerpt:**

WM strongly urges EPA to undertake a rigorous review of available scientific data related to k and Lo factors that includes evaluating significant studies and data that has been supplied by the landfill industry.

As EPA is aware, WM has very serious concerns about the quality, objectivity and reliability of the data reflected in the Office of Research and Development's (ORD) BID upon which EPA drafted its 2008 revisions to the MSW Landfill Chapter of AP-42 emission factors.<sup>22</sup> We are also very frustrated by the lack of any action on the 2008 AP-42 draft over the last seven years. No other sector-specific NSPS rule has such direct and immediate regulatory impacts as a result of AP-42 emission factor modifications. For EPA to delay action for so long, even after the landfill industry provided voluminous data for review, is deeply concerning.

With respect to the proposed NSPS/EG, we find that the revised k value in the BID and MSW Landfill chapter are not supported by relevant, representative data. In 2008, EPA proposed to establish a new first order decay constant k for "wet" landfills of  $0.3 \text{ yr}^{-1}$ , based on the results of a study by Reinhart (USEPA, 2005).<sup>23</sup> At the time, we also commented on the availability of more applicable sources of data upon which to base a k value for bioreactor landfills, and provided several references to scientific literature.

We strongly urge EPA to review thoroughly the literature and voluminous test results and to update emission factors on that basis. Given the implications of these factors on regulatory outcomes, we do not want EPA to generate new values as part of finalizing the NSPS/EG. What we support is a rigorous and transparent process in which EPA reviews the relevant studies (placing prime importance on peer reviewed literature and validated test results), evaluates the quality and objectivity of the studies, and obtains both peer review and stakeholder comments prior to finalizing any new values.

[Footnote 22] See Attachment #4 in Docket ID Number EPA-HQ-OAR-2014-0451-0037.

[Footnote 23] United States Environmental Protection Agency, First Order Kinetic Gas Generation Model Parameters for Wet Landfills, EPA-600/R-05/072, Air Pollution Prevention and Control Division, Research Triangle Park, NC, 2005.

**Comment Response:**

As discussed in the NSPS preamble section VI.A.3, the EPA received a variety of input on k-factors for wet landfills and it is not revising the k-factors for wet landfills as part of the final rulemakings. The impacts analysis presented in the RIA and preambles reflect the k values in the 1998 AP-42 MSW Landfill chapter for determining when landfills would remove controls. See also the discussion of k-values in the docketed memorandum *Revised Methodology for Estimating Cost and Emission Impacts of MSW Landfills Regulations. 2016*.

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**Commenter Name:** Kelly Dixon, Director

**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental

Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0195

**Comment Excerpt Number:** 3

**Comment Excerpt:**

DEQ is concerned with the amount of testing that will be required of small municipally and independently owned MSW landfills. Historical data has shown that the factors contained in the Tier 1 NMOC calculation are not reflective of Oklahoma landfills. Many of the Tier 1 NMOC emission rate estimates have been 10 times greater than actual measured NMOC emissions, when compared to estimates using NMOC emission rates from site specific Tier 2 tests. Although 19 years of site specific data have been collected since Subparts Cc and WWW became effective, EPA has not improved the published 1996 NMOC emission factors. EPA should make the effort to correct its 1996 NMOC emission factors to make the calculation a meaningful reflection of NMOC emissions before proposing new regulations. The overly conservative default factors will result in all Oklahoma MSW landfills affected by Subpart Cf performing either Tier 2 or Tier 4 testing to demonstrate their emissions are below the threshold. DEQ recommends EPA revise the 1996 NMOC emission factors to reflect 19 years of actual data before considering lowering the NMOC emission rate to 34 Mg/yr.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 83, under comment code 7b regarding update of the landfill emission factors.

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**Commenter Name:** Comment submitted by Catharine Fitzsimmons, Chief, Air Quality Bureau

**Commenter Affiliation:** Iowa Department of Natural Resources (DNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0078.1

**Comment Excerpt Number:** 4

**Comment Excerpt:**

The DNR urges EPA to finalize the changes proposed in 2009 to the AP-42 section for landfills concurrently with finalizing Subpart XXX. In addition, EPA should ensure that EPA's LandGEM (Landfill Gas Emissions) Model is current and consistent with AP-42, Subpart XXX, and Subpart WWW.

Current Subpart WWW and proposed Subpart XXX both reference AP-42 for estimating landfill emissions. In 2009, EPA published a draft section of AP-42 for landfills. EPA has never finalized this section. In reviewing the proposed changes to AP-42, the DNR generally found the proposed emission factors to be more accurate than the existing emission factors.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter—DCN-EPA-HQ-OAR-2014-0451-0162, page 2. This response is for both of these comments. See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 83, under comment code 7b regarding update of the landfill emission factors.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 9

**Comment Excerpt:**

Perhaps most importantly, the equation used to calculate emissions per 40 CFR 60.35f retains the values for k and Lo that both USEPA and the industry know are greatly over exaggerated for most landfills. The 34 Mg/year NMOC threshold is actually the equivalent of a much lower limitation when reasonable inputs for these values are used. If USEPA insists on establishing a lower threshold, the Tier 2 values should be based on actual waste type and characteristics of the waste. The values are routinely supported by USEPA in various documents which they rely on to require facilities to accurately report GHGs. The use of the higher k and Lo default constants within the calculations also unnecessarily confuses stakeholders when permitting efforts are undertaken and USEPA is even using these values to overestimate the amount of emissions that they are reducing within the background documents. The resources are available for more accurate modelling to be used to determine "actual" rather than inflated values. Those values should be used. USEPA should never advocate the use of inflated values in reports that greatly overestimate reality. This practice communicates risks to stakeholders and provides mis-information about emissions from landfills. It should be changed to reflect reality.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 83, under comment code 7b regarding update of the landfill emission factors.

### 7.3 Results-Baseline

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader  
**Commenter Affiliation:** Sierra Club, et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0178  
**Comment Excerpt Number:** 8

**Comment Excerpt:**

Voluntary compliance. As one example, many landfills that nominally fall within the proposed change in the emissions threshold will – completely unpredictably – already have had to have installed a GCCS due to local conditions, even though not legally required to have done so. As such, the proposed emission threshold change will have no impact on this subset of landfills of that size, even though the model would mechanically conclude otherwise. Depending on weather conditions and the proximity and political clout of the landfill’s neighbors, a GCCS would be necessary to grapple with odor problems and nuisance suits (and, because the systems are ineffective in open sites, may continue even with a GCCS).

**Comment Response:**

The EPA recognizes the important contributions that voluntary GCCS installations have made to reducing methane emissions. However, since the design and operation of those voluntary systems is not always as comprehensive as a regulatory-required GCCS, the emission reductions from those voluntary systems have not been quantified and factored into the emission reduction impacts in the final rule analysis. For example, a voluntary system may install only enough gas wells to support a specific energy demand, instead of installing a system to cover all collectible gas, as is required by the final regulations. Further, since some of these voluntary systems may be installed as a function of local markets for electricity or carbon markets, the longevity of these projects are somewhat uncertain if the market conditions change.

## 8.0 IMPACTS ANALYSIS

### 8.1 General-Analysis Timeframe

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 28

#### Comment Excerpt:

EPA's proposal would require a GCCS to be installed earlier and operated longer than the current rule. However, EPA's analysis of the costs of the proposal is limited to 10 years from the date of the proposal.<sup>27</sup> The lifecycle costs of a landfill are highly dependent on how long a GCCS must be operated and how long before a facility can be closed. The natural reduction over time of LFG emissions from a landfill is not linear,<sup>28</sup> so lowering the cutoff from 50 Mg/yr to 40 Mg/yr can significantly extend the period over which the small entity bears the costs of compliance. In addition, EPA shows that back-end expenses can be significant,<sup>29</sup> and EPA does not discuss how the end-of-life costs may change with the drop in cutoff.

In EPA's small entity analysis, it presents an average of costs over 10-year periods, extending to 2043,<sup>30</sup> but these figures do not include the effect of operating a GCCS longer under the proposed rule or the end-of-life costs.

[Footnote 27] ERG, Memorandum to EPA, *Methodology for Estimating Cost and Emission Impacts of MSW Landfill Regulations* (April 2014), Regulations.gov Document ID EPA-HQ-OAR-2003-0215-0041.

[Footnote 28] *See EIA*, Figure 2-3.

[Footnote 29] *See EIA*, Figure 2-2.

[Footnote 30] *EIA*, Table 4-1.

#### Comment Response:

While the EPA continues to present the impacts in the preamble as a snapshot year of 2025, the EPA disagrees that the analyses in the final rules do not show the effects of requiring a GCCS to remain in operation longer under the final rule thresholds relative to the length of time the GCCS

would be required under the baseline. If the modeled emissions drop below the baseline emission threshold of 50 NMOC Mg/yr and the GCCS has been installed for at least 15 years, the costs for controls are not factored into the cost analysis for the baseline. However, because the landfill would take additional years to drop below the final rule threshold of 34 NMOC Mg/yr, the costs for control would show up as incremental costs in those later years. The final docketed Regulatory Impact Analysis for the Final Revisions to the Emission Guidelines for Existing Sources and The New Source Performance Standards in the Municipal Solid Waste Landfills Sector (RIA) presents the impacts in the main year of evaluation, 2025, as well as alternate years 2020, 2030, and 2040. There is also a net present value section of the RIA covering the years 2019 through 2040. See chapters 3 and 7 of the final RIA for additional detail on the presentation of the results.

## 8.2 Costs-GCCS Control Technology Assumptions

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

The EPA's cost analysis does not appear to take into account the extra costs that would be incurred for landfills as they go through closure and will not be able to remove the GCCS until they are able to meet the proposed lower threshold.

**Comment Response:**

The cost analysis incorporates the timing of controls until the following two criteria are met: 1) modeled NMOC emission rates fall below the NMOC emission threshold of 34 Mg/yr and 2) the GCCS has been installed for at least 15 years. The docketed memorandum "Revised Methodology for Estimating Cost and Emission Impacts of MSW Landfills Regulations. 2016" provides a table showing how the timing of controls, and their associated costs were estimated for the analysis.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 23

**Comment Excerpt:**

The costs only consider early collection. Much of the costs associated with GCCS operation occurs as LFG production is declining.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt number 9, under comment code 8b.



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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 18

**Comment Excerpt:**

EPA's decision not to model the cost-effectiveness of early gas capture is arbitrary and should be corrected in the final rule.

**Comment Response:**

Options 14 and 15 in the two docketed databases "Modeling Database Containing Inputs and Results of MSW Landfill Emission Guidelines Review" "and Modeling Database Containing Inputs and Results of MSW Landfill NSPS Review" contain the impacts associated with shorter initial and expansion lag times.

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**Commenter Name:** Kelly Dixon, Director

**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0195

**Comment Excerpt Number:** 6

**Comment Excerpt:**

Landfills are allowed to remove controls when the actual emissions are below the emissions threshold, the landfill is closed, and the controls have been in place for at least 15 years. EPA estimated the capital costs associated with GCCS construction, exclusive of blower and LFG destruction device, are estimated \$19,600 per acre. Capital cost for a flare is estimated as \$231,000 (2015 \$s). Operation, monitoring and maintenance costs, estimated by EPA as \$2,500 per well, \$50,000 in electricity per blower and \$5,000 per flare (2015 \$s), from the time the system is installed until the NMOC emission rate falls below the threshold of 34 Mg/yr will be especially difficult for small municipally and independently owned landfills to fund. EPA included estimates of revenue generated from the installation of a GCCS; however, many of the small municipally and independently owned landfills in Oklahoma are in rural areas. Landfills in rural areas of Oklahoma are less likely to be located near industrial consumers of gas products so the revenue projected by EPA should not be used as an offset to the costs of Subpart Cf.

**Comment Response:**

The EPA did not factor in proximity to industrial consumers in its analysis of potential revenue from LFG energy projects. The final rule analysis estimates the additional cost of an engine (in addition to the flare) as well as the estimated revenue from electricity sales for landfills located in electricity market modules (EMM) regions where the electricity pricing would be anticipated to recover the investment in the engine and related infrastructure. Based on the data available to the EPA from the Annual Energy Outlook 2015, 15 of the 17 landfills in Oklahoma expected to control under the final rules are projected to be located in EMM regions where pricing would be favorable enough to generate revenue to recover the investment in the engine.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 8

**Comment Excerpt:**

After EPA Corrects for Collection Efficiency, EPA Should Recalculate its Cost Estimates.

Based on a review of the capital and O&M costs for landfill gas collection and control equipment, WM has concluded that capital costs reductions will not track emission reductions.

The cost estimates will not decrease in proportion to the difference between LFG emissions and LFG collection, because many costs are fixed.

Instead, several cost elements are insensitive to the LFG flow rate.

From the ERG "Updated Summary" memo, fixed costs include:

- Vertical Gas Extraction Well Capital Costs: These costs "were based on a dollar per linear foot of well depth installed estimate from LFGcost-Web,"<sup>6</sup> and EPA assumed that "each landfill would install one well per acre."<sup>7</sup>
- Wellhead Capital Costs: This category covers the equipment associated with each well, as well as "engineering, permitting and surveying fees associated with wellhead installation."<sup>8</sup> These costs are fixed and depend on the number of wells.
- Engine Capital Costs: This category covers the capital required for on-site engines. Each engine is assumed to cost over \$2.6 million. The number of engines needed at a site is determined based on having a gas flow of 195 million ft<sup>3</sup> per year.
- Flare O&M Costs: EPA treats this cost as fixed, assuming that flare O&M costs are \$5,100/year/per flare.
- Well O&M Costs: As with flare O&M, EPA treats well O&M costs as fixed, assuming well O&M costs are \$2,600/year/per well.

Variable costs include:

- Flare Capital Costs, which are based on the maximum LFG collected over a 15-year period.
- Mobilization/Installation for Wellfield Expansion: This is a variable cost that is "dependent on the expansion lag time" and "independent of the number of wells being added."<sup>9</sup>
- Electricity O&M Costs, which is based on the electricity usage of blowers and the electricity purchase price.
- Engine O&M Costs are based on the amount of time the engine operates and the number of engines on the site.
- Engine Revenue Costs also appears to be variable, based on the electricity buyback rate.

[Footnote 6] ERG memo, p. 6.

[Footnote 7] ERG memo, p. 7.

[Footnote 8] ERG memo, p. 8.

[Footnote 9] ERG memo, p. 9.

**Comment Response:**

As discussed in the *Regulatory Impact Analysis for the Final Revisions to the Emission Guidelines for Existing Sources and The New Source Performance Standards in the Municipal Solid Waste Landfills Sector*, the EPA has adjusted the final rules analyses to reflect a collection efficiency of 85 percent.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 9

**Comment Excerpt:**

Given the Multiple Problems with the Analysis of Emission Impacts and Costs, EPA Must Review and Revise the Analysis to Correct the Problems we have Identified.

WM requests that EPA carefully review the modeling approaches described by ERG in the "Updated Summary" memo, make necessary corrections and clarifications, and issue a supplemental proposal or Notice of Data Availability with the corrected results prior to finalizing the NSPS and EG rules. To ensure transparency and because it is critical to get the numbers right, we believe that EPA owes the regulated community and other stakeholders a chance to review the revised analysis prior to promulgation of the final rules.

**Comment Response:**

The final rule reflects changes to the methodology for estimating the cost and emission impacts of the final rules, based on public comments received on the 2014 and 2015 proposals, including many of the suggested improvements noted in other comments made by this commenter. The EPA disagrees that a Notice of Data Availability was necessary as the changes made were derived from the comments in each rulemaking record. These changes to the methodology and the underlying datasets have been documented in the docketed Regulatory Impact Analysis for the Final Revisions to the Emission Guidelines for Existing Sources and The New Source Performance Standards in the Municipal Solid Waste Landfills Sector and in the relevant technical memoranda for the final rules.

### **8.3 Costs-All Other Testing and Monitoring**

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 63

**Comment Excerpt:**

The economic analysis included within the proposed rule does not include any reference to the cost differences associated with the change in testing requirements. The only reference in the administrative record to the testing costs is in a memorandum sent to EPA by the Eastern Research Group ("ERG"). Memorandum from ERG to Hillary Ward, U.S. EPA, OAQPS/Sector Policies and Programs Division, Fuel and Incineration Group, Methodology for Estimating Testing and Monitoring Costs for the MSW Landfill Regulations, Apr. 2014, p. 3. In that memo, ERG erroneously assumed that Method 25 costs would be similar to Method 25A costs.

**Comment Response:**

The EPA has included Method 25A in the final rules as a relevant method. As such, the EPA believes its estimates for testing and monitoring costs included in the final rule analysis agree with the allowable testing methods in the final rules.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 43

**Comment Excerpt:**

Additionally, the substantial increase in time and personnel costs to perform this monitoring must be considered. In Table 5 EPA estimates an increased cost of \$270,500 to \$320,600 per year in order to complete enhanced SEM. Without substantial evidence showing reduced emissions EPA must consider this financial burden to be prohibitive. Analysis performed by EPA does not incorporate the addition of penetration monitoring or the increased time necessary to manage the data, which would be considerable.

**Comment Response:**

The EPA is not finalizing enhanced surface monitoring in the final rules. Regarding the cost to monitor penetrations, the EPA disagrees that the SEM cost estimates do not reflect the costs to monitor cover penetrations and manage the data. An estimate of the per acre costs documented in the memorandum *Updated Methodology for Estimating Testing and Monitoring Costs for the MSW Landfill Regulations, 2016* was derived from SEM monitoring on the California Landfill Methane Rule, which does require monitoring of cover penetrations.

## 8.4 Economic Impacts

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 86

**Comment Excerpt:**

EPA's economic analysis is flawed. As a general matter, EPA's economic analysis is inaccurate and incomplete. As discussed above, reasoned decision making requires EPA to evaluate relevant data and to provide a "satisfactory explanation for its action." *See Portland Cement Ass'n*, 665 F.3d at 186-87; *Am. Farm Bureau Fedn. V. EPA*, 559 F.3d at 519-220 (D.C. Cir. 2009). Reasoned decision making obligates EPA to consider *all* significant aspects of a problem and to address newly acquired evidence in a reasonable manner. *See Portland Cement Ass'n*, 665 F.3d at 187; *Catawba County v. EPA*, 571 F.3d 20, 45 (D.C. Cir. 2009)). Further, EPA is obligated to reexamine its regulatory approach when there has been a change to or EPA has gotten wrong a "significant factual predicate." *See Portland Cement Ass'n*, 665 F. 3d at 187 (quoting *Bechtel v. FCC*, 957 F.2d 873, 881 (D.C. Cir. 1992)). EPA failed to meet its obligation to make reasoned decisions in assessing the economic impact assessment of the Landfill NSPS.

CAA § 317 obligates EPA to prepare an economic impact assessment that considers the costs of compliance with a proposed regulation, the effects the regulation will have on small businesses, and the impacts the regulation will have on consumer costs. 42 U.S.C. § 7617. This assessment must be "as extensive as practicable." *Id.* at § 7617(d). Here, EPA grossly underestimates the total incremental annualized net costs of the Landfill NSPS to be \$471,000. 79 Fed. Reg. at 41826.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e, which discusses changes that were made to the estimates of the number of landfills that would be required to comply with the NSPS.

On August 27, 2015, the EPA issued a supplemental proposal for the landfills NSPS. For additional information on the supplemental proposal, see the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector, which includes estimates of the costs of compliance with the proposed regulation, the effects the regulation will have on small businesses, and the impacts the regulation will have on consumer costs, to the extent practicable.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 88

**Sort Order:** 200

**Comment Excerpt:**

EPA's economic analysis of the proposed rule, however, suffers from a fundamental flaw because EPA only evaluated the impacts for new "greenfield" landfill facilities. The underlying hypothesis of EPA's analysis is that only new sites (estimated at 11) that open in 2014 or later

will be subject to the proposed Subpart XXX control requirements. EPA's assumption greatly understates the number of sites that would be required to install controls under the rule and is inconsistent with the Agency's definition of "modification" - the trigger for rule applicability to existing facilities. The proposed NSPS makes clear that new facilities, as well as existing facilities that are modified, will be subject to the revised NSPS. Greenfield landfills are enormously expensive and difficult to site due to major regulatory hurdles. Given these significant barriers, new landfills are rarely constructed. On the other hand, expansions of existing landfills are far more common and occur far more frequently. For example, WM expects to expand more than twenty landfills in the near future and would expect these facilities to become subject to the proposed Subpart XXX. **Thus, one company alone has more than doubled the Agency's estimate of the affected universe of sites.** We are concerned and perplexed that EPA only analyzed regulatory costs for new sites, and thus gravely misrepresented the number of facilities affected by the proposal as well as attendant costs. Because EPA completely failed, without explanation, to adequately consider this relevant information in assessing the economic impact of the Landfill NSPS, EPA has an obligation to reevaluate the economic impacts of the proposed rule, taking into account existing landfills that will be required to comply.

#### **Comment Response:**

In the July 17, 2014 proposal, the EPA estimated emissions reductions and costs associated with new "greenfield" landfills that the EPA projected to commence construction, reconstruction, or modification between 2014 and 2018 and have a design capacity of 2.5 million m<sup>3</sup> and 2.5 million Mg. Multiple commenters on the July 2014 landfills NSPS proposal stated that the EPA underestimated the cost impacts of the landfills NSPS because the EPA failed to consider the number of landfills that are expected to undergo a modification and become subject to the proposed NSPS.

In response to these comments, the EPA consulted with its Regional Offices, as well as state and local authorities, to identify landfills expected to undergo a modification within the next 5 years. Using this information, the EPA then estimated the number of existing landfills likely to modify after July 17, 2014 and become subject to subpart XXX. In addition, the EPA made several changes to its underlying dataset and methodology used to analyze the impacts of potential control options. Using the revised dataset, the EPA re-ran the model and assessed control options similar to the options presented in the July 2014 proposed NSPS. As a result of these changes, the number and characteristics of the new and modified landfills that are expected to become subject to proposed subpart XXX have changed. On August 27, 2015, the EPA issued a supplemental proposal for the landfills NSPS reflecting these changes. For additional information on the supplemental proposal, see the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 97

**Sort Order:** 201

**Comment Excerpt:**

EPA has not justified a reduction in the NMOC emissions threshold for GCCS installation. WM has carefully reviewed EPA's rationale for reducing the NMOC threshold and believes that EPA overestimated the benefits, underestimated the costs and understated the number of affected facilities.

The economics of EPA's decision are even worse than indicated in the EIA, however, because the Agency's analysis did not adequately assess the implications of the proposed threshold change on the vast majority of landfills that would be affected. EPA's EIA fails to account for the many existing landfills that will become subject to Subpart XXX once they modify. Since the proposed rule applies to both new and modified sources, EPA should have conducted an economic analysis of both types of sources. Given that most of the affected landfills under this proposal are likely to become regulated under this rule because they are modified, not new. EPA's current analysis has significantly overestimated the cost-effectiveness of this proposed revision. We believe that EPA should revise its EIA to reflect the costs and benefits of a lower NMOC threshold to both new and modified landfills, and then provide the public with an opportunity to comment on the updated analysis prior to finalizing the rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 22

**Sort Order:** 202

**Comment Excerpt:**

The proposed NSPS makes clear that new facilities, as well as existing facilities that modify, will be subject to the revised NSPS. However, EPA only evaluated the economic impacts in terms of new "greenfield" landfills that will open in 2014 or later which concluded only 11 landfills would be subject to the proposed Subpart XXX. Landfills that are modified or reconstructed on or after July 17, 2014 will also be subject to the proposed rule. Thus the number of landfills impacted and the associated costs to implement the proposed rule changes are greatly understated in the cost analysis. Given that most of the affected landfills under this proposal are likely to become regulated under this rule because they are modified; EPA's current analysis has significantly overestimated the cost-effectiveness of this proposed revision by only analyzing impacts to new landfills. We believe EPA should revise its analysis to reflect the costs and benefits of a lower NMOC threshold to both new and modified landfills, and then provide the public with an opportunity to comment on the updated analysis prior to finalizing the rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 3

**Sort Order:** 203

**Comment Excerpt:**

We did note that in budgeting for Subpart XXX, EPA only considered the "green field" sites that would be developed after the rule's publication. DSWA is concerned that this analysis provides a deceptively low estimate of the number of facilities that would be affected, and therefore a low estimate of actual costs. It is not uncommon for landfill facilities to undergo modifications (either vertical or horizontal expansions). Following a solid waste facility expansion, facilities that are currently following the 50 Mg applicability threshold under the existing NSPS (Subpart WWW) or Emission Guidelines (Subpart Cc) would then be subject to the proposed NSPS, and the reduced threshold of 40 Mg.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 8

**Sort Order:** 204

**Comment Excerpt:**

TXSWANA believes EPA's cost analysis ignores the costs that will be experienced by those landfills that expand enough to trigger the more stringent standard of 40 Mg/yr that otherwise would be below the existing 50 Mg/yr rule e.g. 40 Mg/yr.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy



**Commenter Affiliation:** SBA Office of Advocacy  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1  
**Comment Excerpt Number:** 29  
**Sort Order:** 205

**Comment Excerpt:**

EPA's analysis of regulated entities that would be affected by revisions to the NSPS focused entirely on new landfills. However, some entities may become subject to the NSPS through expansion.

One small municipality tells Advocacy that it may need to expand in the near future, and that its facility is not reflected in EPA's small entity analysis. An industry representative has also told Advocacy that some landfills obtain permits only as necessary to keep up with expansion rather than for the entire design at the beginning of the project and that this behavior is highly dependent on the relationship with state permitting authorities.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 4  
**Sort Order:** 206

**Comment Excerpt:**

If existing facilities modify their permit and increase their capacity and have to operate under the provisions of subpart XXX, then the scope of this regulation is far greater than the proposal indicates. The proposal discusses the impact of new facilities, the impact on existing facilities could be very, very significant in terms of number of facilities and also very significant with respect to what those facilities have to achieve. So we would like clarification on that.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division  
**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1  
**Comment Excerpt Number:** 2  
**Sort Order:** 207

**Comment Excerpt:**

DEQ is concerned that EPA may have underestimated the size of the affected universe of landfills when considering the cost of the proposed action and potential applicability of the Unfunded Mandates Reform Act. Table 2 in Section VI, Rationale for the Proposed Changes Based on Review of the NSPS, lists the number of affected landfills nationwide as 17. DEQ anticipates at least five Oklahoma landfills will become subject during the first year the rule is in effect, four of them due to expansion, and by extrapolation would expect this group to be much larger. If expansion sites were not considered in the cost analysis, the approach underestimates the effect of the proposed action, and burden on the delegated authority, and may warrant further review.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Comment submitted by Kimberly Smelker  
**Commenter Affiliation:** Granger III and Associates, LLC  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0114.1  
**Comment Excerpt Number:** 40  
**Sort Order:** 208

**Comment Excerpt:**

The cost estimates for requirements from previous rules have been understated and we believe that the estimates initially utilized for these proposed rules were also grossly underestimated.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)  
**Commenter Affiliation:** Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1  
**Comment Excerpt Number:** 2  
**Sort Order:** 209

**Comment Excerpt:**

Subpart XXX will apply to landfills constructed, modified or reconstructed after July 17, 2014. The EPA states that very few landfills will be impacted by this rule because its economic analysis assumed only new landfills (green field sites) would be affected. However, the industry believes that many existing landfills will fall under the new rule due to modifications at their sites. This means landfills currently subject to existing Subpart WWW or Cc (including state EG

rules) will eventually fall under Subpart XXX. None of the analyses done by EPA take into account that modified existing landfills will become subject to Subpart XXX.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 22

**Sort Order:** 210

**Comment Excerpt:**

We believe that the proposed cost evaluations grossly underestimate the actual costs of compliance because they are limited to green fields and neglect to consider modified and expanded landfills that would be subject to this rulemaking.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 88, under comment code 8e.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 32

**Sort Order:** 300

**Comment Excerpt:**

Historically, the NSPS and Emission Guidelines have been aligned. In the ANPRM, EPA requests comment on many of the issues presented in the NSPS. Because of the close relationship between the NSPS and the Emission Guidelines, Advocacy strongly recommends that EPA consider the impacts on small entities operating existing facilities in its decisions on the NSPS and whether to revise the Emission Guidelines to conform to these revisions. EPA should pay particular attention to the comments already received from the SERs during the uncompleted SBREFA panel.

**Comment Response:**

On July 21, 2015 the EPA issued the final report of the Small Business Advocacy Review Panel on EPA's Planned Proposed Rules – Standards of Performance for Municipal Solid Waste

Landfills and Review of Emissions Guidelines for Municipal Solid Waste Landfills. This final report is located in docket number EPA-HQ-OAR-2003-0215 (Document ID EPA-HQ-OAR-2003-0215-0140).

In addition to finalizing the report from the Small Business Advocacy Review Panel, in the regulatory impact analysis for the supplemental proposal for the landfills NSPS the EPA assessed the potential impact of the proposal on small entities, including small businesses and small governmental jurisdictions. This screening assessment concluded that only 13 small entities were projected to be impacted by the proposal. In addition, the impact to those entities was not significant because only two entities were estimated to have impacts greater than one percent of sales, and only one of the two entities was estimated to have impacts greater than three percent of sales. These results were summarized in Table 7-8 of the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector. It should also be noted that the proposed options in the supplemental NSPS proposal and Emission Guidelines proposal are aligned, as the commenter notes has been the case historically.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 1

**Sort Order:** 301

**Comment Excerpt:**

Oklahoma is predominantly a rural state, consisting of many small, municipally owned and operated landfills. Of the 40 MSW landfills in Oklahoma, 15 (38%) are owned and operated by municipal or county governments or public authorities. Another six landfills are independently owned and operated. DEQ is concerned the impact of this proposed rule will be acutely felt by this segment of the regulated community in this state. Smaller and/or municipally owned landfills operate on tighter budgets, have less access to cash and may be limited in their ability to finance projects; therefore they are less able to shoulder the cost of installing a GCCS. Landfills in rural areas are less likely to be located near industrial consumers of gas or near infrastructure that would position them to take advantage of beneficial reuse projects using LFG to offset the cost of installation and create a return on the investment. Smaller landfills due to their lower and slower waste receipt rate and resultant lower and slower gas generation rate are less attractive to third-party investors with capital to fund LFG to energy projects thus putting them at further disadvantage for securing financing for GCCS projects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0080.1, excerpt number 32, under comment code 8e.

**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 181

**Comment Excerpt:**

Based on gas generation model results for closed landfills that report emissions to GHGRP, WM estimates the proposed change to reduce NMOC threshold from 50 Mg to 40 Mg will prolong the requirement to operate GCCS another five years, and impose significant costs on landfills at the end of life. EPA's EIA did not account for the economic impacts of lowering the NMOC threshold at older landfills, which include the cost to operate a GCCS, to purchase supplemental fuel to support the control device, and to monitor, record and report on operations for an extended period. EPA also did not account for the greenhouse gas emissions caused by the use of supplemental fuel (often propane) in the control devices. As noted previously, closed landfills do not generate revenue, and many are owned by municipalities that must pass these costs on to their communities.

**Comment Response:**

On August 27, 2015, the EPA issued a supplemental proposal for the landfills NSPS. The regulatory impact analysis accompanying the supplemental proposal included proposed requirements for a separate subcategory of landfills that closed “after 1987 but on or before the date of the proposal”, as well as a discussion of the potential secondary air impacts from the additional energy demand required to operate the gas capture and control system. For additional information on how these items are addressed in the final landfills NSPS, see the Regulatory Impact Analysis for the Final Revisions to the Emissions Guidelines for Existing Sources and the New Source Performance Standards in the Municipal Solid Waste Landfills Sector.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 55

**Comment Excerpt:**

In contrast to biological material in landfills, biological material that is composted emits nearly no methane because the conditions remain aerobic. Because trash separation with composting is a practicable and inexpensive alternative to landfills, it is far preferable to LFGTE programs whose net effects on methane emissions remain highly uncertain and are very likely negative, possibly extremely so. Unless EPA can demonstrate that LFGTE produces a clear net climate and environmental benefit – without creating a perverse incentive to reduce green waste separation and composting – we believe that LFGTE should be viewed with great skepticism and certainly should not be incentivized.

**Comment Response:**

Chapter 2, Section 2.7.2 of the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector acknowledges that food waste, yard debris, and other organic materials continue to be the largest component of municipal solid waste discarded. The section has a discussion on organic material management, including information on state and local initiatives and programs aimed at diverting organic wastes from landfills, as well as information on the benefits and barriers to diverting organic wastes from landfills. For discussion of organic material management in the final landfills NSPS, see the Regulatory Impact Analysis for the Final Revisions to the Emissions Guidelines for Existing Sources and the New Source Performance Standards in the Municipal Solid Waste Landfills Sector.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 13

**Comment Excerpt:**

Costs will be easily absorbed and should not deter aggressive control of landfill gas. In framing the proposed NSPS, EPA has sought to balance the urgency of controlling emissions against the potential cost of compliance to the waste industry. In this case, however, the proposed rule should pay less deference to the cost concern. Thanks to inefficiency in the way we currently manage wastes, most local governments and private landfills could absorb the costs of rigorous methane capture without suffering much (or any) negative economic impact. The key concept is waste reduction, and in particular, the potential for widespread adoption of ‘pay as you throw’ (PAYT) policies for pricing of waste disposal services.

As you are aware, the central concept of PAYT is that households and businesses shift from paying a flat disposal fee to a use fee tied to the actual amount of garbage thrown away. As of 2008, PAYT had been adopted by roughly one quarter of American jurisdictions, serving roughly 25% of the population, so the policy has a solid track record, but also plenty of room to grow.<sup>16</sup> PAYT’s record of waste reduction and diversion is strong, achieving at average 17% reduction in landfilled weight by 2008, and some providers have claimed much larger reductions in recent years.<sup>17</sup>

Research indicates that PAYT yields lower life cycle emissions than other configurations of materials management, including landfill disposal. Waste prevention remains the most effective strategy for lowering life cycle emissions.<sup>18</sup> Diversion and recycling of container glass has a significantly lower footprint than disposal and creation of new materials.<sup>19</sup> Diversion and compositing of organics will usually deliver greater reductions in greenhouse gas emissions than landfilling.<sup>20</sup> To beat other disposal options, landfills must deliver highly efficient energy generation with very few leaks.<sup>21</sup> Such conditions may be attainable in some jurisdictions under a strong EPA rule, but are unlikely to prevail widely. These life cycle comparisons argue for the benefits of PAYT; to the extent that strong landfill methane capture requirements raise the cost of disposal and drive consumers to reduce waste, these may also be secondary benefits of a strong landfill rule.

More to the point, PAYT offers a way for local governments and the waste industry to absorb the cost of controlling landfill gas without suffering a loss of profits. Here's how: the disposal agency shifts pricing to PAYT, setting the average household or business bill *after* anticipated waste reductions at somewhat less than the previous flat fee. The waste reduction from changes in household behavior is larger than that, creating a windfall that can be used in part by the local government to capture methane from an existing landfill, or (if the service is contracted with private industry) passed in part on to the industry to help with its costs. This is another reason for EPA to move expeditiously to adopt strong standards for existing landfills: so responsible entities can bundle the costs from both new and existing landfills into prices for ongoing service.

[Footnotes]

16. Lisa Skumatz, Pay as you throw in the US: Implementation, impacts, and experience, *Waste Management* 28 (2008) 2778–2785.

17. *Ibid.*, at 2782.

18. Julian Cleary, A life cycle assessment of residential waste management and prevention, *Int J Life Cycle Assess* (2014) 19:1607–1622.

19. Cherilyn Vossberg, et al, An energetic life cycle assessment of C&D waste and container glass recycling in Cape Town, South Africa, *Resources, Conservation and Recycling* 88 (2014) 39–49.

20. Alex Saer, et al, Life cycle assessment of a food waste composting system: environmental impact hotspots, *Journal of Cleaner Production* 52 (2013) 234–244; Hiroko Yoshida et al, Evaluation of organic waste diversion alternatives for greenhouse gas reduction, *Resources, Conservation and Recycling* 60 (2012) 1– 9.

21. Simone Manfredi, Environmental assessment of different management options for individual waste fractions by means of life-cycle assessment modelling, *Resources, Conservation and Recycling* 55 (2011) 995– 1004.

### **Comment Response:**

Chapter 2, Section 2.7.2 of the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector acknowledges that food waste, yard debris, and other organic materials continue to be the largest component of municipal solid waste discarded. The EPA does not have statutory authority to require specific waste reduction programs, but Section 2.7.2 does include a discussion on organic material management, including information on state and local initiatives and programs aimed at diverting organic wastes from landfills. Among the state and local initiatives cited are pricing programs, including the pay-as-you-throw format. For discussion of organic material management in the final landfills NSPS, see the Regulatory Impact Analysis for the Final Revisions to the Emissions Guidelines for Existing Sources and the New Source Performance Standards in the Municipal Solid Waste Landfills Sector.

**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 47

**Comment Excerpt:**

Almost all state agencies consider control device temperature deviations under the NSPS as NOVs, and numerous landfills have paid fines for this occurrence. The proposed change to the SSM language in the rule would result in an unlimited number of these NOVs and fines, a cost it would seem EPA has not considered in its cost analysis for this rulemaking, especially since repeated or chronic violations are often subject to escalating fines.

**Comment Response:**

Without information on the number of Notices of Violation associated with the SSM rule language change, it was not possible to estimate a potential number of NOVs and associated costs from control device temperature deviations in the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector.

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**Commenter Name:** Anonymous public comment

**Commenter Affiliation:**

**Document Control Number:** EPA-HQ-OAR-2014-0451-0193

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The statement in the preamble's Section XI.f that "the overall economic impact of the proposal should be minimal on the affected industries and their consumers" is unsupported by any data and does not agree with the basic laws of economics. According to the Regulatory Impact Analysis, the proposed regulations will cost each of 100 landfills about \$1 mm/yr in additional gross expenditures. I use gross rather than net costs because the cost benefits stated in the analysis are somewhat conditional and speculative. All the customers of each affected landfill will be billed an increased amount to pay for the additional operating cost imposed by the regulation. My employer's trash disposal costs will increase approximately \$4,000/yr assuming his landfill's operating costs increase 10% as a result of this regulation. In the interest of public transparency, I recommend you estimate the gross additional cost that affected consumers will be paying each month for this proposed regulation. I also recommend you estimate how many degrees of average global temperature reduction will be achieved by the regulation's increased disposal costs. Thank you for the opportunity to comment.

**Comment Response:**



Because of data and other information limitations, the EPA does have sufficient information to estimate either the incremental costs each potential landfill customer may pay or the potential average global temperature reduction as a result of the proposal.

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**Commenter Name:** Darin Schroeder, Associate Attorney

**Commenter Affiliation:** Clean Air Task Force (CATF)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0189

**Comment Excerpt Number:** 4

**Comment Excerpt:**

And, significantly, we agree that EG review and revision is appropriate now because “additional emission reductions can be achieved at a reasonable cost.”<sup>21</sup> Specifically, EPA has estimated that the proposed EG revisions would result in a roughly 5% additional direct reduction in emissions of methane and NMOC from existing landfills.<sup>22</sup> EPA’s estimated monetized benefits solely from the methane reductions would range between \$310 million and \$1.7 billion in 2015, depending on the discount rate.<sup>23</sup> This compares to an annualized net cost of less than \$47 million.<sup>24</sup> Importantly, the significant health benefits from direct NMOC reductions, as well as the indirect benefits from CO<sub>2</sub> reductions resulting from fossil-fuel combustion avoided through the use of landfill gas as fuel, are above and beyond the above-described monetary benefits resulting solely from direct methane reductions.

[Footnotes]

<sup>21</sup> 80 Fed. Reg. at 52105. *Cf. Michigan v. EPA*, 576 U.S. \_\_\_\_ (2015), where, in a different context, the Court found that EPA was required to consider cost when deciding whether to regulate power plant HAPs under section 112 of the Act.

<sup>22</sup> 80 Fed. Reg. at 52141-42.

<sup>23</sup> 80 Fed. Reg. at 52145. Applying the mean social cost of methane, and using a 3% discount rate, the methane reductions will amount to about \$660 million in 2025.

<sup>24</sup> 80 Fed. Reg. at 52142-43. EPA used a 7% discount rate for this estimate. Using a 3% discount rate, the cost drops to \$35 million. *See* EPA (2015), “Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and Supplemental Proposed New Source Performance Standards in the Municipal Solid Waste Landfills Sector,” EPA-452/R-15-008 (August 2015), at ES-3, 6-1 to 6-2.

**Comment Response:**

The EPA agrees that the estimated benefits of the supplemental proposal are greater than the estimated costs.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 9

### **Comment Excerpt:**

Capital Costs / Revenue. EPA likewise justifies its proposed alternative thresholds based, in part, on the percentage increase above baseline control costs that these thresholds would entail.<sup>40</sup> While this analysis provides some understanding of the costs of new requirements relative to existing requirements, it does not by itself indicate whether a particular control option has acceptable costs under section 111. EPA should augment it by considering control costs as a percentage of annual capital expenditures and revenue, as the agency has done in other recent rulemakings.<sup>41</sup> This analysis more closely aligns with the case law<sup>42</sup> and with past regulatory precedents which focus either on the costs of achieving emission reductions relative to the amount of reductions achieved, or impacts on the industry or the economy.

Analyzing the costs of the proposed NSPS and emission guidelines in the way we recommend underscores that control costs associated with options even more stringent than the one proposed by EPA are eminently reasonable. We compared EPA's estimated capital costs to comply with the proposed Emission Guidelines to: (1) the industry's estimated new annual capital expenditures in the absence of the proposed standards; and (2) the industry's estimated annual revenues, in order to compare the annualized costs as a percentage of the revenues generated by the industry sector. The analysis demonstrated that net annual costs represent approximately 1.2 percent of new annual expenditures<sup>43</sup> and well below 1 percent of annual revenue<sup>44</sup>—both of which are far lower than costs that courts have previously determined to be reasonable.<sup>45</sup>

[Footnote 40] *E.g.*, 80 FR at 52,122.

[Footnote 41] *See* Oil and Natural Gas Sector: Emission Standards for New and Modified Sources, 80 Fed. Reg. 56,593, 56,617 (to be codified at 40 C.F.R. Part 60) (using U.S. Census data to determine the percentage that capital costs incurred by facilities to comply with the proposed standards represented of capital expenditures, and the percentage that such capital costs represented of annual revenues).

[Footnote 42] *See Portland Cement Ass'n v. EPA*, 513 F.2d 506, 508 (D.C. Cir. 1975).

[Footnote 43] For the capital expenditure analysis, we used the new capital expenditures for 2012 for NAICS 5622 (Industry: Waste Treatment and Disposal) as reported in the U.S. Census data. EPA's estimated costs for complying with the proposed Emission Guidelines includes \$101 million to install and operate a GCCS and \$0.64 million to complete the corresponding testing and monitoring; these costs are offset by an estimated \$55.3 million in revenue from electricity sales. The net annualized cost of \$46.8 million is 1.2 percent of the total new capital expenditures.

[Footnote 44] For the total revenue analysis, we used the revenues for 2012 for NAICS 562212 (Industry: Solid Waste Landfill) as reported in the U.S. Census data. EPA's regulatory impact analysis for the proposed Emission Guidelines includes investor reported revenues for the waste management industry that are 10 times higher, at \$55 billion in 2011.

[Footnote 45] *See* 80 Fed. Reg. at 56,618 (noting increases in capital costs of approximately 15 and 12 percent that were upheld by courts).

### **Comment Response:**

Firms engaged in the collection and disposal of refuse in a landfill operation are classified under the North American Industry Classification System (NAICS) codes Solid Waste Landfill (562212) and Administration of Air and Water Resource and Solid Waste Management Programs (924110). Private companies that own landfills range in size from very small businesses to large businesses with billions of dollars in annual revenue. Public landfill owners include cities, counties/parishes, regional authorities, state governments, and the federal government. Economic Census data for NAICS 562212 represents only a subset of the industry, but similar data is not available for NAICS 924110. As a result, it is difficult to compile a complete snapshot of the industry using Census data. However, a screening analysis that compares costs to reported revenues was conducted for small entities, and Chapter 5, Section 5.2 provides some information about the distribution of the Emission Guidelines costs across the sector.

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**Commenter Name:** Kelly Dixon, Director

**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0195

**Comment Excerpt Number:** 9

**Sort Order:** 1100

**Comment Excerpt:**

EPA's lowering of the emission threshold from 50 Mg/yr to 34 Mg/yr will subject more small municipally and independently owned landfills to increased costs associated with continuous testing, monitoring, reporting, GCCS installation and operation, and extended post-closure periods and financial assurance. DEQ is concerned that EPA has not investigated all economic impacts associated with lowering the emission threshold to 34 Mg/yr.

**Comment Response:**

In the supplemental NSPS proposal and EG proposal, the EPA made efforts to minimize impacts on small and closed landfills. The EPA originally convened a panel to obtain advice and recommendations from small entity representatives potentially subject to this rule's requirements. The EPA carefully considered the small business representatives comments and opinions in developing the proposed and final rules. A copy of the "Summary of Small Entity Outreach, 2014" is included in Docket ID No. EPA-HQ-OAR-2003-0215 (Document ID EPA-HQ-OAR-2003-0215-0051). Further, in July 2015 the EPA issued the final report of the Small Business Advocacy Review Panel on EPA's Planned Proposed Rules – Standards of Performance for Municipal Solid Waste Landfills and Review of Emissions Guidelines for Municipal Solid Waste Landfills (Document ID EPA-HQ-OAR-2003-0215-0140).

In addition, the Emission Guidelines proposal included a separate subcategory for landfills that closed after 1987 but on or before the date of this Emission Guidelines proposal. These landfills would be subject to a 50 Mg/yr NMOC emission rate threshold, consistent with the NMOC thresholds in Subparts Cc and WWW of Part 60. These landfills will also be exempt from initial reporting requirements, provided that the landfill already met these requirements under Subparts Cc or WWW of Part 60.

For additional information on how small and closed landfills are addressed in the final landfills NSPS, see the Regulatory Impact Analysis for the Final Revisions to the Emissions Guidelines for Existing Sources and the New Source Performance Standards in the Municipal Solid Waste Landfills Sector.

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**Commenter Name:** Anonymous public comment  
**Commenter Affiliation:** Private Citizen  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0153  
**Comment Excerpt Number:** 2  
**Sort Order:** 1101

**Comment Excerpt:**

I have been a small business owner for 25 years, and believe the pendulum is now swinging too far on EPA regulations. Certainly we all want clean air/water/land and the EPA has done a fine job of assisting with that goal using the existing regulations. These proposed increased regulations, however, are excessive and counterproductive to the best interests of our country. They will increase the financial burden on all consumers and small businesses to cover the cost of compliance, without a meaningful increase in public health and welfare.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0195, excerpt number 9, under comment code 8e.

## 8.5 Emission Impacts

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader  
**Commenter Affiliation:** Sierra Club, et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0178  
**Comment Excerpt Number:** 16

**Comment Excerpt:**

*In fact, the actual methane reductions will be de minimis.*

However, an analysis of the underlying considerations shows that any gains from the proposed change in the threshold emissions test will not even be minor. In fact, they would be *de minimis*. In light of the existential magnitude of the climate threat, EPA's decision to essentially do nothing, when so much is possible, is a very wrong thing to have done.

*In aggregate, 2.5 MMT and smaller landfills emit such a small fraction of the methane from landfills that they are irrelevant.* Today huge megafills dominate the landscape, and most landfill gas is generated at these massive sites that are 10 and many more times larger than 2.5 million metric tons, and where either the 50 or 34 MT threshold is exceeded inside the first year.

We could not find a data base of all landfills with their estimated annual emissions in the rule making docket file squarely on point. But, suggestive, the largest data set in the file of 1,837

landfills, which includes almost all of the small landfills, shows 99.9% of the tons of reported design capacity were at the 12% of the sites larger than 2.5 million metric tons (2.75 million short tons).

What remains at the small sites that might be picked up by the switch from 50 to 34 metric tons of NMOC, if anything, is only of academic interest largely irrelevant to global methane loadings,<sup>7</sup> as shown in the following TABLE.



[Footnote 7] Landfill Dataset Memo, showing 21,147,963,769 tons of design capacity in 1,621 landfills above 2.5 million metric tons (2.75 million tons), and 21,173,824 tons in 216 landfills below the size threshold in the combined set of 1,837 landfills. There did not appear to be a complete data set that included both small landfills and all annual gas emissions (or annual deposits).

**Comment Response:**

The dataset for the final rule is based predominantly on the latest GHGRP Subpart HH data available at the time of the analysis. Based on the thresholds for reporting to the GHGRP, the EPA believes the dataset covers the vast majority of large landfills in the United States and U.S. Territories. The final rule datasets are now based on 1,988 landfills accepting waste since 1987. Of these, 1,014 existing landfills and 128 new or modified landfills have an estimated design capacity of at least 2.5 million megagrams.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 3

**Comment Excerpt:**

One part of the current landfill air rule<sup>1</sup> applies two criteria to the threshold question of which MSW landfills are required to install active gas collection and control systems (GCCS):

1. A landfill design capacity of more than 2.5 million metric tons (MMT) or 2.5 million cubic meters (size threshold) and
2. More than 50 metric tons of nonmethanic organic compounds (NMOC) per year (emissions threshold).<sup>2</sup>

The proposed rule would lower the second of the two, the emissions threshold, from 50 to 34 metric tons NMOC per year<sup>3</sup>. EPA claims that in 2025 this will reduce methane emissions from existing landfills of a projected 9,035,000 metric tons by 436,000 metric tons, or by 4.8%, and from new landfills, or expansions of existing landfills, a reduction in that year from 1,934,000 metric tons methane by 5,400 metric tons, or by 2.8%.<sup>4</sup> Before reaching the crux of what should have been focus on this proceeding – an organics landfill ban – these claimed benefits are on their face, even if correct, minor but, in fact, they are, on examination, trivial.

The benchmark for evaluating the adequacy of EPA’s proposal to comply with the White House methane strategy is how large the reductions are proportionately, and how do the percentage gains stack up against the practical alternatives that the Agency rejected. On its own terms, even if everything EPA assumed were true, the underlying Regulatory Impact Analysis (RIS) only claims a methane reduction from baseline landfill emissions of 4% after 5 years and 7.6% after 10 years.<sup>5</sup> Even if it is true, that is an exceedingly modest claim completely incommensurate with the dimensions of the climate crisis. The evaluation of the EPA’s response gets substantially worse when that very small reduction is compared to what could have been done.

Footnotes:

1 40 CFR Part 60 Subpart WWW.

2 40 CFR §60.752. Note that the emissions threshold is not based on a field measurement. Rather, it is a calculation from a flawed model based on questionable assumptions, which raises questions at the outset about whether the emphasis that the rule places on it can be supported.

3 EPA, Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills– Notice of Proposed Rule, Docket EPA-HQ-OAR-2014-0451, published in 80 FED. REG. 166 (August 27, 2015) , at pp 52162-52168 (Notice), at PDF p. 15.

4 EPA, Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and Supplemental Proposed New Source Performance Standards in the MSW Landfills Sector (EPA-452/R-15-008, August 2015) (RIS), at PDF pp. 82 and 150.

5 RIS, at pp. 82 and 150

#### **Comment Response:**

As discussed in the Preamble for the final NSPS, section III.C, the EPA has reviewed the basis for BSER at MSW landfills and finalized an emission threshold of 34 Mg/yr. The rationale for not pursuing mandating organics diversion is discussed in comment code EG5.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 5

**Sort Order:** 300

#### **Comment Excerpt:**

##### **EPA Understates Landfill Disposal Volume by As Much As a Factor of Two**

EPA’s estimates of landfill emissions, methane as well as NMOCs (non-methane organic compounds), are a function of disposal volume. *See generally* 80 Fed. Reg. at 52116-119, 79 Fed. Reg. at 41779. EPA’s estimates understate landfill disposal volume in the United States, and the omitted volume is substantial – a factor of two. This is demonstrated by a number of recent scientific (and peer-reviewed) analyses.

The most recent example was published last month by researchers at Yale University and the University of Florida, *Estimates of Solid Waste Disposal Rates and Reduction Targets for Landfill Gas Emissions, Nature Climate Change*, DOI: 10.1038/NCLIMATE2804, Sept. 21, 2015, Jon T. Powell, et al., <http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate-2804.html> (copy on file with author) (hereafter “*Nature Climate Change*”). This EPA-funded study determined that the total quantity of MSW disposed in the U.S. in 2012 was 262,000,000 tons, which was 115% larger than the 122,000,000 tons in EPA’s estimate. The authors explain that the error in EPA’s estimate results from the materials flow method the Agency employs, which causes “significant under-prediction of waste disposal quantities.” *Id.* In contrast, *Nature Climate Change* employs a facility-level method and various embedded quality assurance checks which the authors believe makes their estimate the most accurate available.

Other studies reach the same conclusion. For example, research by Columbia University’s Earth Engineering Institute indicates that approximately 389,000,000 tons of MSW were generated in the U.S. in 2011. *See Generation and Disposition of Municipal Solid Waste (MSW) in the United States – A National Survey*, p. 19, [http://www.seas.columbia.edu/earth/wtert/sofos/Dolly\\_Shin\\_Thesis.pdf](http://www.seas.columbia.edu/earth/wtert/sofos/Dolly_Shin_Thesis.pdf) (2014); *see also* <http://www.biocycle.net/2010/10/26/the-state-of-garbage-in-america-4> (“The overall results of the 2010 State of Garbage in America survey (2008 data) are: An estimated 389.5 million tons of MSW were generated, most of which (270 million tons) were sent to landfills.”). Similarly, a recent (July 2015) analysis published by the German Federal Environment Agency of MSW management in the United States and other OECD nations (as well as certain non-OECD countries) analyzed Columbia University’s research on waste generation in the U.S. *See The Climate Change Mitigation Potential of the Waste Sector*, [http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/texte\\_56\\_2015\\_the\\_climate\\_change\\_mitigation\\_potential\\_of\\_the\\_waste\\_sector.pdf](http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/texte_56_2015_the_climate_change_mitigation_potential_of_the_waste_sector.pdf). (hereafter “*Climate Change Mitigation Potential*”). The authors note that most of the additional waste volume – 64 percent – for which EPA does not account is disposed in landfills. *See id.* at 107. In addition, the German Environment Agency’s report notes that in absolute terms Columbia University’s data showed higher volumes than EPA in all areas – recycling, composting, WTE and landfilling. On the other hand, in terms of their relative shares, recycling, composting and WTE were each lower, while landfilling was significantly higher. *See id.* at 107 and Figure 27. In addition, landfill methane emissions are approximately twice as large as EPA estimated. *Id.* at 23, 107.<sup>3</sup>

In short, the Agency has underestimated the quantity of MSW disposed in landfills and, as result, has significantly understated landfill methane emissions. The consequence is not only to understate the dimensions of the problem posed by landfill methane, but also to understate the benefits and cost-effectiveness of additional environmental controls to reduce landfill methane.

[Footnote 3] EPA’s underestimate of landfill disposal volume is based on the Agency’s estimate of average per capita daily waste generation. *See Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2012*, EPA-530-F-14-001 (February 2014) [http://www3.epa.gov/epawaste/nonhaz/municipal/pubs/2012\\_msw\\_fs.pdf](http://www3.epa.gov/epawaste/nonhaz/municipal/pubs/2012_msw_fs.pdf) (scroll to pp. 9-10, Tables 3 and 4). The waste generation rates in Coalition members’ communities confirm the higher waste generation figures of the independent (and in one case EPA-funded) research discussed above. For example, one of the Coalition members serves 1.4 million residents and processes approximately 4500 tons (or 9,000,000 pounds) of post-recycled waste each day. That

is approximately 5.8 pounds per person, or about twice the per capita figure on which EPA bases its landfill disposal estimates.

**Comment Response:**

Neither the proposed nor final rule analyses were based on the waste disposal quantities cited by the commenter (*Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2012*, EPA-530-F-14-001 (February 2014)). Instead, the EPA derived waste disposal quantities using data from the GHGRP dataset and other data sources. The final rule dataset includes 1,988 landfills and an estimated 403 million tons of waste disposed in 2015. The EPA disagrees that it has significantly underestimated the waste disposal basis used in the final rule impact estimates.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 6

**Sort Order:** 301

**Comment Excerpt:**

**EPA Should Correct and Revise Upward its Underestimation of the Amount of MSW Being Landfilled**

EPA appears to be greatly underestimating the amount of MSW being landfilled. Recently, a rigorous study<sup>25</sup> concluded that 262 million tons of MSW were landfilled in 2012, rather than 122 million tons estimated to be landfilled by EPA.<sup>26</sup> The authors of “The Climate Change Mitigation Potential of the Waste Sector,”<sup>27</sup> also concluded that “USEPA’s data collection methods . . . in all probability do not produce an accurate picture of actual waste streams.”<sup>28</sup> Both of these studies are in line with the regular surveys of actual waste amounts compiled by Columbia’s Earth Engineering Center.<sup>29</sup> EPA needs to correct its landfilling estimates as a realistic knowledge of waste amounts, streams, and characteristics is essential for appropriate regulation.

US and European Waste Management Models

EPA’s underestimation of how much MSW is being landfilled gives it an incorrect view of the problem and leads to half measures. By way of explanation, see Figure 1 that illustrates the practice of the EU27 and the EU8, the 8 countries with the most advanced waste management processes in the EU.

[See submittal for Figures 1 and 2 which reference US, European, and Palm Beach County solid waste practice models]

Moreover, WTE do not interfere with recycling as is demonstrated by the figures below.

[See submittal for referenced figures showing MSW in the US and US MSW Generation Before and After Compost and Recycle]

[See submittal for EU-27 waste treatment per capita]



[FOOTNOTES]

(25) *Estimates of Solid Waste Disposal* analyzed 1,200 landfills and suggested that EPA may be underestimating the amount of MSW being landfilled, in part, because small landfills do not have to report how much waste they refuse to accept.

(26) Oxford University atmospheric physicist Raymond Pierrehumbert said the study underscores that LFG should be use more widely as an energy source and people should throw less in the trash, especially organic matter.

(27) Climate Change Mitigation Potential at 95–98. This study also notes the US trend towards dumping of waste in “wet landfills” which sharply increases methane emissions. *Id.* at 95 quoting presentation by Susan Thornoloe at a methodology workshop on June 18, 2012 in Berlin, Germany.

(28) *Id.* at 119.

(29) *Id.* at 88. Interestingly, West Palm Beach County has 1.4 million residents and has a facility that processes 9 million pounds of trash per day at 90% capacity factor. This equates to 5.8 pounds of trash per person per day to the WTE facility after curbside recycling. This is more MSW per person than EPA estimates and does not include the recycle of material through curbside recycling program. If one third of the materials are recycled (as predicted by EPA), then this amount of waste for West Palm Beach County is about two times EPA’s average estimates and consistent with the recent studies.

**Comment Response:**

See response to EPA-HQ-OAR-2014-0451-0184, excerpt 5 comment code 8f for an answer on underestimating the volume of MSW disposed at landfills.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 4

**Sort Order:** 302

**Comment Excerpt:**

**The Proposed Emission Guidelines Significantly Understate Methane Emissions from Landfills and Their Environmental Impact**

A key aspect of the proposed Emission Guidelines is EPA’s incorrect assumption substantially understating the quantities of methane being emitted from approximately 1,900 landfills in the United States. *See* 79 Fed. Reg. at 41778/1 (estimating number of U.S. landfills). The Agency’s error results from several factors including understating the volume of MSW that is disposed at the nation’s landfills as well as the potency (i.e., global warming potential or “GWP”) of methane. Aside from masking the adverse environmental impact of methane, these errors also

understate the benefits and cost-effectiveness of additional environmental controls to address landfill methane.

**Comment Response:**

See response to EPA-HQ-OAR-2014-0451-0184, excerpt 5 comment code 8f for an answer on underestimating the volume of MSW disposed at landfills. See response to comment code 8k for a response on the global warming potential for methane used in the final analysis.

## 8.6 Benefits – General

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Although EPA does claim that the proposed revisions would further reduce methane emissions, EPA cannot claim that a reduction in methane emissions will provide health benefits, and the methane-based climate benefits EPA claims are speculative at best. In particular, EPA's benefit calculations rely exclusively on a brand-new "social cost of methane" metric that relies on the same methodology as the "social cost of carbon"—a highly controversial analysis that actually confirms reducing U.S. emissions will only provide insignificant climate benefits.

**Comment Response:**

EPA disagrees with this comment. Regarding the climate-related benefits from methane reductions: The EPA also disagrees that the SC-CH<sub>4</sub> estimates are speculative. As discussed in the Regulatory Impact Analysis, Section 4, EPA determined that the Marten et al. estimates are scientifically defensible for valuing methane impacts in regulatory analyses and improve upon prior treatment of methane impacts in regulatory analysis. See the EPA response to DCN EPA-HQ-OAR-2003-0215-0202, excerpt 9, for discussion about the extensive reviews conducted before the estimates were applied to the RIA and for discussion about the EPA's conclusions regarding the validity and rigor of the Marten et al (2014) SC-CH<sub>4</sub> estimates as well as the interagency working group's SC-CO<sub>2</sub> estimates. See EPA's response to comment EPA-HQ-OAR-2003-0215-0202, excerpt 79, for detailed response to the commenter's assertion about the significance of climate benefits.

EPA also disagrees with the statement that a reduction in methane emissions would not provide health benefits. The Regulatory Impact Analysis provides a clear discussion about methane impacts, including the health-related impacts from methane as an ozone precursor. While the effects of methane-derived ozone on health and agriculture are not yet included in any of the

integrated assessment models used to estimate the social cost of methane, EPA acknowledges that these effects exist, and has sought comment on ways to account for these effects in RIAs by using separate analyses. However, there remain unresolved questions regarding several methodological choices necessary for an analysis of the impacts of methane-derived ozone, and therefore the EPA is not including a quantitative analysis in this rule at this time. The RIA for the final rule continues to present a qualitative discussion about these impacts. See also EPA's response to comment DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 7, under comment code 8i, for additional discussion about human health impacts related to reductions in methane concentrations.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 5

**Comment Excerpt:**

Even if the Supplemental Proposal will reduce methane emissions, the benefits of those reductions are speculative and, at best, insignificant.

Because EPA's supplemental proposal will not achieve any meaningful NMOC emission reductions, the only justification EPA can provide for its supplemental proposal is to claim that a relatively small reduction in methane emissions may provide benefits that justify the increase in stringency. By focusing on those methane reductions, EPA's RIA gives the impression that the benefits of those methane reductions are greater than their cost. The benefits, however, are illusory, while the costs are real.

**Comment Response:**

EPA disagrees with this comment and has responded to these points elsewhere in the Response to Comments document. Specifically, see EPA's response to comment EPA-HQ-OAR-2003-0215-0083, excerpt number 1 under [comment code 8j] regarding the statement that it will not achieve meaningful NMOC emission reductions. See EPA's response to comment EPA-HQ-OAR-2003-0215-0202, excerpt number 2, under comment code 8i, regarding comment that the methane benefits are speculative and insignificant.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 7

**Comment Excerpt:**

Methane Reductions Will Not Produce Any Human Health Benefits.

EPA notes that anthropogenic methane emissions may present a potential human health concern by contributing to "global ozone formation." RIA at 1-3. However, EPA does not claim that the

additional methane reductions associated with its supplemental proposal will have any impact on global concentrations of methane or on ambient ozone concentrations in the United States. That result is unsurprising, given that the amount of methane reductions that EPA attributes to the supplemental proposal—7,000 Mg/yr is but a tiny fraction of global anthropogenic methane emissions. Thus, EPA admits as it must that "with the data available, we are not able to provide health benefit estimates." *Id.* at 52103. Since EPA cannot show that the supplemental proposal will address the only methane-related health risk identified by EPA, the supplemental proposal cannot be justified on that basis.

**Comment Response:**

The commenter asserts that "EPA does not claim that the additional methane reductions associated with its supplemental proposal will have any impact on global concentrations of methane or on ambient ozone concentrations". This is incorrect. EPA did not project the exact change in concentrations of methane or ozone, but the science is clear that a reduction in methane emissions will lead to a reduction in methane concentrations and therefore ozone concentrations and therefore human health impacts. These links are demonstrated in citations provided by the EPA such as the *Integrated Science Assessment for Ozone and Related Photochemical Oxidants* (<http://www.epa.gov/isa>), the IPCC 5<sup>th</sup> Assessment Report ([www.ipcc.ch](http://www.ipcc.ch)), and Sarofim et al. 2015 (<http://link.springer.com/article/10.1007%2Fs10640-015-9937-6>).

Note that the statement, "with the data available, we are not able to provide health benefit estimates", refers specifically to changes in the HAP, ozone, and PM2.5 due to reductions in non-methane emissions. The EPA did not provide health benefits estimates due to methane-derived ozone either, but health benefits due to reductions in climate change resulting from reductions in methane emissions are embedded within the SC-CH4.

See also EPA's response to comment EPA-HQ-OAR-2003-0215-0202, excerpt number 2, under comment code 8i, for discussion about EPA's qualitative treatment of the human health impacts related to methane emissions in the RIA.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 8

**Comment Excerpt:**

The Supplemental Proposal will not affect the climate.

Lacking any basis for claiming its supplemental proposal will provide health benefits, EPA's benefit calculation focuses exclusively on the assumption that the expected methane reductions will help address climate change. To estimate those climate benefits, EPA relied solely on a brand-new estimate of the "social cost of methane," described as "a metric that estimates the monetary value of impacts associated with marginal changes in methane emissions in a given year." *Id.* at 52164. That new metric comes from a single source—a 2014 research paper by "Marten et al." containing the first-ever peer-reviewed attempt to quantify a social cost of

methane. *Id.* at 52165 (citing Marten, A.L., E.A. Kopits, C.W. Griffiths, S.C. Newbold & A. Wolverton, *Incremental CH<sub>4</sub> and N<sub>2</sub>O mitigation benefits consistent with the U.S. Government's SC-CO<sub>2</sub> estimates* (2014)). The paper concludes that each ton of methane results in a detriment to human society of somewhere within the wide range between \$430 and \$7,200, depending on the year and interest rate employed. Therefore, EPA's benefits calculations assume that, for every ton of methane emissions avoided in 2025 (the year EPA assumes emission reductions will occur), human society will benefit by between \$700 and \$4000 per ton. *Id.*

Even at those high dollar-per-ton values, EPA's calculations confirm that the climate benefits of its supplemental proposal would still be very low. According to the RIA, the difference in calculated climate benefits between the 2014 proposal and the 2015 supplemental proposal is somewhere between \$4-14 million, given that the supplemental proposal will only further reduce methane emissions by 7,000 Mg/yr. RIA at 7-10, Table 7-6. EPA's preamble cites to a benefit calculation of \$36-210 million, 80 Fed. Reg. at 52165, but that range is based on the less-relevant comparison of the supplemental proposal to the current rule, which hides the fact that most of that benefit calculation is attributable EPA's 2014 proposal, not its supplemental proposal. The more appropriate comparison of the supplemental proposal to the 2014 proposal confirms that the incremental benefits are small, even at face value.

#### **Comment Response:**

Regarding the commenter's statement that there are not health benefits associated with the rulemaking, see:

- DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 2, under comment code 8i, which discusses the qualitative treatment in the RIA of health impacts associated with methane;
- DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 7, under comment code 8i, which discusses the link between methane emissions and human health impacts; and
- DCN EPA-HQ-OAR-2003-0215-0083, excerpt number 1, under comment code 8j and EPA-HQ-OAR-2003-0215-0189, excerpt number 3, under comment code 8j for discussion about the human health impacts associated with non-methane emissions.

Regarding the comment on climate benefits: See EPA response to DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 9, under comment code 8l for discussion about the extensive reviews conducted before the estimates were applied to the RIA and for discussion about EPA's conclusions regarding the validity and rigor of the Marten et al (2014) SC-CH<sub>4</sub> estimates as well as the interagency working group's SC-CO<sub>2</sub> estimates.

Regarding the range of benefits incorrectly cited by the commenter and the baseline used to quantify the benefits expected from the 2014 proposal and the supplemental proposal, see response to comment DCN EPA-HQ-OAR-2003-0215-0196, excerpt number 2, under comment code 8l.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 4

## Comment Excerpt:

### **EPA's Discussion of its Estimate of Benefits Should Include Discussion of the Benefits of WTE**

EPA estimates that electricity generated from LFG collection and combustion in a boiler, engine, or turbine will generate \$55.3 million. WTE plants generate nine times more electricity than is generated through combustion of LFG collected at landfills even if the LFG collection and combustion system is highly efficient. Using EPA's estimate of electricity revenues in 2025 above, if WTE rather than a LFG collection and combustion system were used, electricity revenue would be \$500 million.

There are additional revenue streams possible from WTE that cannot be achieved through LFG collection and combustion systems; these are metals and minerals recovery and recycling and thermal (heat and/or steam) sales. Enhanced recovery of metals through WTE achieves almost two times more metal recovery than is achieved in current curbside recovery programs. Recycled metals reduce greenhouse gas emissions by reducing energy and limestone used in making steel<sup>15</sup> and energy used in making aluminum.<sup>16</sup>

Using a global warming potential of 25, the U.S. produced 630 million metric tons (MMT) CO<sub>2</sub>e of methane in 2013.<sup>17</sup> Of the 630 MMT, 18% of US methane emissions came from landfills or approximately 4.5 MMT. If a global warming potential of 85 is used, then US landfill methane emissions were 385 MMT CO<sub>2</sub>e, all of which could have been eliminated through diversion to WTE plants.

This number—385 MMT—would double if one took into account EPA's significant underestimation of the total amount of MSW landfilled. In 2012, the amount of MSW landfilled was 2.5 times more than EPA estimated.<sup>18</sup>

The UN calculated that waste sector emissions could be reduced by 80% through significant diversion of waste currently being landfilled to WTE.<sup>19</sup> The Administration's Strategy to Reduce Methane Emissions stated a goal of reducing methane emissions by 90 million metric tons CO<sub>2</sub>e.<sup>20</sup> That is almost the same reduction the US would achieve (87 MMT CO<sub>2</sub>e) if the US were to use WTE at a rate comparable to the EU (24% versus 7.6%).

#### [FOOTNOTES]

(15) Steel recycle uses 56% less energy than virgin steel.

(16) Recycled aluminum uses 92% less energy than aluminum produced from virgin ore.

(17) In 2011 and 2012, US methane emissions were just below 600 million metric tons/year but in 2013, there was a sharp increase to about 630 million metric tons.<http://www3.epa.gov/climatechange/ghgemissions/gases/ch4.html>.

(18) "Estimates of Solid Waste Disposal Rates and Reduction Targets for Landfill Gas Emissions," Nature Climate Change (September 21, 2015) (*Estimates of Solid Waste Disposal*).

(19) *Bridging the Emissions Gap*, at 37–38 (November 2011) available at [http://www.unep.org/pdf/UNEP\\_bridging\\_gap.pdf](http://www.unep.org/pdf/UNEP_bridging_gap.pdf).

(20) Strategy to Reduce Methane Emissions available at [https://www.whitehouse.gov/sites/default/files/strategy\\_to\\_reduce\\_methane\\_emissions\\_2014-03-28\\_final.pdf](https://www.whitehouse.gov/sites/default/files/strategy_to_reduce_methane_emissions_2014-03-28_final.pdf).

**Comment Response:**

Chapter 2, Section 2.7.1 of the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector acknowledges that while landfills are one method of waste disposal, alternative strategies for the treatment of MSW do exist, including the combustion of MSW in waste-to-energy facilities. The EPA does not have statutory authority to require specific waste reduction programs, but MSW landfill operators have the option of diverting MSW to waste-to-energy facilities.

See also response to DCN EPA-HQ-OAR-2014-0451-0157, excerpt number 9, under comment code EG11 regarding encouraging WTE under this rule.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 76

**Comment Excerpt:**

The asserted benefits of methane are speculative at best.

As required by executive order, EPA calculated the costs and benefits of its proposed revisions to the NSPS and EG, presenting the details of that analysis in its Regulatory Impact Analysis (RIA). EPA's estimates of the costs and benefits give the impression that the benefits of its proposed rules are greater than its costs. The benefits, however, are illusory, while the costs are real.

EPA admits that "with the data available, we are not able to provide health benefit estimates." *Id.* at 52103. Instead, EPA's benefit calculation is based entirely on climate change. Almost all of the benefits estimate is grounded in the expectation of "climate co-benefits due to reductions of the methane component of LFG." 80 Fed. Reg. at 52106. The only other benefit that EPA was able to quantify was a relatively minor reduction in CO<sub>2</sub> emissions attributable to the use of landfill gas to produce electricity in lieu of fossil fuels. RIA at 4-1. However, the benefit associated with the expected reduction in CO<sub>2</sub> emissions represents less than 2 percent of the total. Thus, the vast majority of the benefits that EPA claims that its rules will achieve are related to asserted climate change benefits associated with reductions in methane emissions.

To estimate these expected methane reduction "climate co-benefits," EPA relied solely on a brand-new estimate of the "social cost of methane (SC-CH<sub>4</sub>)," which EPA described as "a metric that estimates the monetary value of impacts associated with marginal changes in methane emissions in a given year." *Id.* at 52143. That metric comes from a single source—a 2014 research paper by "Marten et al." containing the first-ever peer-reviewed attempt to quantify a social cost of methane. *Id.* at 52144. The paper concludes that each ton of methane emissions results in a detriment to human society of somewhere within the wide range between \$430 and

\$7,200. Therefore, EPA's benefits calculations assume that, for every ton of methane emissions avoided in 2025 (the year EPA assumes emission reductions will occur), human society will benefit by between \$700 and \$4,000 per ton.

**Comment Response:**

Regarding the commenter's statement that there are not health benefits associated with the rulemaking, see:

- DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 2, under comment code 8i which discusses the qualitative treatment in the RIA of health impacts associated with methane;
- DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 7, under comment code 8i which discusses the link between methane emissions and human health impacts; and
- DCN EPA-HQ-OAR-2003-0215-0083, excerpt number 1, under comment code 8j and EPA-HQ-OAR-2003-0215-0189, excerpt number 3, under comment code 8j for discussion about the human health impacts associated with non-methane emissions.

Regarding the comment on climate benefits: See EPA response to DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 9, under comment code 8l for discussion about the extensive reviews conducted before the estimates were applied to the RIA and for discussion about EPA's conclusions regarding the validity and rigor of the Marten et al (2014) SC-CH<sub>4</sub> estimates as well as the interagency working group's SC-CO<sub>2</sub> estimates.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 8

**Comment Excerpt:**

Marginal carbon abatement costs for additional recycling, composting and energy recovery options are well below the 2020 social cost of carbon central value of \$40 / ton CO<sub>2</sub>e.<sup>32</sup> For example, energy-from-Waste (EfW) can achieve GHG reductions of 70 million tons of carbon dioxide equivalents (CO<sub>2</sub>e) per year while allowing for national recycling rates of 65% or greater, with a GHG abatement cost of approximately \$9 per ton CO<sub>2</sub>e (2005\$). [See attachment "Energy-from-Waste (EfW) GHG Abatement Cost" to DCN EPA-HQ-OAR-2014-0451-0175.]. The abatement cost is comparable to that of on-shore wind, and well below the cost of many other GHG abatement technologies including solar PV, biomass co-firing, and coal electrical generation with carbon capture & storage (CCS) as reported in the latest McKinsey GHG abatement cost report prepared for the United States. Most importantly, \$9 / ton CO<sub>2</sub>e, is far more cost effective than the Clean Power Plan's weighted average cost estimate of \$30 / ton CO<sub>2</sub>e.<sup>33</sup>

[Footnote 32] See §V.A.4.d. of EPA (2015) *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units*, pre-publication version.

[Footnote 33] *Ibid.*



### **Comment Response:**

Chapter 2, Section 2.7 of the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector acknowledges that while landfills are one method of waste disposal, alternative strategies for the treatment of MSW do exist, including the combustion of MSW in waste-to-energy facilities as well as organics management. The EPA does not have statutory authority to require specific waste reduction programs, but MSW landfill operators have the option of diverting MSW to waste-to-energy facilities.

See also response to DCN EPA-HQ-OAR-2014-0451-0157, excerpt number 9, under comment code EG11 regarding encouraging WTE under this rule.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 31

### **Comment Excerpt:**

#### **The SCC is an important policy tool.**

The SCC estimates the economic cost of climate impacts—specifically the additional economic harm caused by one additional metric ton of carbon dioxide (CO<sub>2</sub>) emissions. SCC calculations are important for evaluating the costs of activities that produce greenhouse gas emissions and contribute to climate change, such as burning fossil fuels to produce energy. The SCC is also important for evaluating the benefits of policies that would reduce the amount of those emissions going into the atmosphere. For example, in order to properly evaluate standards that reduce the use of carbon-intensive energy, improve energy efficiency, or lead to the capture and beneficial use of greenhouse gases—like the proposed rule—it is important to understand the benefits they will provide, including the benefit of reducing carbon pollution and the harm it causes.

As with all economic impact analyses, the exercise can only provide a partial accounting of the costs of climate change (those most easily monetized) and inevitably involves incorporating elements of uncertainty. However, accounting for the economic harms caused by climate change is a critical component of sound benefit-cost analyses of regulations that directly or indirectly limit greenhouse gases. This endeavor is important because benefit-cost analysis is a central tool of regulatory policy in the United States, first institutionalized in a 1981 executive order by President Ronald Reagan. The executive order currently in effect provides that agencies:

- "[P]ropose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); . . .
- "[S]elect, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); . . .

- "In applying these principles, each agency is directed to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. Where appropriate and permitted by law, each agency may consider (and discuss qualitatively) values that are difficult or impossible to quantify, including equity, human dignity, fairness, and distributive impacts."<sup>1</sup>

Benefit-cost analysis has long been a staple of agency rulemakings, usually conducted as part of the regulatory impact analysis associated with proposed rules. Even though the analysis is generally not able to encompass all of the effects of a policy, and it is challenging to translate impacts on health, mortality, and welfare into dollar values, benefit-cost analysis is an important economic tool to help inform decision-makers about the societal benefits of different policy choices. Of course, benefit-cost analysis cannot be the sole criterion for making regulatory decisions, especially in cases where there are overriding public health, equity, or safety imperatives.<sup>2</sup> And in a few instances, legal protections prohibit the consideration of benefit-cost analysis.

Without an SCC estimate, regulators would by default be using a value of zero for the benefits of reducing carbon pollution, implying that carbon pollution has no costs. That, sadly, is not the case, as evidenced by the large body of research outlining the sobering health, environmental, and economic impacts of rising temperatures, extreme weather, intensifying smog, and other climate impacts. If anything, most evidence points to the fact that current numbers significantly underestimate the SCC. It would be arbitrary for a federal agency to weigh the societal benefits and costs of a rule with significant carbon pollution effects but to assign no value at all to the considerable benefits of reducing carbon pollution.<sup>3</sup>

EPA should continue to use the latest IWG estimates of the SCC, and should start using the Social Cost of Methane estimates. The current estimates are biased downwards: more can and should be done to improve the estimates and to ensure, through regular updates, that they reflect the latest science and economics. However, the necessary process of improving the ability of the SCC and Social Cost of Methane to fully reflect the costs of climate impacts to society cannot hold up agency rulemaking efforts. The values provide an important, if conservative, estimate of the costs of climate change and the benefits of reducing carbon pollution. To ignore these costs would be detrimental to human health and well-being and contrary to law and Presidential directives to agencies to evaluate the cost of pollution to society when considering standards to abate that pollution. In the context of agency rulemakings, the SCC and Social Cost of Methane provide the best available means to factor those costs into benefit-cost analyses.

#### Footnotes

1 Exec. Order No. 13,563 §§ 1(b)-(c), 76 Fed. Reg. 3,821 (Jan. 18, 2011); *see also infra* on how this and subsequent orders, including Exec. Order No. 13,609, inform the use of a global SCC value.

2 President Clinton issued Executive Order 12,866 in 1993, establishing new guidance for benefit-cost analysis and explicitly directing agencies to consider, in addition to costs and benefits for which quantitative estimates are possible, "qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider." Exec. Order No. 12,866 § 1(a), 58 Fed. Reg. 51,735 (Sept. 30, 1993).

3 Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1199 (9th Cir. 2008) (holding unlawful NHTSA's fuel economy standards for passenger vehicles when NHTSA ascribed a value of "zero" to the benefits of mitigating carbon dioxide, reasoning that "NHTSA assigned no value to *the most significant benefit* of more stringent CAFE standards: reduction in carbon emissions" (emphasis added)).

**Comment Response:**

EPA acknowledges this comment and notes that it has used the Marten et al. (2014) social cost of methane (SC-CH<sub>4</sub>) estimates to monetize the climate-related impacts of this rulemaking. Regarding the comment that the SCC underestimates benefits, the EPA recognizes that none of the three integrated assessment models (IAMs) fully incorporates all climate change impacts, either positive or negative; see response to DCN EPA-HQ-OAR-2014-0451-0196, excerpt number 24, under comment code 8m.

Regarding the recommendations to improve the estimates, see EPA's response to comment EPA-HQ-OAR-2014-0451-0196, excerpt number 24, under comment code 8m.

## 8.7 Health/Welfare Effects (non-Methane)

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**Commenter Name:** Comment submitted by Matt Lamb

**Commenter Affiliation:** Smith Gardner, Inc

**Document Control Number:** EPA-HQ-OAR-2003-0215-0083

**Comment Excerpt Number:** 1

**Sort Order:** 100

**Comment Excerpt:**

There is an accompanying cost benefit analysis in terms of achieving the most reduction of NMOC relative to cost. There is not an accompanying demonstration of the health benefits related to this threshold reduction, causing it to appear arbitrary.

**Comment Response:**

The EPA disagrees that this rule or its accompanying analyses are arbitrary. As noted on the executive summary of the final RIA, the EPA was unable to quantify the monetized health benefits from reducing emissions of NMOC due to a lack of data, but this inability does not mean that real health benefits for this rule would not exist from reducing exposure to HAP, ozone and PM<sub>2.5</sub>. As the RIA states (chapter 4), "[t]he benefits from reducing some air pollutants have not been monetized in this analysis due to data, resource, and methodological limitations, including reducing 1,810 Mg NMOC in 2025 (that includes undetermined amounts of HAPs)." We assessed the benefits of these emission reductions qualitatively in sections 4.3, 4.4, and 4.5 of the RIA.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 2

**Sort Order:** 101

**Comment Excerpt:**

In addition to methane, emissions from MSW landfills contain significant nonmethane organic compounds (NMOCs) and trace amounts of inorganic compounds such as mercury.<sup>4</sup> These emissions pose a threat to public health, both directly and indirectly. NMOCs consist of certain hazardous air pollutants (HAPs) and volatile organic compounds (VOCs), which can react with sunlight to form ground-level ozone (smog) if uncontrolled. Nearly 30 organic HAPs have been identified in uncontrolled landfill gas, including benzene, toluene, ethyl benzene, and vinyl chloride.<sup>5</sup> Recent EPA field measurements from controlled landfills have shown emissions of these organic HAPs as well as emissions of mercury.<sup>6</sup> Health impacts of these HAPs include respiratory, reproductive, and central nervous system adverse effects. For example, vinyl chloride can adversely affect the central nervous system and has been shown to increase the risk of liver cancer in humans, while benzene is known to cause leukemia in humans.<sup>7</sup> In addition, some of these compounds have strong, pungent odors that can cause nausea or headaches and disrupt the quality of life in surrounding communities, and may trigger respiratory effects among asthmatics.

[Footnotes]

(4) Environmental Defense Fund, Recommendations and Considerations for EPA's Forthcoming Revisions to Section 111 Standards for MSW Landfills, Docket ID No. EPA-HQ-OAR-2014-0451-0008 (Jan. 2, 2013).

(5) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2012, at ES-6 (April 2014).

(6) U.S. EPA, *Quantifying Methane Abatement Efficiency at Three Municipal Solid Waste Landfills*, at 3-9 (Jan. 2012).

(7) National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills, 65 Fed. Reg. at 66, 672 (proposed November 7, 2000) (to be codified at 40 C.F.R. pt. 63).

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0083.1, excerpt 1 under comment code 8j.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 14

**Sort Order:** 102

**Comment Excerpt:**

Aggressive standards for control of landfill gas will provide important collateral benefits as well. Reduction of waste disposal and capture of landfill gas emissions will have additional collateral benefits. MSW landfills emit, in addition to methane, hydrogen sulfide and other odiferous

compounds that can greatly reduce the health and quality of life of nearby residents.<sup>22</sup> Volatile compounds emitted from an MSW landfill can include a wide variety of toxic air pollutants.<sup>23</sup> Control of these non-methane gases was the motive for the current NSPS standard adopted in 1996.<sup>24</sup> The proposed rule will extend these benefits by capturing non-methane gases from facilities earlier and with greater success, given the proposed improvements in monitoring.

[Footnotes]

22. See, for example, Christopher Heaney, Relation between malodor, ambient hydrogen sulfide, and health in a community bordering a landfill, *Environmental Research* 111 (2011) 847–852 (finding elevated levels of H<sub>2</sub>S downwind from a regional landfills, and correlations with impacts to residents' psychological and physical health).

23. Jing Jing Fang, Odor compounds from different sources of landfill: Characterization and source identification, *Waste Management* 32 (2012) 1401–1410 (identifying 35 different odiferous compounds, including such air toxics as styrene, toluene, xylene, acrolein, and butylaldehyde).

24. 79 Fed. Reg. 41772, at 41777.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0083.1, excerpt 1 under comment code 8j.

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**Commenter Name:** Amanda B. (no surname provided)

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2003-0215-0189

**Comment Excerpt Number:** 3

**Comment Excerpt:**

There is an association between adverse health effects and the distance residents live from a landfill site (Porta et al., 2009). Limited evidence suggested that those living within two or three kilometers of a landfill may be at a heightened risk for congenital anomalies, low birth weight and cancer (Porta et al., 2009). Prolonged exposure to landfill odors can result in anxiety and physical symptoms such as shortness of breath, eye irritation and unusual tiredness (Aatamila et al., 2011). Benzene, vinyl chloride and chloroform, all NMOCs, are carcinogens. LFG typically contains traces of these elements so small that little risk is present. Our knowledge on cancer is still expanding and there is the potential that these chemicals are more dangerous than we currently know. Toluene is another NMOC. It is known for its harmful effects on the cardiovascular and nervous systems. Ethylbenzene is a NMOC that can effect development in children and produce neurological symptoms. Surely, reducing human exposure to any of these chemicals will help improve health and safety.

**Comment Response:**

The RIA has reserved a full section on landfills HAPs emissions and addressed several pollutants health impacts (e.g., benzene, ethylbenzene, toluene, and vinyl chloride) among other HAPs. Detailed assessment is in section 4.5 of the final RIA.

## 8.8 Climate Impacts (GWP Methane)

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 6

**Sort Order:** 100

### Comment Excerpt:

The most current international assessment of climate change is the IPCC's Fifth Assessment Report ("AR5"), which was released in 2013. This assessment contains an updated value for methane's 100-year GWP of 34,<sup>16</sup> which is 36 percent higher than the previous assessment due to methodological improvements in the calculation of methane's GWP. Previous IPCC assessments had failed to account for carbon cycle feedbacks when calculating the GWP for methane. Yet, the climate impacts attributed to CO<sub>2</sub>, the benchmark measure, automatically include carbon cycle feedbacks. In order to accurately compare the GWP of various greenhouse gases and to assess the true climate damage done by each, it is critical to include carbon cycle feedbacks in every GWP calculation. The value of 34 in AR5 is thus the scientifically correct value EPA must use.

Another important choice is the timescale on which GWP is assessed. The climate impact of greenhouse gases is often reported for a "100-year" time span. Yet, as stated in the IPCC's AR5, "there is no scientific argument for selecting 100 years [time horizon for GWPs] compared with other choices."<sup>17</sup> Using only a 100-year GWP means that consideration of the decadal impact of short-lived pollutants will be lost. This is especially important with regard to methane, the most ubiquitous short-lived pollutant.

Methane reductions are essential for avoiding global climate tipping points. Although both carbon dioxide and methane are "well-mixed greenhouse gases," they differ in an important way: methane remains in the atmosphere for just a little over a decade, while carbon dioxide remains there for a century or more. This difference in "atmospheric lifetime" means that methane mitigation can result in reductions in radiative forcing much more rapidly than carbon dioxide mitigation.<sup>18</sup>

Timescale of GWPs is also important with regard to reaching emission reduction goals and commitments. A recent study found that analyzing methane emissions using a 100-year GWP resulted in an inability to achieve shorter-term target emission levels within the coming decades.<sup>19</sup> The United States has an obligation under the Copenhagen Accord to limit peak warming to 2°C or less. Complying with this commitment requires that GHG emissions be analyzed on a relevant timescale, necessitating the use of the 20-year GWP for methane. To accurately estimate how methane emissions will factor into these near-term reduction goals under President Obama's Climate Action Plan<sup>20</sup> as well as the NPRM, EPA must use a GWP timescale that coincides with the implementation schedule – namely a 20-year or less time scale GWP for methane.

Both timescales matter and should be included: the 100-year GWP gives a better sense of how reductions can influence long-term climate stabilization and the 20-year GWP is useful when

considering tipping points and near-term climate impacts. The AR5 includes a 20-year GWP for methane of 86 including climate-carbon feedbacks,<sup>21</sup> which is 19 percent higher than the estimate in the IPCC Fourth Assessment Report (“AR4”). Thus, once again, it is essential that EPA adopt the most recent values from the IPCC’s AR5.

In its technical amendments to the Greenhouse Gas Reporting Rule, EPA recently updated the methane GWP from the value in the IPCC Second Assessment Report to that in AR4 for reporting in year 2015 and beyond. While this was an important improvement, we and other organizations requested that EPA utilize the most up-to-date science and adopt the most recent methane GWPs from AR5 as well as require reporting of both 100-year and 20-year methane GWPs. EPA declined to adopt the most recent estimates of methane’s GWP because current international reporting requirements under the United Nations Framework Convention on Climate Change (“UNFCCC”) employ only 100-year GWPs and will begin using AR4 GWPs in 2015.

While we understand EPA’s need to comply with international reporting requirements, EPA should use AR5 values for domestic purposes. Doing otherwise cannot be justified based only on the desire to harmonize information with the UNFCCC reporting conventions. As EPA acknowledges elsewhere,<sup>22</sup> the UNFCCC reporting system is based on AR4 not because AR4 is correct, but because UNFCCC reporting standards are updated less frequently – indeed, the UNFCCC has used even more outdated data from the IPCC’s Second Assessment for over a decade. But the need to allow for this lag in international reporting accuracy is easily remedied without adopting outdated values. EPA should consistently use AR5 values for its domestic reporting and decision-making, while *also* creating a set of tables that reflects the UNFCCC reporting conventions. Indeed, EPA has already proposed to use GWP values from AR5 for fluorinated greenhouse gases and heat transfer fluids.<sup>23</sup> That action demonstrates that there is no obstacle to using AR5 values for other greenhouse gases, such as methane. It is clear that the only scientifically defensible values for fossil methane’s GWP are those from IPCC’s AR5: 34 for GWP-100 and 86 for GWP-20. For this reason, we strongly urge EPA to use AR5 values for all purposes in this rulemaking as well as all other Clean Air Act carbon reduction regulations.

[Footnotes]

<sup>16</sup> IPCC AR5 WGI at 714.

<sup>17</sup> IPCC ARS WGI at 711.

<sup>18</sup> See, e.g., Shindell, Drew, *Simultaneously Mitigating Near-Term Climate Change and Improving Human Health and Food Security*, 335 Science 183 (2012) (attached).

<sup>19</sup> Edwards, M.R. & J. E. Trancik, *Climate Impacts of Energy Technologies Depend on Emissions Timing*, 4 Nature Climate Change 347 (2014) (attached).

<sup>20</sup> The White House, *Climate Action Plan: Strategy to Reduce Methane Emissions* (March 2014), available at <http://www.whitehouse.gov/blog/2014/03/28/strategy-cut-methane-emissions>.

<sup>21</sup> IPCC AR5 WGI at 714.

<sup>22</sup> Greenhouse Gas Reporting Program: Addition of Global Warming Potentials, 79 Fed. Reg. 34835 n.7 (June 18, 2014).

<sup>23</sup> 79 Fed. Reg. 44332 (Jul. 31, 2014).

### **Comment Response:**

The EPA has determined that use of the AR4 GWP is preferred over the AR5 GWP for calculating methane emissions in this context – see the response to EPA-HQ-OAR-2014-0451-0184 Excerpt 6.

Several commenters have argued that the EPA should use the 20 year GWP for methane in addition to or as a replacement for the 100 year GWP. However, the EPA has determined that the 100 year GWP is the best metric to use for greenhouse gas comparisons.

The commenters quote the IPCC assessment, which states that “There is no scientific argument for selecting 100 years compared with other choices (Fuglestvedt et al., 2003; Shine, 2009). The choice of time horizon is a value judgement because it depends on the relative weight assigned to effects at different times”. The EPA agrees that a value judgment is inherent in choosing a timescale, but the EPA disagrees with the commenters that 20 years would be better than 100 years. 100 years is roughly the length of a human life, and is a common timespan for long-term policy analysis. Moreover, it has a long history in international negotiations as a relevant timespan for climate change. The EPA finds that the use of a metric that ignores all climate impacts occurring more than 20 years after the date of emission would be misleading.

Some commenters incorrectly assert that the timescale of a GWP should be chosen to match the lifetime of the relevant gas. Using a 20 year GWP for methane and a 100 year GWP for nitrous oxide and then comparing the CO<sub>2</sub> equivalent emissions is like calculating the weight of an apple in pounds and comparing the result to the weight of an orange in kilograms. This is because a CO<sub>2</sub> equivalent for a 20 year GWP is not equal to a CO<sub>2</sub> equivalent for a 100 year GWP: they are two different units.

This issue of different units is also relevant for a claim by a commenter that the cost-effectiveness would improve when using a 20 year GWP compared to using a 100 year GWP. The commenter does not take into account that because a 100 year CO<sub>2</sub>-equivalent is not the same unit as a 20 year CO<sub>2</sub>-equivalent, comparing \$/mtCO<sub>2</sub>e for two different time period GWPs could lead to misunderstandings.

A commenter asserts that the “20-year GWP is useful when considering tipping points” but provides no evidence supporting this assertion. Some tipping points relate to absolute temperature, other tipping points relate to the rate of change. For tipping points that are absolute temperature related, the danger of using a 20 year GWP is that while it would likely delay reaching any given temperature, it would also likely make reaching that temperature more likely in the long run because the reduced methane emissions would be offset by increased carbon dioxide emissions. The commenter does not address this issue.

A commenter also cites a paper (Edwards and Trancik, 2014) which the commenter claims concludes that use of the 100 year GWP results in an “inability to achieve shorter-term target emission levels within the coming decades”. However, the paper does not suggest that a 20 year GWP would be any better than a 100 year GWP – rather, the paper is contrasting the use of static



metrics (e.g., a GWP with any given time horizon) to dynamic metrics (metrics that change in value as a target is approached).

The EPA considers the 100 year GWP to be a measure which does a good job balancing long term and near term impacts when comparing emissions of different gases. However, two other approaches to considering relative impacts are also reasonable to use. The first is the Social Cost of Methane, as used in the proposed rule. Rather than choosing a 100 year timeframe, this approach uses a discount rate to value different time periods, and rather than using radiative forcing, the Social Cost approach uses a modeled, monetized estimate of impacts. The second approach is to explicitly calculate changing concentrations of gases and radiative forcing over time.

Taking all these factors into account, the EPA concludes that the presentation of methane impacts, in terms of both 100 year GWP and in terms of Social Cost of Methane, is appropriate and sufficient, and that no presentation of short-term GWP measures is needed.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1  
**Comment Excerpt Number:** 4  
**Sort Order:** 101

**Comment Excerpt:**

EPA relies exclusively on the 100-year GWP of methane without recognizing that methane is a short-lived climate pollutant and, as a result, has a much stronger impact on the rate of near-term climate change than the 100-year GWP suggests. Indeed, the IPCC's Fifth Assessment Report concludes that a ton of methane is as much as 87 times more potent than a ton of CO<sub>2</sub> during the first twenty years after it is emitted – nearly three times the 100-year GWP of methane.<sup>7</sup> For this reason, climate scientists are increasingly recognizing that reductions in short-lived climate pollutants, including methane, are an indispensable complement to reductions in CO<sub>2</sub> in order to avoid catastrophic climate change.<sup>8</sup> In its final NSPS and proposed emission guidelines, EPA should take into account these well-established scientific findings on the role of methane in our climate system by, among other things, using them to calculate cost-effectiveness and quantify the benefits of reducing methane from landfills.

[Footnotes]

(7) National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills, 65 Fed. Reg. at 66, 672 (proposed November 7, 2000) (to be codified at 40 C.F.R. pt. 63).

(7) Id.

(8) J.K. Shoemaker *et al.*, *What Role for Short-Lived Climate Pollutants in Mitigation Policy?* 342 Science 1323 (Dec. 2013).

**Comment Response:**

The EPA disagrees that the 20 year GWP is more appropriate than the 100 year GWP for calculating methane emissions in this context – see the response to EPA-HQ-OAR-2003-0215-0121 excerpt 6 under comment code 8k.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 19

**Sort Order:** 102

**Comment Excerpt:**

EPA's analysis indicates that reduced applicability threshold and early gas collection at existing landfills could avoid approximately 770,000 metric tons of methane emissions a year at a cost of only four twenty -- four dollars 20 per ton of CO2 emissions. Using the IPCC's more accurate 20-year value for methane global warming potential, these reductions are equivalent to approximately 65,000,000 metric tons of CO2 each year. Strong standards for existing landfills would leverage the innovative technologies and practices that many communities and landfill operators around the country have implemented already to reduce emissions including, recycling and composting, responsible use of landfill gas for energy and advance cover systems.

**Comment Response:**

The EPA disagrees that the 20 year GWP is more appropriate than the 100 year GWP for calculating methane emissions in this context – see the response to EPA-HQ-OAR-2003-0215-0121 excerpt 6 under comment code 8k.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 1

**Sort Order:** 103

**Comment Excerpt:**

**EPA Should Use Methane's 20-year Global Warming Potential**

Given the harm done by methane and the quicker time horizon of methane's effects compared to carbon dioxide, EPA's final rule should use the 20-year global warming potential of methane as established by the Intergovernmental Panel on Climate Change in its Fifth Assessment Report. Because methane is a much faster-acting climate pollutant than carbon dioxide, there is less opportunity for technological advancement or adaptation. While we understand that for purposes of reporting national greenhouse gas emissions pursuant to the United Nations Framework Convention on Climate Change, EPA uses the global warming potential numbers found in the IPCC's Fourth Assessment, this rulemaking is setting US national policy and should use the latest science.

**Comment Response:**

While we acknowledge near-term benefits of reducing methane emissions, the EPA disagrees that the 20 year GWP is more appropriate than the 100 year GWP – see the response to EPA-HQ-OAR-2003-0215-0121 excerpt 6 under comment code 8k.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 8

**Sort Order:** 104

**Comment Excerpt:****EPA's Social Cost of Methane Calculation Should Use the 20-year GWP of Methane and Be Comprehensive**

Given current knowledge of the significant adverse effect of methane, EPA should use methane's 20-year global warming potential as well as including its direct and indirect effects in its calculation of the Social Cost of Methane.

**Comment Response:**

While we acknowledge near-term benefits of reducing methane emissions, the EPA disagrees that the 20 year GWP is more appropriate than the 100 year GWP – see the response to EPA-HQ-OAR-2003-0215-0121 excerpt 6 under comment code 8k.

Regarding the social cost of methane: The social cost of methane (SC-CH<sub>4</sub>) is a metric that estimates the monetary value of impacts associated with marginal changes in methane emissions in a given year. It includes a wide range of anticipated climate impacts, such as net changes in agricultural productivity and human health, property damage from increased flood risk, and changes in energy system costs, such as reduced costs for heating and increased costs for air conditioning. However, the integrated assessment models used to develop these estimates do not currently assign value to all important physical, ecological, and economic impacts of climate change recognized in the climate change literature due to a lack of precise information on the nature of damages and because the science incorporated into these models understandably lags behind the most recent research. Marten et al. provide a more detailed discussion about the three IAMs used to develop the estimates and the treatment of methane's indirect effects. One of the three models internally computes methane's direct and indirect impacts on the climate system. For reasons discussed in Marten et al., the authors applied an exogenous radiative forcing projection to the other two models that accounted for methane's indirect effects. Specifically, the indirect effects of methane are modeled as a 40 percent increase in SC-CH<sub>4</sub> due to increased ozone resulting from methane.

EPA recognizes the importance of the estimates to be as complete as possible and continues to engage in research on modeling and valuation of climate impacts. In addition, EPA and other members of the U.S. Interagency Working Group on the social cost of carbon are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the

Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. EPA will evaluate its approach based upon any feedback received from the Academies' panel.

After careful evaluation of the full range of comments and associated technical issues described in this Response to Comments document, EPA has determined that it will continue to use the Marten et al. SC-CH<sub>4</sub> estimates in the final rulemaking analysis. In particular, the Marten et al. SC-CH<sub>4</sub> estimates represent the best scientific information on the impacts of climate change available in a form appropriate for incorporating the damages from incremental CH<sub>4</sub> emissions changes into regulatory analysis. Therefore, EPA has presented the Marten et al. SC-CH<sub>4</sub> estimates in this rulemaking. EPA will continue to consider these comments and will share the recommendations with the IWG as it moves forward with the Academies process.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 7

**Sort Order:** 105

**Comment Excerpt:**

### **The Emission Guidelines' Impact Analyses Should Consider Methane's GWP on a 20-Year Timescale**

EPA's error in basing its impact analyses on AR4 rather than AR5 is compounded by the Agency's exclusive focus on methane's impact on a 100-year timescale without consideration of the 20-year timescale for assessing GWP. EPA's position is difficult to reconcile with the undisputed fact that the 20-year timescale most closely corresponds to the impact of short-lived climate pollutants (SLCPs), of which methane is one of the most potent examples. While the 100-year timescale (as a measure of long-term impacts) can be used in tandem with the 20-year timescale, EPA's failure to consider the 20-year timescale disregards the most immediate impact of landfill methane. EPA's choice is not, moreover, justified by science: as noted in AR5, "[t]here is no scientific argument for selecting 100 years compared with other choices," and "[t]he choice of time horizon is a value judgement because it depends on the relative weight assigned to effects at different times." [http://www.climatechange2013.org/images/report-/WG1AR5\\_ALL\\_FINAL.pdf](http://www.climatechange2013.org/images/report-/WG1AR5_ALL_FINAL.pdf) at 711-12. As EPA itself has emphasized, "[b]ecause of methane's potency as a GHG and its [12-year] atmospheric life, reducing methane emissions is one of the best ways to achieve near-term beneficial impact in mitigating global climate change." 80 Fed. Reg. at 52105/2; 79 Fed. Reg. at 41774/1 (same). The Agency's straightforward acknowledgement that reducing methane in the near-term is one of the best ways to mitigate climate change cannot be reconciled with EPA's decision to disregard the near-term consequences of methane for purposes of the impact analyses that underlie the proposed regulations. Needless to say, AR4's methane GWP of 25 (100-year timescale) is considerably different than the GWP of 86 that AR5 has determined for methane on a 20-year timescale.<sup>5</sup>

In short, President Obama’s concern over SLCPs (*see* n.2, *supra*) is well-justified. As his administration has emphasized, “[f]ast action to reduce short-lived climate pollutants can have a direct impact on global warming, with the potential to reduce the warming expected by 2050 by as much as 0.5 degrees Celsius,” and “[a]t the same time, by 2030, such action can prevent millions of premature deaths, while also avoiding the annual loss of more than 30 million tons of crops.” *See* <http://www.state.gov/r/pa/prs/ps/2012/02/184055.htm>; *see also* [http://www.arb.ca.gov/cc/shortlived/2030\\_slcp\\_fs.pdf](http://www.arb.ca.gov/cc/shortlived/2030_slcp_fs.pdf) (CARB explaining that reducing SLCPs such as landfill methane is the “only way to immediately slow global warming” and to provide the “immediate global reductions necessary to limit warming below 2°C through at least 2050”). Given these facts, it is arbitrary for EPA not to include the AR5 20-year timescale GWP for methane in the impact analyses for the proposed Emission Guidelines.

[Footnote 5] As one example, EPA indicates that the cost effectiveness of applying the 34 Megagram NMOC emission rate threshold at closed landfills would be \$6 per mtCO<sub>2</sub>e (metric tons of carbon dioxide equivalent). *See* 80 Fed. Reg. at 52130/2. But that cost declines substantially – to \$1.74 per mtCO<sub>2</sub>e – using 86 as the GWP factor.

#### **Comment Response:**

While the EPA recognizes that methane emissions reductions will have near-term climate benefits, the EPA disagrees that the 20 year GWP is more appropriate than the 100 year GWP – see the response to EPA-HQ-OAR-2003-0215-0121 excerpt 6 under comment code 8k.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 9

**Sort Order:** 106

#### **Comment Excerpt:**

The values used to calculate methane’s GWP will have a significant influence on the analysis of climate impacts from landfill methane. Landfills – one of the methane sectors targeted by the President’s Climate Action Plan – are a leading source of the potent short-lived gas. Annually, an estimated 284 teragrams of waste is placed in municipal solid waste (“MSW”) landfills, an increase of 26 percent from 1990, and the amount of waste generated in the U.S. is projected to increase further. EPA estimates that in 2014 alone, uncontrolled emissions from the approximately 1,800 landfills in EPA’s database (an incomplete data set) generated some 10 million metric tons of methane, a number that continues over the sites’ life and beyond as decay continues at a declining rate. The agency states that the “2012 Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012 shows a growth in uncontrolled emissions from MSW landfills, from 172.6 Tg CO<sub>2</sub>e in 1990 to 280.0 Tg CO<sub>2</sub>e in 2012.” These are staggering numbers, though we believe them to be underreported.

As EPA itself notes, the enormously important decadal impact of some greenhouse gases is especially important with regard to methane, the most ubiquitous short-lived pollutant. We urge

EPA to calculate and display the results of its proposals in terms of a converted CO<sub>2</sub>e value based on methane's 20-year GWP of 86.

**Comment Response:**

The EPA disagrees that the 20 year GWP is more appropriate than the 100 year GWP for calculating methane emissions in this context – see the response to EPA-HQ-OAR-2003-0215-0121 excerpt 6 under comment code 8k.

Additionally, the more recent 2014 Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014 shows a decline in landfill emissions from 1990 to 2014 of 179.6 Tg CO<sub>2</sub>e to 148.0 Tg CO<sub>2</sub>e.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Municipal solid waste (MSW) landfills are a major source of greenhouse gases as well as other harmful air pollutants, including carcinogenic air toxics, all of which are generated by decomposing waste. MSW landfills receive household waste and can also receive non-hazardous sludge, industrial solid waste, and construction and demolition debris. Methane is the principal GHG emitted by landfills, and is emitted from MSW landfills in large quantities. In fact, EPA estimates that MSW landfills are the third largest anthropogenic source of methane in the United States, with total emissions of over four million metric tons of methane in 2012.<sup>5</sup> Further, the approximately 1,217 MSW landfills that are subject to EPA's Greenhouse Gas Reporting Program accounted for 79% of direct emissions from the waste sector in 2012. The GHGRP data also shows that MSW landfills accounted for 85 to 79 million metric tons of CO<sub>2</sub>-e per year over the period from 2010-2012.<sup>3</sup>

[Footnotes]

(3) 42 U.S.C. § 7411(a)(1).

(5) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2012, at ES-6 (April 2014).

**Comment Response:**

The EPA appreciates the commenter's support of the Agency's efforts to regulate methane. These efforts are significant contributions to a larger strategy to reduce global emissions of GHGs in order to avoid the worst impacts of climate change.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 2

**Comment Excerpt:**

We also ask the agency to complete the instant rulemaking for new, modified and reconstructed landfills earlier than the one-year timeframe the agency has announced. That agency delay itself is the cause of damage is no longer in doubt. President Obama's Administration now publicly acknowledges the separate and extremely steep costs that attach to *delayed action* alone. As the Administration's recent report on the cost of delaying action on climate change<sup>7</sup> demonstrates, this cost is irreversible and permanent, and it rises exponentially as delay continues. Based even on highly conservative assumptions, the report values the cost of *delay alone* as at least \$150 billion for *every year* of delayed action in reducing greenhouse gases if the delay results in overshooting an increase of temperatures of 2 degrees Celsius over preindustrial levels by just one degree, and sharply higher annual amounts for every degree of warming thereafter.<sup>8</sup> Current global carbon emission rates are on a path leading to a projected total warming above pre-industrial temperatures of 4.5° Celsius,<sup>9</sup> resulting in annual costs exceeding the report's boundaries. Plainly, every year of unnecessary delay in setting emission targets sufficiently stringent to meet the challenge at hand, in the face of steeply rising, persistent, and irreversible costs of delay, including the acknowledged possibility that mitigation will be too late,<sup>10</sup> is unreasonable.

The urgency of addressing greenhouse gas pollution is becoming more evident every day. The National Climate Assessment released in May 2014 by the U.S. Global Change Research Program states that “reduc[ing] the risks of some of the worst impacts of climate change” will require “aggressive and sustained greenhouse gas emission reductions” over the course of this century.<sup>11</sup> Humanity is rapidly consuming the remaining “carbon budget” necessary to preserve a likely chance of holding the average global temperature increase to only 2°C above pre-industrial levels. According to the Intergovernmental Panel on Climate Change (“IPCC”), if non-CO<sub>2</sub> forcings are taken into account, total cumulative future anthropogenic emissions of CO<sub>2</sub> must remain below about 1,000 gigatonnes (Gt) to achieve this goal.<sup>12</sup> Some leading scientists—characterizing the effects of even a 2°C increase in average global temperature as “disastrous”—have prescribed a far more stringent carbon budget for coming decades.<sup>13</sup>

In light of these facts, we urge the agency to adopt stringent new landfill regulations, and to do so as soon as possible. EPA itself recognizes the role that landfill methane emissions play in avoiding climate damage, stating that, because of methane's short atmospheric life of 12 years and its potency as a greenhouse gas, “reducing methane emissions is one of the best ways to achieve a near-term beneficial impact in mitigating global climate change.” The agency's action must now match its words.

[Footnotes]

<sup>7</sup> The White House, *Cost of Delaying Action to Stem Climate Change* at 2 (July 29, 2014), available at <http://www.whitehouse.gov/the-press-office/2014/07/29/white-house-report-costdelaying-action-stem-climate-change> (“Cost of Delay”).

<sup>8</sup> *Id.*

<sup>9</sup> IPCC AR5 WGI Summary for Policy Makers at 14.

<sup>10</sup> *Id.* at 20.

<sup>11</sup> Melillo, Jerry M. et al., *Climate Change Impacts in the United States: The Third National Climate Assessment* 14-15 (2014), available at <http://nca2014.globalchange.gov/downloads> (accessed May 7, 2014).

<sup>12</sup> IPCC AR5 WG1 SPM at 25-26 (“Limiting the warming caused by anthropogenic CO<sub>2</sub> emissions alone with a probability of >33%, >50%, and >66% to less than 2°C since the period 1861–1880, will require cumulative CO<sub>2</sub> emissions from all anthropogenic sources to stay between 0 and about 1570 GtC (5760 GtCO<sub>2</sub>), 0 and about 1210 GtC (4440 GtCO<sub>2</sub>), and 0 and about 1000 GtC (3670 GtCO<sub>2</sub>) since that period, respectively. These upper amounts are reduced to about 900 GtC (3300 GtCO<sub>2</sub>), 820 GtC (3010 GtCO<sub>2</sub>), and 790 GtC (2900 GtCO<sub>2</sub>), respectively, when accounting for non-CO<sub>2</sub> forcings as in RCP2.6. An amount of 515 [445 to 585] GtC (1890 [1630 to 2150] GtCO<sub>2</sub>), was already emitted by 2011.”). *See also* United Nations Environment Programme, *The Emissions Gap Report*, 13-22 (2013) (attached) (describing emissions “pathways” consistent with meeting 2°C and 1.5°C targets).

<sup>13</sup> Hansen, James et al., *Assessing ‘Dangerous Climate Change’: Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, 8 PLoS ONE e81648 at 15 (2013), doi:10.1371/journal.pone.0081648 (attached).

#### **Comment Response:**

The EPA appreciates the commenter’s submission regarding the urgency of addressing the climate change problem. The EPA is acting to reduce greenhouse gas emissions within the rule of law, and taking the necessary time to craft a well-designed regulation taking into account all the public comments received. In addition, this rulemaking action is subject to a consent decree that establishes an official schedule. Further, under Clean Air Act section 111, the agency must take final action on proposed rules within one year. As such, the EPA has moved at the pace deemed most appropriate.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 41

#### **Comment Excerpt:**

In light of the overwhelming evidence that the climate crisis cannot be avoided absent immediate and far-reaching greenhouse gas emission reductions, we speed up its slow approach in finalizing the landfill new source performance standards (“NSPS”)<sup>13</sup> and the instant emission guidelines review.

[Footnote]

<sup>13</sup> Standards of Performance for Municipal Solid Waste Landfills, 79 Fed. Reg. 41796 (July 17 2014) (the “NPRM”).



**Comment Response:**

The EPA appreciates the commenter's support of the Agency's efforts to regulate methane. These efforts are significant contributions to a larger strategy to reduce global emissions of GHGs in order to avoid the worst impacts of climate change. EPA also notes that under Clean Air Act section 111(d), the agency has the discretion to review and revise existing source standards, if deemed appropriate. The agency intends to issue a final rule for the landfill emission guidelines within a similar timeframe as the NSPS. While a review is not required, the agency agrees that action on the landfill emission guidelines is appropriate.

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**Commenter Name:** Anonymous public comment

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2003-0215-0090

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The Rule changes proposed to reduce methane emissions increase costs to landfill owners. The incentive to reduce emissions is rooted in global warming concerns at the time of the initial promulgation of the final Rule (Subpart WWW) in 1996. Since that time, there have been many developments discrediting climate prediction models. Significantly, none of the models use by the IPCC predicted the 15 years without warming that we recently experienced. The new Rule (Subpart XXX) needs to reconsider the basis for requiring more money to be spent on controlling a small fraction of methane emissions at landfills as the current Rule already accomplishes much.

**Comment Response:**

The commenter asserts that climate prediction models have been discredited, implying that this creates less urgency to reduce methane emissions. This claim is flawed. The EPA has evaluated the latest major scientific assessments, and finds that they provide stronger evidence for endangerment of public health and welfare due to elevated concentrations of greenhouse gases. 2015 was the warmest year on record as noted in the preamble to the regulation, and warming is continuing. No climate prediction model is perfect, but they are not designed to emulate observed short-term natural variability. Therefore short-term observed periods of slower or faster warming compared to modeled projections do not necessarily discredit those models. EPA has considered the information provided by the commenter and finds that it does not provide credible evidence of flaws in the EPA's approach of relying upon the synthesis conclusions of the major assessments.

Regarding compliance costs, EPA also refers the commenter to section I.C. of the 2015 emission guidelines preamble sections I.C and XI E-G.: "The annualized net cost for the proposed Emission Guidelines is estimated to be \$46.8 million (2012\$) in 2025, when using a 7 percent discount rate. The annualized costs represent the costs compared to no changes to the current Emission Guidelines (*i.e.*, baseline) and include \$101 million to install and operate a GCCS, as well as \$0.64 million to complete the corresponding testing and monitoring. These control costs are offset by \$55.3 million in revenue from electricity sales, which is incorporated into the net control costs for certain landfills that are expected to generate revenue by using the landfill gas to produce electricity."

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1  
**Comment Excerpt Number:** 5

**Comment Excerpt:**

EPA's decision not to monetize the benefits of methane reduction from the proposed NSPS is arbitrary and unfounded. EPA declines to do so because of the absence of a government-approved figure for the social cost of methane, and the "well-documented limitations" associated with basing the social cost of methane on the social cost of carbon (a technique EPA used recently in the 2012 revisions to the NSPS for oil and gas facilities).<sup>9</sup> EDF does not dispute that there are limitations associated with using the social cost of carbon as a proxy for methane. Nevertheless, EPA's decision appears to disregard research by the Agency's own economists finding that it is more accurate to use the social cost of carbon as a proxy than to assume that the social cost of methane is zero, as EPA effectively has done.<sup>10</sup> In addition, Federal courts have held in related contexts that *uncertainty* about the social cost of pollution is not a valid basis for failing to quantify it at all. As the United States Court of Appeals for the Ninth Circuit held in invalidating fuel economy standards that were adopted without quantifying the benefits of reduced carbon emissions, "while the record shows that there is a range of values, the value of carbon emissions reduction is certainly not zero."<sup>11</sup>

[Footnotes]

(9) Proposed NSPS, 79 Fed. Reg. at 41,827

(10) Alex L. Marten & Stephen C. Newbold, *Estimating the Social Cost of Non-CO2 GHG Emissions: Methane and Nitrous Oxide*, 51 Energy Policy 957, 969 (2012) (finding that the social cost of carbon is likely to underestimate the social costs of high-GWP gases, and *therefore* represents a "lower bound" on abatement benefits).

(11) *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1200 (9th Cir. 2007) ("*NHTSA*"). *See also High Country Conservation Advocates v. United States Forest Serv.*, 2014 U.S. Dist. LEXIS 87820 at 36-38 (D.Co. 2014) (Setting aside a lease modification for failure to quantify social costs of carbon emissions because ". . . there is a wide range of estimates about the **social cost** of GHG emissions. But neither the BLM's economist nor anyone else in the record appears to suggest the cost is as low as \$0 per unit. Yet by deciding not to quantify the costs at all, the agencies effectively zeroed out the cost in its quantitative analysis.") (citing *NHTSA*, 538 F.3d at 1217).

**Comment Response:**

EPA issued a supplemental proposal subsequent to this comment that applied directly modeled estimates of the social cost of methane (SC-CH<sub>4</sub>) to monetize the methane impacts. See Section 4 of the Regulatory Impact Analysis for complete details about this calculation. See also 80 Fed Reg. 52145, "the agency has used the Marten et al. (2014) SC-CH<sub>4</sub> estimates to value methane impacts expected from this proposed rulemaking and has included those benefits in the main benefits analysis". Therefore, no change is required in response to this comment.

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**Commenter Name:** Ted Michaels, President  
**Commenter Affiliation:** Energy Recovery Council (ERC)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0175  
**Comment Excerpt Number:** 8

**Comment Excerpt:**

Overall, the climate impact of methane is much larger than previously reported. According to the IPCC's 5th Assessment Report, methane's contribution to climate change is equivalent to over 40% of the total net drivers of climate change.<sup>iv</sup> This latest data on methane's contribution to the increase in radiative forcing, a measure of the atmosphere's additional uptake of energy relative to pre-industrial times, and hence global warming of the earth's climate system, is over 75% higher than previously reported. For years, climate scientists have been calling for separate regulation of climate pollutants like methane owing to their potency and other differences relative to CO<sub>2</sub>.<sup>5,6,7</sup>

[Footnote iv] Methane's contribution to the increase in radiative forcing relative to 1750 is 0.97 W / m<sup>2</sup>, 42% of the total net increase in radiative forcing of 2.29 W / m<sup>2</sup>. See Figure SPM.5 of IPCC WGI. 2013. *Working Group I Contribution to the IPCC Fifth Assessment Report Climate Change 2013: The Physical Science Basis Summary for Policymakers*.

[Footnote 5] Jackson, S., (2009), Parallel Pursuit of Near-Term and Long-Term Climate Mitigation *Science*, **326**: 526-527

[Footnote 6] Weaver, A., (2011), Toward the Second Commitment Period of the Kyoto Protocol *Science*, **332**: 795-796

[Footnote 7] See p2 of UNEP, WMO, (2011), *Integrated Assessment of Black Carbon and Tropospheric Ozone: Summary for Decision Makers*.  
[http://www.unep.org/dewa/Portals/67/pdf/Black\\_Carbon.pdf](http://www.unep.org/dewa/Portals/67/pdf/Black_Carbon.pdf)

**Comment Response:**

As the commenter notes, the IPCC AR5 estimate of methane forcing is about 0.97 W/m<sup>2</sup>. While this represents about 42% of the net radiative forcing from all climatically active substances, it is often considered more appropriate to compare methane's forcing to the total forcing resulting from elevated concentrations of the well-mixed gases – i.e., about 32% of the total warming influence of the GHGs. The climate impact of historical methane emissions (including impacts on ozone and stratospheric water vapor) of 0.97 W/m<sup>2</sup> estimated in AR5 is somewhat larger than previously estimated in the IPCC AR4 assessment (0.86 W/m<sup>2</sup>). However, this increase is only about 13%, not the 75% claimed by the commenter.

The EPA has considered this comment, and finds that the impacts of methane were appropriately reported in the proposal.

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**Commenter Name:** John R. Holladay  
**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 6

**Sort Order:** 900

**Comment Excerpt:**

**Methane’s Global Warming Potential and Resulting Environmental Harm Is Much Greater Than the Proposed Emission Guidelines Recognize**

**The Proposed Emission Guidelines’ Impact Analyses Should Be Based on the GWP Factors from Assessment Report 5 of the Intergovernmental Panel on Climate Change**

As EPA is of course well aware, the Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. The main activity of the IPCC is to prepare periodic “Assessment Reports” on the state of knowledge regarding climate change. The latest of these reports is the Fifth Assessment Report (AR5), which was finalized in November 2014. *See* <https://www.ipcc.ch/report/ar5/index.shtml>. Throughout the preamble for the proposed Emission Guidelines EPA repeatedly refers to – and relies on – AR5 as a primary source for the science of climate change. There is one exception: for the purpose of the impact analyses that underlie the proposed Emission Guidelines, EPA relies on the GWP for methane from the IPCC’s November 2007 Fourth Assessment Report (AR4) even though it is outdated in various respects. *See* 80 Fed. Reg. at 52105/1-2, n.5 (“The impacts analysis in this proposal is based on AR4 instead of AR5 (i.e., a GWP of 25)”). *See also id.* at 52106/1, n.18 and 52122/3, n.59 (same). Under the earlier analysis in AR4, methane’s GWP was 25 times that of carbon dioxide on a 100-year timescale and 72 times CO<sub>2</sub> on a 20-year timescale. AR5, on the other hand, increases methane’s GWP to 34 times CO<sub>2</sub> on a 100-year scale and 86 times CO<sub>2</sub> on a 20-year scale.

EPA’s decision in the proposed landfill Emission Guidelines to rely on the outdated methane GWP from AR4 substantially understates the adverse environmental impact of landfill methane and the benefits of alternative control measures. In that regard it bears particular emphasis that EPA has expressly stated that the AR5 GWPs “*are the most up-to-date and accurate available.*” *Greenhouse Gas Reporting Program, etc., Final Rule*, 79 Fed. Reg. 73750, 73760/2 (2014). But contrary to its recognition of the greater accuracy of the AR5 GWPs, the Agency defends its use here of the methane GWP from AR4 on the basis that it is “consistent with the GHG emissions inventories.” 80 Fed. Reg. at 52106/1, n.18. This appears to be a reference to international reporting requirements under the United Nations Framework Convention on Climate Change (UNFCCC). Use of AR5 would not cause any inconsistency, however, because this is not an “either-or” proposition. Put another way, UNFCCC reporting is entirely distinct from the domestic policy process for the proposed Emission Guidelines, and use of GWP factors from AR5 would not in any way impede international reporting.<sup>4</sup> Moreover, it would be arbitrary to suggest that recognizing a 36 percent improvement in accuracy (i.e., methane’s increased GWP under AR5 compared to AR4 on a 100-year timescale) is not justified for this rulemaking.

[Footnote 4] It should also be noted that EPA is already using AR5 GWPs for international reporting in various instances. *See* 79 Fed. Reg. at 73755/3 (EPA used AR5 to determine GWPs for 97 compounds that are subject to the Agency’s GHG Reporting Rule). In addition, EPA relies extensively on AR5 throughout the preamble for the proposed Emission Guidelines, and the only

references to AR4 are where EPA notes that it is using AR4's GWP for methane. *See* 80 Fed. Reg. at 52105/1-2, n.5, 52106, n.18 and 52122, n.59 and corresponding text.

**Comment Response:**

Several comments have proposed that EPA use AR5 GWPs when calculating methane emissions. However, the EPA has determined that the use of AR4 GWPs is still preferred in this context. The primary benefit of using AR4 GWPs in this context is for consistency with the EPA's Inventory of Greenhouse Gas Emissions and Sinks and the Greenhouse Gas Reporting Program, as well as with international GHG reporting standards under the United Nations Framework Convention on Climate Change (UNFCCC).

The EPA has determined that there are few concrete drawbacks to using AR4 GWPs in this context. The first is that emissions are also presented in terms of mass in the rulemaking (namely, metric tons or Mg): eg., 80 Fed Reg. 52143, "By lowering the NMOC emissions threshold to 34 Mg/yr, the proposal would achieve reductions of 2,770 Mg/yr NMOC and 436,100 Mg/ yr methane (10.9 million mtCO<sub>2</sub>e/yr)." Therefore, CO<sub>2</sub> equivalent emissions using any metrics can be calculated easily from the mass numbers. Second is that the use of a different GWP would not actually change any monetary benefits calculation, as the monetized benefits are calculated using the Social Cost of Methane (80 Fed Reg. 52145, "the agency has used the Marten et al. (2014) SC-CH<sub>4</sub> estimates to value methane impacts expected from this proposed rulemaking and has included those benefits in the main benefits analysis"). Third, the EPA does present the most recent AR5 estimates when discussing the scientific estimates of the relative impact of methane and carbon dioxide (80 Fed Reg. 52106, "Methane is a potent GHG with a global warming potential (GWP) 28–36 times greater than CO<sub>2</sub>").

Regarding the argument that EPA uses AR5 GWPs in the GHG Reporting Rule, it is clear in that Rule that EPA only uses AR5 GWPs where no GWP estimate for those substances existed under AR4. This is consistent with EPA's intent to remain consistent with international GHG reporting standards to the extent possible, and is not a valid argument for using AR5 GWPs for methane (where an AR4 GWP does exist). For EPA's response to the use of 20 year GWPs, see the response to EPA-HQ-OAR-2003-0215-0121 Excerpt 6.

Therefore, EPA has considered the commenter's arguments, and while EPA acknowledges that AR5 GWPs are the most recent estimates provided by a major scientific assessment and are appropriate for certain uses and contexts and agrees that methane emission reductions likely achieve near-term benefits, EPA has determined that for the purposes of presenting inventory numbers in this context, use of the AR4 GWPs continues to be the most appropriate metric.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 3

**Sort Order:** 901

**Comment Excerpt:**

The proposed NSPS and the ANPR fail to fully account for the benefits of methane reduction, and the real harm that uncontrolled methane emissions do to our climate. First, EPA understates the climate-destabilizing impacts of methane by making unqualified statements in both documents that the global warming potential (GWP) of methane is 25 times greater than CO<sub>2</sub>.<sup>8</sup> Nowhere in the proposed NSPS or the ANPR does EPA acknowledge the GWP values in the most recent Fifth Assessment Report of the Intergovernmental Panel Climate Change (IPCC), which concluded that the GWP of methane over a 100-year time horizon is between 28 and 36.<sup>9</sup> These new GWP values are as much as 45% higher than the older value EPA relies upon, which derives from the IPCC's Fourth Assessment Report (released in 2007). This is a significant and arbitrary omission, especially given the important role that GWP plays in quantifying the environmental benefits and the cost-effectiveness (per ton of CO<sub>2</sub>-equivalent) of the proposed NSPS revisions.

[Footnotes]

(8) Shoemaker *et al.*, *What Role for Short-Lived Climate Pollutants in Mitigation Policy?* 342 *Science* 1323 (Dec. 2013).

(9) Proposed NSPS, 79 Fed. Reg. at 41,827

**Comment Response:**

The EPA has determined that use of the AR4 GWP is preferred over the AR5 GWP for calculating methane emissions in this context – see the response to EPA-HQ-OAR-2014-0451-0184 excerpt 6 under comment code 8k.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 3

**Comment Excerpt:**

Overall, the climate impact of methane is much larger than previously reported. According to the IPCC's 5th Assessment Report, methane's contribution to climate change is equivalent to over 40% of the total net drivers of climate change.<sup>4</sup> This latest data on methane's contribution to the increase in radiative forcing, a measure of the atmosphere's additional uptake of energy relative to pre-industrial times, and hence global warming of the earth's climate system, is over 75% higher than previously reported. For years, climate scientists have been calling for separate regulation of climate pollutants like methane owing to their potency and other differences relative to CO<sub>2</sub>.<sup>5,6,7</sup>

The EPA should calculate GHG emissions for purposes of regulatory applicability and emissions reporting using the latest climate science.

The IPCC's 5th Assessment Report updated the 100 year global warming potential ("GWP") to 34 CO<sub>2</sub> when climate-carbon feedbacks are included and 84 times more potent over 20 years.<sup>51</sup> This is 36% greater than the now outdated 100-year GWP of 25 from the IPCC's former report; the same outdated figure just recently adopted by the EPA's GHG reporting program. This

change is important, given that the climate impact of methane is much larger than previously reported.

[Footnote 4] Methane's contribution to the increase in radiative forcing relative to 1750 is 0.97 W / m<sup>2</sup>, 42% of the total net increase in radiative forcing of 2.29 W / m<sup>2</sup>. See Figure SPM.5 of IPCC WGI. 2013. *Working Group I Contribution to the IPCC Fifth Assessment Report Climate Change 2013: The Physical Science Basis Summary for Policymakers*.

[Footnote 5] Jackson, S., (2009), Parallel Pursuit of Near-Term and Long-Term Climate Mitigation *Science*, **326**: 526-527

[Footnote 6] Weaver, A., (2011), Toward the Second Commitment Period of the Kyoto Protocol *Science*, **332**: 795-796

[Footnote 7] See p2 of UNEP, WMO, (2011), *Integrated Assessment of Black Carbon and Tropospheric Ozone: Summary for Decision Makers*.  
[http://www.unep.org/dewa/Portals/67/pdf/Black\\_Carbon.pdf](http://www.unep.org/dewa/Portals/67/pdf/Black_Carbon.pdf)

[Footnote 51] The IPCC concluded that "it is likely that including the climate-carbon feedback for non-CO<sub>2</sub> gases as well as for CO<sub>2</sub> provides a better estimate of the metric value than including it only for CO<sub>2</sub>." See Table 8-7 of *IPCC WGI Fifth Assessment Report, Chapter 8: Anthropogenic and Natural Radiative Forcing*.

#### **Comment Response:**

The EPA disagrees that the 20 year GWP is more appropriate than the 100 year GWP – see the response to EPA-HQ-OAR-2003-0215-0121 Excerpt 6.

The EPA has determined that use of the AR4 GWP is preferred over the AR5 GWP for calculating methane emissions in this context – see the response to EPA-HQ-OAR-2014-0451-0184 Excerpt 6.

The EPA recognizes that methane has an important impact on the climate, particularly in the near-term, but not that the latest data is 75% higher than previously reported – see the response to EPA-HQ-OAR-2014-0451-0175 excerpt 8 under comment code 8k.

## **8.9 Support/Oppose Marten et al**

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 2

#### **Comment Excerpt:**

EPA's benefit calculation for the threshold reduction focuses on the assumption that the expected methane reductions will help address climate change relying on an estimate of the social cost of methane (80 FR 52164). That new metric comes from a 2014 research paper by Marten et al. that quantifies the social cost of methane (80 FR 52165). The paper concludes that each ton of

methane results in a detriment to human society of somewhere within the wide range between \$430 and \$7,200, depending on the year and interest rate employed. Therefore, EPA's assume that, for every ton of methane emissions avoided in 2025, human society will benefit by between \$700 and \$4000 per ton. EPA's calculations confirm that the climate benefits of the incremental drop from 40 Mg/yr to 34 Mg/yr would be between \$4-14 million. However, EPA's preamble cites a benefit calculation of \$36-\$210 million (80 FR 52165). That range does not disclose the fact that most of that benefit is attributable to the reduction from 50 Mg/yr to 40 Mg/yr, not the further reduction to 34 Mg/yr.

**Comment Response:**

EPA monetized the methane-related benefits by applying four estimates of the social cost of methane (SC-CH<sub>4</sub>) to the estimated methane reductions for the supplemental NSPS proposal. In accordance with OMB and EPA guidelines for conducting benefit-cost analysis in regulatory impact analysis, EPA calculated the incremental benefits of the proposed NSPS relative to the baseline standard, which is defined by the current regulatory standard of 50 Mg/yr. EPA also applied the SC-CH<sub>4</sub> estimates to the expected methane reductions under alternative options, which include the 40 Mg/yr option referenced by the commenter. These results were displayed in a table in the RIA (see proposed RIA, see Table 7-6). Table 7-6 clearly shows that the incremental methane-related benefits of the 2.5/34 Mg/yr relative to the 2.5/40 Mg/yr option are approximately \$4 million to \$30 million in the year 2025 (2012\$).

Also, EPA calculated methane-related benefits using four estimates of the social cost of methane (SC-CH<sub>4</sub>): the average SC-CH<sub>4</sub> at discount rates of 2.5, 3, and 5 percent as well as the 95<sup>th</sup> percentile at 3 percent. The \$36-\$210 million range presented in the preamble and RIA, which was quoted by the commenter, covers estimates resulting from the application of the four SC-CH<sub>4</sub> estimates. The \$4-\$14 million range cited by the commenter results from three of the four SC-CH<sub>4</sub> estimates, specifically the average SC-CH<sub>4</sub> at discount rates of 2.5, 3, and 5 percent. Table 7-6 in the proposal RIA clearly shows that the incremental methane-related benefits of 2.5/34 Mg/yr relative to the 2.5/40 Mg/yr option are approximately \$4 million to \$30 million in the year 2025 (2012\$).

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 9

**Comment Excerpt:**

There are many reasons to doubt the face value of EPA's benefit calculations because EPA's heavy reliance on the new "social cost of methane" estimate that provides the sole foundation for those calculations is questionable. EPA attempts to justify its use of this new estimate by pointing out that the analysis conducted by "Marten et al." is consistent with the analysis underlying the "social cost of carbon," which was developed by an interagency workgroup that included EPA. EPA has relied on the "social cost of carbon" estimate in many of its recent rulemakings, touting it as the "best science available," developed over many years through a lengthy review process that included consideration of comments from the public. RIA at 4-5; 80



Fed. Reg. at 52,165 (citing the Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (revised 2015)).

Republic questions whether a single research paper can provide the same level of support for EPA's benefit calculations as another analysis that has received far greater scrutiny simply because it is based on the same basic methodology. Moreover, even if the "social cost of methane" is on par with the "social cost of carbon," that estimate also remains highly controversial because it suffers from many shortcomings—flaws that the social cost of methane apparently now shares by virtue of its common foundation. As recognized by the authors of the 2014 social cost of methane report, "any limitations that apply to inputs and modeling assumptions underlying the ["social cost of carbon"] estimates ... also apply to the ["social cost of methane"] estimates derived here." Marten et al. at 3.

### **Comment Response:**

The EPA disagrees with the commenter's criticism of the Marten et al. social cost of methane (SC-CH<sub>4</sub>) estimates and of the IWG's social cost of carbon (SC-CO<sub>2</sub>) estimates, specifically the level of review and the rigor of the models and estimates. Both the development and application of the Marten et al. estimates have been subject to extensive review. The methodology and resulting estimates themselves underwent a standard double blind peer review process prior to journal publication. The EPA also sought additional external peer review before applying this work in the primary analysis of a proposed regulation (see RIA, Section 4). The EPA has also sought comment on methods to monetize methane emissions in past rulemakings and on the application of Marten et al SC-CH<sub>4</sub> estimates to this landfills NSPS rulemaking.

The EPA determined that the Marten et al. estimates are scientifically defensible for valuing methane impacts in regulatory analyses and improve upon prior treatment of methane impacts in regulatory analysis. Furthermore, the use of the estimates went through standard OMB review, per Executive Order 12866, prior to publication in the proposal rule. The review under Executive Order 12866 occurred for use of these estimates in the landfills sector proposal as well as for the application in other Agency proposed rulemakings, i.e., for the oil and gas sector and the medium- and heavy-duty engine and vehicle proposed rulemakings.

The assumptions and models employed in generating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> estimates are all drawn from the peer-reviewed academic literature. The models used to develop the SC-CH<sub>4</sub> estimates—DICE, FUND, and PAGE—are by design the very same models used to estimate the SC-CO<sub>2</sub> (see below for more discussion about these three models). Marten et al. (2014) were not the first to use these models to estimate the SC-CH<sub>4</sub>. Rather, Marten et al. (2014) used these models as part of their work to develop the first set of published estimates of the SC-CH<sub>4</sub> that are fully consistent with the modeling assumptions underlying the USG SC-CO<sub>2</sub> estimates. Specifically, the estimation approach of Marten et al. used the same set of three models, five socioeconomic and emissions scenarios, equilibrium climate sensitivity distribution, three constant discount rates, and aggregation approach used by the interagency working group to develop the SC-CO<sub>2</sub> estimates. Prior to Marten et al., there were a number of studies in the scientific literature providing directly-modeled estimates of SC-CH<sub>4</sub>, but the EPA had found considerable variation among these estimates in terms of the models and input assumptions that made them outdated and inconsistent with the methodology underlying the USG SC-CO<sub>2</sub> estimates. Some adjustments were made relative to SC-CO<sub>2</sub>, i.e., the methodology changes that capture methane chemistry, but these were reviewed in the peer-review paper. Moreover, as

discussed in the RIA, Section 4, three peer-reviewers scrutinized the SC-CH<sub>4</sub> estimates and explicitly considered the consistency and appropriateness for application and estimating methane benefits.

EPA notes that beyond questioning the link between SC-CO<sub>2</sub> and SC-CH<sub>4</sub>, the commenter did not identify any specific methodological concerns or limitations. Moreover, the fact that limitations exist does not itself suggest an approach should not be used; every approach will have a limitation. Rather, the EPA has carefully examined those limitations and determined that the SC-CO<sub>2</sub> estimates are the best available for monetizing carbon dioxide impacts in rulemaking analysis. The value of that information far outweighs the limitations of the estimates, which are clearly documented in the SC-CO<sub>2</sub> Technical Support Documents and Regulatory Impact Analysis documents for rulemakings that use the SC-CO<sub>2</sub>. The EPA recognizes that the SC-CH<sub>4</sub> estimates share some of the limitations of the SC-CO<sub>2</sub> estimates, but after careful examination has determined that, again, the value of the information provided by the estimates far outweighs the limitations.

To further strengthen the robustness of the SC-CO<sub>2</sub> estimates, the EPA and other members of the U.S. Interagency Working Group on the social cost of carbon are seeking independent expert advice on technical opportunities to update these estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. Going forward, the EPA will evaluate its approach to estimating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> based upon any feedback received from the Academies' panel.

To date, the Committee has released an interim report, which recommended against doing a near term update of the SC-CO<sub>2</sub> estimates. For future revisions, the Committee recommended the IWG move efforts towards a broader update of the climate system module consistent with the most recent, best available science, and also offered recommendations for how to enhance the discussion and presentation of uncertainty in the SC-CO<sub>2</sub> estimates. Specifically, the Committee recommended that "the IWG provide guidance in their technical support documents about how [SC-CO<sub>2</sub>] uncertainty should be represented and discussed in individual regulatory impact analyses that use the [SC-CO<sub>2</sub>]" and that the technical support document for each update of the estimates present a section discussing the uncertainty in the overall approach, in the models used, and uncertainty that may not be included in the estimates. At the time of this writing, the IWG is reviewing the interim report and considering the recommendations. The EPA looks forward to working with the IWG to respond to the recommendations and will continue to follow IWG guidance on SC-CO<sub>2</sub>.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 77

**Comment Excerpt:**

EPA attempts to justify its use of this new estimate by pointing out that the analysis conducted by Marten et al. is consistent with the analysis underlying the "social cost of carbon" developed by an interagency workgroup that included EPA. EPA has relied on the "social cost of carbon" estimate in many of its recent rulemakings, touting it as the "best science available," developed over many years through a lengthy review process that included consideration of comments from the public. RIA at 4-5; 80 Fed. Reg. at 52,143 (citing the Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (revised 2015) ("SC-CO<sub>2</sub>")).

Republic questions whether a single report can provide the same level of support for EPA's benefit calculations as another analysis that has received far greater scrutiny just because it is based on the same basic methodology. But even if the "social cost of methane" is on par with the "social cost of carbon," that estimate remains highly controversial because it suffers from many shortcomings—flaws that the social cost of methane apparently now shares by virtue of its common foundation. As recognized by the authors of the 2014 social cost of methane report, "any limitations that apply to inputs and modeling assumptions underlying the ["social cost of carbon"] estimates ... also apply to the ["social cost of methane"] estimates derived here." Marten, A.L., E.A. Kopits, C.W. Griffiths, S.C. Newbold & A. Wolverton, *Incremental CH<sub>4</sub> and N<sub>2</sub>O mitigation benefits consistent with the U.S. Government's SC-CO<sub>2</sub> estimates* (2014) at 3 ("Marten et al.").

The shared flaws inherent in the social cost estimates of carbon and methane are many. As an initial matter, both estimates rely on a highly attenuated analysis—one that requires the conversion of emission reductions into changes in atmospheric concentrations, which must then be converted to changes in "radiative forcing" properties, then converted into actual changes to the earth's climate, then converted into impacts to human health and welfare, and finally quantified in present-value dollars. RIA at 4-9. The technical support document for the social cost of carbon itself admits that the analysis leaves much to be desired, due to the incomplete way in which it captures catastrophic and non-catastrophic impacts, the incomplete treatment of adaptation and technological change, uncertainty in the extrapolation of damages to high temperatures, and assumptions regarding risk aversion. RIA at 4-6.

### **Comment Response:**

See EPA response to DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 9, under comment code 8l for discussion about the extensive reviews conducted before the estimates were applied to the RIA and for discussion about EPA's conclusions regarding the validity and rigor of the Marten et al (2014) SC-CH<sub>4</sub> estimates as well as the interagency working group's SC-CO<sub>2</sub> estimates.

Regarding the comment about the attenuated nature of the analysis, see EPA's response to DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 10, [under comment code 8m](#).

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist  
**Commenter Affiliation:** Union of Concerned Scientists et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0196  
**Comment Excerpt Number:** 19

**Comment Excerpt:**

EPA anticipates that its landfill emissions guidelines and performance standards will reduce significant amounts of methane, in addition to the carbon dioxide reductions expected as electricity from landfill gas replaces demand for more carbon-intensive electricity generation. EPA proposes directly estimating the Social Cost of Methane using an analysis conducted by Marten *et al.*, which is based on the same techniques the Interagency Working Group developed to estimate the SCC.<sup>98</sup> The Marten *et al.* Social Cost of Methane methodology is well supported, and in the final emissions guidelines and standards, EPA should monetize the benefits of methane reductions, to reflect the true benefits of the standards and to enhance the rigor and defensibility of the final rule.<sup>99</sup>

[Footnote 98] Marten, A.L., E.A. Kopits, C.W. Griffiths, S.C. Newbold & A. Wolverton (2014). Incremental CH<sub>4</sub> and N<sub>2</sub>O Mitigation Benefits Consistent with the U.S. Government's SC-CO<sub>2</sub> Estimates, Climate Policy, DOI: 10.1080/14693062.2014.912981.

[Footnote 99] *See Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1202 (9th Cir. 2008) (finding NHTSA's decision to assign zero value to carbon reductions to be arbitrary and capricious).

**Comment Response:**

EPA agrees with this description and has used the Marten *et al.* SC-CH<sub>4</sub> estimates to monetize the climate-related methane impacts of this rulemaking.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists *et al.*

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 25

**Comment Excerpt:**

Yet while sharing that carefully built framework with the SCC estimates, Marten *et al.*'s Social Cost of Methane estimates directly account for the quicker time horizon of methane's effects compared to carbon dioxide, include the indirect effects of methane on radiative forcing,<sup>104</sup> and reflect the complex, nonlinear linkages along the pathway from methane emissions to monetized damages. Marten *et al.* was not only published in a peer reviewed economics journal, but EPA undertook additional internal and peer review of the approach.<sup>105</sup> Marten *et al.*'s estimates thus are reasonable and appropriate measurements of the Social Cost of Methane.

[Footnote 104] Though the Social Cost of Methane methodology does not yet fully reflect the effects of methane oxidizing in the atmosphere over time and becoming carbon dioxide. *See* Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and Supplemental Proposed New Source Performance Standards in the Municipal Solid Waste Landfills Sector, at 4-15 (2015).

[Footnote 105] <http://www3.epa.gov/climatechange/pdfs/social%20cost%20methane%20white%20paper%20application%20and%20peer%20review.pdf>

**Comment Response:**

EPA acknowledges this comment and notes that it has used the Marten et al. SC-CH<sub>4</sub> estimates to monetize the climate-related methane impacts of this rulemaking.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 26

**Comment Excerpt:**

Overall, the Marten *et al.* methodology provides reasonable, direct estimates that reflect updated evidence and provide consistency with the Government's accepted methodology for estimating the SCC. At the same time, EPA should work toward the future refinement of these Social Cost of Methane estimates. For example, the Social Cost of Methane methodology does not yet fully reflect the effects of methane oxidizing in the atmosphere over time and becoming carbon dioxide.<sup>108</sup> Because the Social Cost of Methane and the SCC share many assumptions and methods, it may make sense for the Interagency Working Group to review and update both metrics. In any case, any future improvements made to the SCC methodology should also be incorporated into and adjusted for the Social Cost of Methane estimates.

[Footnote 108] EPA, Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and Supplemental Proposed New Source Performance Standards in the Municipal Solid Waste Landfills Sector, at 4-15 (2015).

**Comment Response:**

EPA agrees that the Marten et al. methodology provides reasonable, direct estimates that reflect updated evidence and provide consistency with the interagency working group's (IWG) SC-CO<sub>2</sub> estimates. EPA notes that it has applied the Marten et al. SC-CH<sub>4</sub> estimate to the final rulemaking analysis. EPA recognizes the importance of the SC-CH<sub>4</sub> and SC-CO<sub>2</sub> estimates to be as complete as possible and continues to engage in research on modeling and valuation of climate impacts, which would support improvements to SC-CH<sub>4</sub> and SC-CO<sub>2</sub> estimates. See also EPA's response to DCN EPA-HQ-OAR-2014-0451-0196, excerpt 24, for discussion about impacts omitted from the SC-CH<sub>4</sub>.

EPA will share with the interagency working group (IWG) the commenters' recommendation to consider reviewing and updating both SC-CO<sub>2</sub> and the SC-CH<sub>4</sub>. EPA will continue to follow and evaluate the latest science on impact categories that are omitted or not fully addressed in the IAMs.

EPA and other members of the IWG on the SC-CO<sub>2</sub> are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the

SC-CH<sub>4</sub> estimates. Going forward, the EPA will evaluate its approach to estimating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> based upon any feedback received from the Academies' panel.

## 8.10 Methodology for Marten et al

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 10

### Comment Excerpt:

The shared flaws inherent in the social cost estimates of carbon and methane are many. As an initial matter, both estimates rely on a highly attenuated analysis—one that requires the conversion of emission reductions into changes in atmospheric concentrations, which must then be converted to changes in "radiative forcing" properties, then converted into actual changes to the earth's climate, then converted into impacts to human health and welfare, and finally quantified in present-value dollars. RIA at 4-9. The technical support document for the social cost of carbon itself admits that the analysis leaves much to be desired, due to the incomplete way in which it captures catastrophic and non-catastrophic impacts, the incomplete treatment of adaptation and technological change, uncertainty in the extrapolation of damages to high temperatures, and assumptions regarding risk aversion. RIA at 4-6.

### Comment Response:

Regarding the comments about the limitations of the social cost of carbon and the social cost of methane: see EPA response to DCN EPA-HQ-OAR-2003-0215-0202, Excerpt 9, for discussion about the extensive reviews conducted before the estimates were applied to the RIA and for discussion about EPA's conclusions regarding the validity and rigor of the Marten et al (2014) SC-CH<sub>4</sub> estimates as well as the interagency working group's SC-CO<sub>2</sub> estimates.

Regarding the comment about the attenuated nature of the analysis, EPA again notes that analysis involves uncertainty. The EPA acknowledges uncertainty in the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> estimates but disagrees that the uncertainty is so great as to undermine use of these estimates in regulatory impact analysis. The uncertainty in the estimates is fully acknowledged and comprehensively discussed in the RIA, the TSDs and supporting academic literature. While uncertainty must be acknowledged and addressed in regulatory impact analyses, even an uncertain analysis provides useful information to decision makers and the public. For example, if an analysis shows that benefits of a policy option consistently do (or do not) justify costs even over a broad range of estimates, this may increase confidence in the robustness of this conclusion. Conversely, if choices among parameter estimates within a plausible range significantly affect the conclusions of the analysis, this is an important consideration in deciding how to weigh the analytical results in the decision making process. The presence of uncertainty is thus not a reason to exclude the best available estimates of quantified/monetized benefits, as long as it is appropriately characterized. Rather, good regulatory practice requires that agencies use the best available scientific, technical and economic information to derive the best estimates

of costs and benefits that they can, and then communicate to the public the limitations and uncertainties of the analyses.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 14

**Comment Excerpt:**

*The IWG's choice of three IAMs was fully justified but should still be revisited in its next iteration.*

In its calculations of the SCC, the IWG relied on the three Integrated Assessment Models (IAMs) available at the time, all with a long record of peer-reviewed publications that link physical and economic effects: the Dynamic Integrated Model of Climate and the Economy (DICE),<sup>72</sup> the Climate Framework for Uncertainty, Negotiation, and Distribution (FUND),<sup>73</sup> and Policy Analysis of the Greenhouse Effect (PAGE).<sup>74</sup> The government's first SCC estimates, published in 2010, used the then-current versions of the models; the recent update employed revised, peer-reviewed versions of the models but maintained the underlying assumptions of the 2010 IWG analysis. As stated by the 2010 IWG, "the main objective of [the 2010 IWG modeling] process was to develop a range of SCC values using a defensible set of input assumptions grounded in the existing scientific and economic literatures."<sup>75</sup>

DICE, FUND, and PAGE are well-established, peer-reviewed models. They represent the state-of-the-art IAMs. Each of these models has been developed over decades of research, and has been subject to rigorous peer review, documented in the published literature. However, updates to the SCC should also consider other models that are similarly peer reviewed and based on the state of the art of climate-economic modeling. One such model is Climate and Regional Economics of Development (CRED); another is the World Bank's ENVIRONMENTAL IMPACT AND SUSTAINABILITY APPLIED GENERAL EQUILIBRIUM (ENVISAGE) model.

CRED borrows its fundamental structure from William Nordhaus's DICE and RICE models but also offers significant changes. For one, it uses updated damage functions and Marginal Abatement Cost Curves (MACC). Moreover, it uses different global equity weights, and uses additional state-of-the-art methodologies.<sup>76</sup>

ENVISAGE represents a broader modeling effort by the World Bank, where perhaps the largest contribution is a more detailed sectoral breakdown, using 57 different sectors.<sup>77</sup> This level of analysis allows for a more detailed view of agriculture as well as food and energy sectors that are particularly important to any climate-economy modeling.

Moreover, the broader policy and research community at large ought to consider creating the right incentive structure within the economic and scientific community to engage many more researchers on working with the core IAMs. Doing so could speed up the process of capturing the latest research on climate damages.

No model fully captures the costs of climate impacts to society. In fact, virtually all uncertainties and current omissions point to a higher SCC value. That makes it essential to use the established

IWG process, which provides for updating the SCC estimates every two to three years in order to capture the advances in physical and social sciences that have been incorporated into the models during the intervening period, in order to revisit both the choice of models and the key inputs used.<sup>78</sup>

[Footnote 72] William D. Nordhaus, *Estimates of the social cost of carbon: concepts and results from the DICE-2013R model and alternative approaches*, 1 JOURNAL OF THE ASSOCIATION OF ENVIRONMENTAL AND RESOURCE ECONOMISTS 1 (2014).

[Footnote 73] David Anthoff & Richard S.J. Tol, THE CLIMATE FRAMEWORK FOR UNCERTAINTY, NEGOTIATION AND DISTRIBUTION (FUND), TECHNICAL DESCRIPTION, VERSION 3.6 (2012), available at <http://www.fund-model.org/versions>.

[Footnote 74] Chris Hope, *The Marginal Impact of CO<sub>2</sub> from PAGE2002: An Integrated Assessment Model Incorporating the IPCC's Five Reasons for Concern*, 6 INTEGRATED ASSESSMENT J. 19 (2006).

[Footnote 75] 2010 TSD, *supra* note 4, at 1.

[Footnote 76] Frank Ackerman, Elizabeth A. Stanton & Ramón Bueno, *CRED: A New Model of Climate and Development*, 85 ECOLOGICAL ECONOMICS 166 (2013).

[Footnote 77] World Bank, ENVISAGE, <http://go.worldbank.org/8DTXIDMRM0> (last visited Feb. 4, 2014).

[Footnote 78] 2010 TSD, *supra* note 4, at 1-3 ("The estimates are presented with an acknowledgement of the many uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts . . . . Specifically, we have set a preliminary goal of revisiting the SCC values within two years or at such time as substantially updated models become available, and to continue to support research in this area.").

### **Comment Response:**

The EPA acknowledges the commenters' recommendations for potential opportunities to improve the social cost of carbon (SC-CO<sub>2</sub>) estimates and has considered each one in the context of this rulemaking, which uses the Marten et al. SC-CH<sub>4</sub> estimates. EPA recognizes the importance of the estimates to be as complete as possible and continues to engage in research on modeling and valuation of climate impacts. In addition, EPA and other members of the U.S. Interagency Working Group on the SC-CO<sub>2</sub> are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. Going forward, the EPA will evaluate its approach to estimating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> based upon any feedback received from the Academies' panel.

After careful evaluation of the full range of comments and associated technical issues described in this RTC, EPA has determined that it will continue to use the Marten et al. SC-CH<sub>4</sub> estimates



in the final rulemaking analysis. In particular, the Marten et al. SC-CH<sub>4</sub> estimates represent the best scientific information on the impacts of climate change available in a form appropriate for incorporating the damages from incremental emissions changes into regulatory analysis. Therefore, EPA has presented the Marten et al. SC-CH<sub>4</sub> estimates in this rulemaking. EPA will continue to consider these comments and will share the recommendations with the IWG as it moves forward with the Academies process.

In addition, regarding model selection: EPA agrees that the selection of the three IAMs—DICE, FUND, and PAGE—was the most appropriate for the purpose of estimating the SC-CO<sub>2</sub>. EPA and all of the other IWG members made this determination when they began developing the SC-CO<sub>2</sub> estimates in 2009-2010. DICE, FUND, and PAGE are the most widely used and widely cited models in the economic literature that link physical impacts to economic damages for the purposes of estimating the SC-CO<sub>2</sub>. Moving forward, EPA will continue to follow and evaluate the latest peer reviewed literature applying IAMs. As previously noted, EPA and all of the other IWG members are seeking external expert advice on the technical merits and challenges of using additional models (e.g., CRED, ENVISAGE) to estimate the SC-CO<sub>2</sub> and/or removing existing models from the ensemble (DICE, FUND, and PAGE) used to estimate the SC-CO<sub>2</sub>.

Finally, EPA agrees that it is important to update the SC-CO<sub>2</sub> periodically to incorporate improvements in the understanding of greenhouse gas emissions impacts. EPA will also share with the IWG the commenters' recommendation that the "broader policy and research community at large...consider creating the right incentive structure within the economic and scientific community to engage many more researchers on working with the core IAMs."

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist  
**Commenter Affiliation:** Union of Concerned Scientists et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0196  
**Comment Excerpt Number:** 16

**Comment Excerpt:**

*The current inclusion of CO<sub>2</sub> fertilization benefits likely overstates its effects.*

The models do not reflect recent research on agricultural changes, which suggest the CO<sub>2</sub> fertilization is overestimated, particularly in the FUND model, and that much, if not all, of the fertilization benefits may be cancelled out by negative impacts on agriculture (e.g., extreme heat, pests, and weeds).<sup>80</sup> If the agency is not able to adequately model all agricultural impacts it should, at a minimum, remove CO<sub>2</sub> fertilization benefits.

[Footnote 80] FRANK ACKERMAN & ELIZABETH A. STANTON, CLIMATE ECONOMICS: THE STATE OF THE ART 45-56 (2013); Wolfram Schlenker et al., *Will U.S. Agriculture Really Benefit From Global Warming? Accounting for Irrigation in the Hedonic Approach*, 95 AM. ECON. REV. 395, 395-406 (2005). See also: Fisher, Anthony C., W. Michael Hanemann, Michael J. Roberts, and Wolfram Schlenker. 2012. "The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather: Comment." *American Economic Review*, 102(7): 3749-60. DOI: 10.1257/aer.102.7.3749

**Comment Response:**

As noted in the OMB Response to Comments on SC-CO<sub>2</sub>, to date, the interagency working group (IWG) has accepted the models as currently constituted, and omitted any damages or beneficial effects that the model developers themselves do not include.<sup>[1]</sup> The IWG recognizes that none of the three IAMs fully incorporates all climate change impacts, either positive or negative. Some of the effects referenced by commenters (e.g., "catastrophic" effects, disease, and CO<sub>2</sub> fertilization) are explicitly modeled in the damage functions of one or more of the current models (although the treatment may not be complete), and the model developers continue to update their models as new research becomes available. In fact, the IWG undertook the 2013 SC-CO<sub>2</sub> revision because of updates to the models, which include new or enhanced representation of certain impacts, such as sea level rise damages. In addition, some of the categories mentioned by commenters are currently speculative or cannot be incorporated into the damage function for lack of appropriate data. Using an ensemble of three different models was intended to, at least partially, address the fact that no single model includes all of the impacts. EPA recognizes that there may be effects that none of the three selected models addresses (e.g., impacts from ocean acidification) or that are likely not fully captured (e.g. catastrophic effects).

EPA also recognizes that the impacts of climate change on agriculture is an area of active research and that methodological and data challenges persist. As a result there is uncertainty as to the magnitude of these impacts and the role of interactions between changes in the climate and other factors, such as CO<sub>2</sub> fertilization, temperature, precipitation, ozone, pests, etc. Additionally, these effects are likely to vary widely across regions and crops. However, with high confidence the IPCC (2013) stated in its Fifth Assessment Report (AR5) that "[b]ased on many studies covering a wide range of regions and crops, negative impacts of climate change on crop yields have been more common than positive impacts." As noted above, the IWG's approach to date has been to rely on the damage functions included in the three IAMs by their developers.

EPA recognizes that it is important to update the SC-CO<sub>2</sub> periodically to incorporate improvements in the understanding of greenhouse gas emissions impacts and will continue to follow and evaluate the latest science on impact categories that are omitted or not fully addressed in the IAMs. EPA and other members of the U.S. Interagency Working Group on the social cost of carbon are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. Going forward, the EPA will evaluate its approach to estimating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> based upon any feedback received from the Academies' panel.

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<sup>[1]</sup> OMB's Response to Comments on SC-CO<sub>2</sub> is available at <https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-response-to-comments-final-july-2015.pdf>

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist  
**Commenter Affiliation:** Union of Concerned Scientists et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0196  
**Comment Excerpt Number:** 17

**Comment Excerpt:**

*The specific functional form assumptions in IAMs ought to be re-evaluated.*

Climate damages in IAMs are assumed to affect levels of economic output rather than economic growth rates. Similarly, standard modeling assumptions assume multiplicative damage functions—i.e. substitutability across economic sectors—rather than additive functions—i.e. limited substitutability across sectors. IAMs ought to probe the impacts of both assumptions. Recent literature supports the conclusion that climate change will effect economic growth rates.<sup>81</sup>

Similarly, models ought to better capture the impacts of wildly heterogeneous climate damages. Each of the models used to calculate the SCC assume one representative household, going as far as to consider damages by relatively large regions. Such averaging ignores the enormously diverse effects of damages. It similarly contributes to not fully capturing the effects of extreme outcomes and tail risks. Instead, models ought to attempt to capture a much broader array of damages and climate impacts.<sup>82</sup>

[Footnote 81] See Melissa Dell et al., *Temperature shocks and economic growth: Evidence from the last half century*, 4 AMERICAN ECONOMIC JOURNAL: MACROECONOMICS 66-95 (2012); R. Bansal & M. Ochoa *Temperature, aggregate risk, and expected returns* (National Bureau of Economic Research No. w17575, 2011); E.J. Moyer et al., *Climate impacts on economic growth as drivers of uncertainty in the social cost of carbon* (University of Chicago Coase-Sandor Institute for Law & Economics Research Paper 652, 2013); S. Dietz & N. Stern, *Endogenous Growth, Convexity of Damage and Climate Risk: How Nordhaus' Framework Supports Deep Cuts in Carbon Emissions*, 125 THE ECONOMIC JOURNAL 574-620 (2015); F.C. Moore & D.B. Diaz *Temperature impacts on economic growth warrant stringent mitigation policy*, NATURE CLIMATE CHANGE (2015).

Marshall Burke et al., *Global Non-Linear Effect of Temperature on Economic Production*, NATURE (Oct. 21, 2015) looks at the effect of temperature and precipitation changes on economic growth rates, and finds that a 23% decline in global GDP by 2100 for business as usual. This is much higher than previous macro-estimates by Dell et al., *supra*, is more consistent with previous micro-estimates, and challenges assumptions that climate change will not affect the growth rates of wealthy nations.

[Footnote 82] See, for example, National Science Foundation-funded work by Per Krusell and Anthony A. Smith on "A Global Economy-Climate Model with High Regional Resolution" using 19,000 agents (each covering a 1 x 1° area of land).

**Comment Response:**

See EPA's response to comment EPA-HQ-OAR-2014-0451-0196, excerpt number 16, **under comment code 8m**.

In addition, EPA notes that in two of the IAMs used by the IWG to estimate the SCC (DICE and FUND), climate damages do affect the realized rate of economic growth in the models.

However, EPA recognizes that the magnitude and pathway by which climate change may affect economic growth rates is an active area research. EPA agrees that it is important to update the SC-CO<sub>2</sub> periodically to incorporate improvements in the understanding of greenhouse gas emissions impacts and will continue to follow and evaluate the latest science on impact categories that are omitted or not fully addressed in the IAMs.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist  
**Commenter Affiliation:** Union of Concerned Scientists et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0196  
**Comment Excerpt Number:** 21

**Comment Excerpt:**

The Interagency Working Group on the Social Cost of Carbon has, to date, focused exclusively on carbon dioxide. The SCC can be roughly adjusted to approximate the costs of other greenhouse gases by multiplying by the relative global warming potential of those gases. Scientists, however, have long argued that the full social costs of specific, non-carbon dioxide gases like methane should be assessed through separate models and methodologies, which would more accurately account for varying atmospheric life spans, among other differences.<sup>100</sup> At least a dozen published studies, dating back to 1993, have estimated the social cost of non-carbon dioxide greenhouse gases, including methane.<sup>101</sup>

[Footnote 100] See Disa Thureson & Chris Hope, *Is Weitzman Right? The Social Cost of Greenhouse Gases in an IAM World 21* (Örebro University-Swedish Business School Working Paper 3/2012).

[Footnote 101] See, e.g., Marten et al at 7 (describing eleven prior studies estimating the social cost or global damage potential associated with methane).

**Comment Response:**

EPA has used directly modeled estimates of the social cost of methane (SC-CH<sub>4</sub>) to monetize the methane impacts of the rulemaking. See Chapter 4 of the Regulatory Impact Analysis for complete details.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist  
**Commenter Affiliation:** Union of Concerned Scientists et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0196  
**Comment Excerpt Number:** 22

**Comment Excerpt:**

EPA proposes to use Social Cost of Methane estimates based on one of the most recent peer-reviewed articles: Marten *et al.*<sup>102</sup> Marten *et al.* takes a reasonable (although conservative) approach to estimating the Social Cost of Methane and currently constitutes "the best available science" to inform agency regulation.<sup>103</sup> Specifically, Marten *et al.* builds on the methodology used by the Interagency Working Group to develop the SCC. The study maintains the same three

integrated assessment models, five socioeconomic-emissions scenarios, equilibrium climate sensitivity distribution, three constant discount rates, and aggregation approach that were agreed upon by the Interagency Working Group. Consequently, many of the key assumptions underlying the Social Cost of Methane estimates have already gone through a transparent, consensus-driven, publically reviewed, regularly updated process, since they were borrowed from the Interagency Working Group's thoroughly vetted methodology.

[Footnote 102] Alex L. Marten et al., *Incremental CH<sub>4</sub> and N<sub>2</sub>O Mitigation Benefits Consistent With the US Government's SC-CO<sub>2</sub> Estimates*, Climate Policy (2014).

[Footnote 103] See Executive Order 13,563, 76 Fed. Reg. 3821 (January 18, 2011).

### **Comment Response:**

EPA agrees with this description and has used the Marten et al. SC-CH<sub>4</sub> estimates to monetize the climate-related methane impacts of this rulemaking.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 24

### **Comment Excerpt:**

Marten *et al.*'s estimates are conservative and very likely underestimate the true Social Cost of Methane. To start, as the authors note, because their methodology followed the Interagency Working Group's approach, all limitations that apply to inputs and modelling assumptions for the SCC also apply to the Social Cost of Methane. As discussed above, omitted damages, socioeconomic assumptions, the treatment of uncertainty and catastrophic damages, and so forth all suggest the Social Cost of Methane is underestimated, just as the SCC is.

Additionally, the integrated assessment models shared by both the Social Cost of Methane and the SCC include some features better suited to assessing carbon dioxide effects than methane effects, and so likely underestimate the costs of methane. For example, a countervailing benefit of carbon dioxide emissions—enhanced fertilization in the agricultural sector—is included in the underlying models used to develop both the SCC and Social Cost of Methane, yet does not apply to methane emissions.<sup>106</sup> Similarly, the damage functions used by the integrated assessment models assume some level of adaptation to climate change over time, but because methane is a much faster-acting climate pollutant than carbon dioxide, there is less opportunity for technological advancement or political progress to adapt to the climate damages imposed by methane emissions. Methane also has indirect but significant effects, via its contribution to surface ozone levels, on global health and agriculture, and such effects need to be included either in the Social Cost of Methane or elsewhere in the cost-benefit analysis, but currently are not.<sup>107</sup>

[Footnote 106] Interagency Working Group on the Social Cost of Carbon, *Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis*, 12 (February 2010), available at <https://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf> ("Impacts other than temperature change also vary across gases in ways that

are not captured by GWP. For instance . . . damages from methane emissions are not offset by the positive effect of CO<sub>2</sub> fertilization.").

Martin et al (2015) state that "A comparison across models further highlights the importance of CO<sub>2</sub> fertilization impacts on the global damage potential. CO<sub>2</sub> emissions, and the resulting increase in atmospheric concentration, have the potential to increase yields in the agriculture and forestry sector. This characteristic is not shared by other GHG emissions. Accordingly, the FUND model, which explicitly captures this effect, exerts downward pressure on the SC-CO<sub>2</sub> that is not present for the SC-CH<sub>4</sub> and SC-N<sub>2</sub>O, allowing for the possibility of substantially higher global damage potential estimates. The results based on the FUND model presented in this article exhibit this effect; however, the CO<sub>2</sub> fertilization effect is not explicitly modelled in DICE and PAGE and therefore they are found to produce lower estimates of the global damage potential. For example, using the 3% discount rate, the global damage potential for CH<sub>4</sub> as estimated by FUND ranges between 58 and 88 depending on the scenario, whereas it ranges from 19 to 28 for DICE and PAGE. As the DICE and PAGE models only consider two natural system impacts, temperature and sea level, if they do implicitly include potential CO<sub>2</sub> fertilization benefits, they are included by using the temperature anomaly as a proxy for the increasing atmospheric CO<sub>2</sub> concentration. Fertilization benefits would therefore be allowed to falsely accrue to perturbations of other GHG emissions besides CO<sub>2</sub>. It is not clear the degree to which these models try to incorporate CO<sub>2</sub> fertilization effects and therefore the degree to which this issue is of concern."

[Footnote 107] A study by Sarofim et al. (2015) finds that reductions in surface ozone levels from the mitigation of methane emissions would provide additional global health benefits from avoided cardiopulmonary deaths equal to 60 to 140% of climate benefits identified by Marten. Similarly, Shindell (2014) finds that the impact of methane on agriculture, via changes in surface ozone, are valued at \$22 and \$27 per ton, for 5% and 3% discounting respectively, in addition to his study's estimates for climate and climate-health related damages.

### **Comment Response:**

The social cost of methane (SC-CH<sub>4</sub>) is a metric that estimates the monetary value of impacts associated with marginal changes in methane emissions in a given year. It includes a wide range of anticipated climate impacts, such as net changes in agricultural productivity and human health, property damage from increased flood risk, and changes in energy system costs, such as reduced costs for heating and increased costs for air conditioning. However, the integrated assessment models used to develop these estimates do not currently assign value to all important physical, ecological, and economic impacts of climate change recognized in the climate change literature due to a lack of precise information on the nature of damages and because the science incorporated into these models understandably lags behind the most recent research. Marten et al. provide a more detailed discussion about the three IAMs used to develop the estimates and the treatment of methane's indirect effects. One of the three models internally computes methane's direct and indirect impacts on the climate system. For reasons discussed in Marten et al., the authors applied an exogenous radiative forcing projection to the other two models that accounted for methane's indirect effects. Specifically, the indirect effects of methane are modeled as a 40 percent increase in SC-CH<sub>4</sub> due to increased tropospheric ozone and stratospheric water vapor resulting from methane reactions in the atmosphere. The effects of methane-derived ozone on health and agriculture are not yet included in any of the IAMs. EPA

acknowledges that these effects exist, has sought comment on ways to account for these effects in RIAs by using separate analyses. However, there remain unresolved questions regarding several methodological choices necessary for an analysis of the impacts of methane-derived ozone, and therefore the EPA is not including a quantitative analysis in this rule at this time.

EPA recognizes the importance of the estimates to be as complete as possible and continues to engage in research on modeling and valuation of climate impacts. In addition, EPA and other members of the U.S. Interagency Working Group on the social cost of carbon are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. EPA will evaluate its approach based upon any feedback received from the Academies' panel.

After careful evaluation of the full range of comments and associated technical issues described in [this section], EPA has determined that it will continue to use the Marten et al. SC-CH<sub>4</sub> estimates in the final rulemaking analysis. In particular, the Marten et al. SC-CH<sub>4</sub> estimates represent the best scientific information on the impacts of climate change available in a form appropriate for incorporating the damages from incremental CH<sub>4</sub> emissions changes into regulatory analysis. Therefore, EPA has presented the Marten et al. SC-CH<sub>4</sub> estimates in this rulemaking. EPA will continue to consider these comments and will share the recommendations with the IWG as it moves forward with the Academies process.

Regarding the comment that the models have some features better suited to assessing carbon dioxide effects than methane, EPA acknowledges that lack of explicit treatment of methane in two of the models (DICE and PAGE) used to develop the SC-CH<sub>4</sub> estimates pose some challenges. However, Marten et al. (2014) demonstrate one way to amend these models to represent the methane gas cycle and directly estimate the SC-CH<sub>4</sub>. As discussed in a peer-reviewed whitepaper, EPA determined that the Marten et al. estimates are scientifically defensible for valuing methane impacts in regulatory analyses and improve upon prior treatment of methane impacts in regulatory analysis.<sup>[1]</sup>

Regarding the suggestion that carbon fertilization benefits have accrued to Marten et al.'s SC-CH<sub>4</sub> estimates, EPA notes this is a possibility for the estimates from two of the models—DICE and PAGE—but not for the third model, FUND. The commenters have quoted a passage from Marten et al. that discusses how carbon fertilization impacts affect Global Damage Potential (GDP), which is a ratio of the social cost of a non-CO<sub>2</sub> GHG to the SC-CO<sub>2</sub>. The quoted text from Marten et al. examines how carbon fertilization affects the SC-CO<sub>2</sub> estimates, which in turn affect the ratio of non-CO<sub>2</sub> GHG to SC-CO<sub>2</sub>, but not necessarily the magnitude of the SC-CH<sub>4</sub> estimates. While FUND explicitly considers increased production in the agricultural and forestry sectors from CO<sub>2</sub> fertilization to calculate the SC-CO<sub>2</sub>, it does not include carbon dioxide fertilization impacts when estimating the social cost of non-CO<sub>2</sub> gases, including methane.<sup>[2]</sup> In the FUND model, net productivity effects in the agriculture sector are a function of atmospheric CO<sub>2</sub> concentrations estimated by the model, and as such are not impacted by changes in methane emissions in the modeling. Marten et al. further note that neither DICE nor PAGE explicitly

consider carbon fertilization and consider the implications of implicit carbon fertilization in those two models. The authors concluded that “As the DICE and PAGE models only consider two natural system impacts, temperature and sea level, if they do implicitly include potential CO2 fertilization benefits, they are included by using the temperature anomaly as a proxy for the increasing atmospheric CO2 concentration. Fertilization benefits would therefore be allowed to falsely accrue to perturbations of other GHG emissions besides CO2. It is not clear the degree to which these models try to incorporate CO2 fertilization effects and therefore the degree to which this issue is of concern” (Marten et al. (2014), pg 21).

## 8.11 SC-CH4- global vs domestic

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 12

### **Comment Excerpt:**

Compounding the questions pervading EPA’s heavy reliance on these social cost analyses to estimate benefits is the fact they have a global focus, while EPA’s compliance cost estimates focus more narrowly on only the United States. This mis-match is unusual. In evaluating most policies, the government typically compares U.S. costs to U.S. benefits, even if other costs or benefits are felt outside its borders. After all, the executive order EPA is attempting to satisfy with its regulatory impact analysis specifically states:

The *American people* deserve a regulatory system that works for *them*, not against *them*: a regulatory system that protects and improves *their* health, safety, environment, and well-being and improves the performance of the economy without imposing unacceptable or unreasonable costs on society...

William J. Clinton, "Executive Order 12866: Regulatory Planning and Review," 58 Fed. Reg. 51735 (Oct. 1993) (emphasis added). The U.S. Office of Management and Budget, in adopting guidance on regulatory impact analyses reaffirmed this focus by advising federal agencies that:

Your analysis should focus on benefits and costs that accrue to *citizens and residents of the United States*. Where you choose to evaluate a regulation that is likely to have effects beyond the borders of the United States, *these effects should be reported separately*.

U.S. Office of Management and Budget, Circular A-4, Sept. 2003, p. 15.

A focus on U.S. benefits, not global benefits, would be more consistent with the purposes of the Clean Air Act, namely "to protect and enhance the quality of the *Nation's* air resources so as to promote the public health and welfare and the productive capacity of *its population*." 42 U.S.C. § 7401(b)(1) (emphasis added). The global focus of the social cost estimates for both carbon and methane is inconsistent with these principles. At a minimum, EPA should comply with the guidance quoted above by providing a separate accounting of the asserted benefits of the supplemental proposal to the United States.



## Comment Response:

This comment regarding the use of a global SC-CH<sub>4</sub> estimate mirrors those submitted to the Office of Management and Budget's separate comment solicitation on the SC-CO<sub>2</sub> (78 FR 70586; November 26, 2013). The EPA had determined that the basis for using global estimates of the SC-CO<sub>2</sub> also applies to use of the SC-CH<sub>4</sub> estimates, given that methane is also a global pollutant and that the SC-CH<sub>4</sub> methodology is linked to the SC-CO<sub>2</sub> methodology.

As a member of the interagency working group (IWG) on SC-CO<sub>2</sub>, the EPA has carefully examined and evaluated comments submitted to OMB's separate solicitation. EPA has also carefully examined and evaluated all comments received regarding SC-CH<sub>4</sub> and SC-CO<sub>2</sub> through this rulemaking process and determined that the IWG responses to the comments on the OMB solicitation address the comments on the scope of the SC-CH<sub>4</sub> and SC-CO<sub>2</sub> estimates and use of the estimates in this RIA. Specifically, the EPA concurs with the IWG's response to these comments and hereby incorporates them by reference and has determined that they are also applicable to the use of global estimates of the SC-CH<sub>4</sub> as the methodology is linked to the SC-CO<sub>2</sub> methodology and methane is also a well-mixed global pollutant.[\[1\]](#)

In addition, the EPA and other members of the U.S. Interagency Working Group on the social cost of carbon are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. Going forward, the EPA will evaluate its approach to estimating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> based upon any feedback received from the Academies' panel.

After careful evaluation of the full range of comments and associated technical issues described in the comments that EPA received on this action, the EPA has determined that it will continue to use the Marten et al. SC-CH<sub>4</sub> estimates in the final rulemaking analysis. In particular, the Marten et al. SC-CH<sub>4</sub> estimates represent the best scientific information on the impacts of climate change available in a form appropriate for incorporating the damages from incremental emissions changes into regulatory analysis. Therefore, the EPA has presented the Marten et al. SC-CH<sub>4</sub> estimates in this rulemaking. The EPA will continue to consider these comments and will share the recommendations with the IWG as it moves forward with the Academies' process.

The remainder of this section provides more detailed responses to the comment.

The EPA disagrees that a focus on global SC-CO<sub>2</sub> and SC-CH<sub>4</sub> estimates in RIAs is inappropriate. As discussed in the 2010 SC-CO<sub>2</sub> Technical Support Document (TSD), the IWG determined that a global measure of SC-CO<sub>2</sub> is appropriate in this context because emissions of most greenhouse gases contribute to damages around the world and the world's economies are now highly interconnected.[\[2\]](#) To reflect the global nature of the problem, the SC-CO<sub>2</sub> incorporates the full damages caused by CO<sub>2</sub> emissions and other governments are expected to consider the global consequences of their greenhouse gas emissions when setting their own domestic policies.

The same rationale applies to SC-CH<sub>4</sub> because, analogous to CO<sub>2</sub>, methane is a global pollutant with global consequences. Methane, in addition to CO<sub>2</sub> and other GHG emissions, contributes to warming of the atmosphere, which over time leads to increased air and ocean temperatures, changes in precipitation patterns, melting and thawing of global glaciers and ice, increasingly severe weather events, such as hurricanes of greater intensity, and sea level rise, among other impacts. Pursuant to Clean Air Act section 202(a), the EPA Administrator found that GHGs in the atmosphere threaten the public health and welfare of current and future generations. In particular, the Administrator found that the mix of six greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>) is “global in nature because the greenhouse gas emissions emitted from the United States (or from any other region of the world) become globally well mixed, such that it would not be meaningful to define the air pollution as the greenhouse gas concentrations over the United States as somehow being distinct from the greenhouse gas concentrations over other regions of the world” (74 FR 66517; December 15, 2009). Any pollutant with an atmospheric lifetime of greater than one or two years becomes well-mixed globally. Methane has an atmospheric lifetime of roughly a decade. *Id.* at n. 18. One attribute of a well-mixed substance is that the location of emission has little impact on the consequences of those emissions, such that a ton of methane emitted in the US will have just as much an impact on global temperatures as a ton of methane emitted in Australia.

As stated in the OMB Response to Comments on SC-CO<sub>2</sub>, if all countries acted independently to set policies based only on the domestic costs and benefits of carbon emissions, it would lead to an economically inefficient level of emissions reductions which could be harmful to all countries, including the United States, because each country would be underestimating the full value of its own reductions. The same applies to methane emissions because methane is, as discussed in the previous paragraph, a well-mixed global pollutant with global consequences. This is a classic public goods problem because each country’s reductions benefit everyone else and no country can be excluded from enjoying the benefits of other countries’ reductions, even if it provides no reductions itself. In this situation, the only way to achieve an economically efficient level of emissions reductions is for countries to cooperate in providing mutually beneficial reductions beyond the level that would be justified only by their own domestic benefits. By adopting a global estimate of the SC-CO<sub>2</sub> or the SC-CH<sub>4</sub>, the U.S. government can signal its leadership in this effort. In reference to the public good nature of mitigation and its role in foreign relations, thirteen prominent academics noted that these “are compelling reasons to focus on a global [SC-CO<sub>2</sub>]” in a recent article on the SC-CO<sub>2</sub> (Pizer et al., 2014). In addition, there is no bright line between domestic and global damages from greenhouse gas emissions, such as methane and CO<sub>2</sub>. Adverse impacts on other countries can have spillover effects on the United States, particularly in the areas of national security, international trade, public health and humanitarian concerns.

GHG emissions in the United States will have impacts abroad, some of which may, in turn, affect the United States. For this reason, a purely domestic measure is likely to understate actual impacts to the United States. Also, as stated above, the EPA and the other members of IWG believes that accounting for global benefits can encourage reciprocal action by other nations, leading ultimately to international cooperation that increases both global and U.S. net benefits relative to what could be achieved if each nation considered only its own domestic costs and benefits when determining its climate policies. As a party to the United Nations Framework Convention on Climate Change, the United States is actively engaging with the international

community to find solutions and promote global cooperation on climate change. As of May 2016, over 170 nations have signed the Paris Agreement on climate change, signifying worldwide commitment to reduce GHG emissions.

Further, as explained in the 2010 TSD, from a technical perspective, the development of a domestic SC-CO<sub>2</sub> was greatly complicated by the relatively few region- or country-specific estimates of the SC-CO<sub>2</sub> in the literature, and impacts beyond our borders have spillover effects on the United States, particularly in the areas of national security, international trade, and public health. As a result, it was only possible to include an "approximate, provisional, and highly speculative" range of 7 to 23 percent for the share of domestic benefits in the 2010 TSD. This range was based on two strands of evidence: direct domestic estimates resulting from the FUND model, and an alternative approach under which the fraction of GDP lost due to climate change is assumed to be similar across countries.

The EPA also disagrees that the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> estimates are inconsistent with OMB guidance, e.g., OMB Circular A-4. Circular A-4 is a living document, which may be updated as appropriate to reflect new developments and unforeseen issues. OMB was fully involved in the development of the SC-CO<sub>2</sub> estimates as a working group co-chair and supports the recommendations regarding the discount rate and the focus on global damages. The emphasis on global rather than domestic damages is also explained in detail in the TSDs. Beyond the fact that good methodologies for estimating domestic damages do not currently exist, basing decisions on only the domestic damages from carbon emissions, including methane, will lead to an inefficient allocation of resources to reducing them, especially if all countries adopt a similarly short-sighted approach. An efficient outcome can only be achieved if all countries consider the full costs and benefits of their actions; the United States continues to be a leader in working to establish such a regime internationally.

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[1] Referred to as the "OMB Response to Comments on SC-CO<sub>2</sub>." In particular, see pgs 30-32 at <https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-response-to-comments-final-july-2015.pdf>.

[2] 2010 SC-CO<sub>2</sub> TSD available in the docket and at <https://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 79

**Comment Excerpt:**

Compounding the questions pervading EPA's heavy reliance on these social cost analyses to estimate benefits is the fact they have a global focus, while EPA's compliance cost estimates focus more narrowly on just the United States. This mismatch is unusual. In evaluating most

policies, the government typically compares U.S. costs to U.S. benefits, even if other costs or benefits are felt outside its borders. After all, the executive order EPA is attempting to satisfy with its regulatory impact analysis specifically states that "[t]he *American people* deserve a regulatory system that works for *them*, not against *them*: a regulatory system that protects and improves *their* health, safety, environment, and well-being and improves the performance of the economy without imposing unacceptable or unreasonable costs on society..." William J. Clinton, "Executive Order 12866: Regulatory Planning and Review," 58 Fed. Reg. 51735 (Oct. 1993) (emphasis added). The U.S. Office of Management and Budget, in adopting guidance on regulatory impact analyses reaffirmed this focus by advising federal agencies that "[y]our analysis should focus on benefits and costs that accrue to citizens and residents of the United States. Where you choose to evaluate a regulation that is likely to have effects beyond the borders of the United States, these effects should be reported separately."

The focus on U.S. benefits, not global benefits, is also co-extensive with the purposes of the Clean Air Act, which provides and bounds EPA's authority to impose regulatory burdens on industrial sources of air emissions. Specifically, the purpose of the Clean Air Act is to protect and enhance the quality of the *Nation's* air resources so as to promote the public health and welfare and the productive capacity of *its population*." 42 U.S.C. § 7401(b)(1) (emphasis added).

To put this important inconsistency into context, EPA's cost and benefit calculations conclude that the proposed rules will provide a total net benefit of \$620 million. Spread over the approximately 320 million U.S. citizens (*see* <http://www.census.gov/popclock/>), that benefit is a mere \$2 per person. But spread over the world population of approximately 7 billion individuals (*id.*), the benefits become vanishingly small—less than nine pennies per person. Such incredibly tiny benefits are almost certainly within the margin of error of the analysis, given its wide range of results.

But perhaps the most troubling aspect of EPA's heavy reliance on the social cost estimates is the quiet recognition that those estimates will be entirely meaningless if the rest of the world does not follow suit with the EPA's efforts to address climate change. Specifically, all three versions of the technical support document for the social cost of carbon contain the following discussion:

[C]limate change presents a problem that the United States alone cannot solve. *Even if the United States were to reduce its greenhouse gas emissions to zero, that step would be far from enough to avoid substantial climate change.* Other countries would also need to take action to reduce emissions if significant changes in the global climate are to be avoided.

This statement confirms that only "[*in*]"significant changes" can be avoided if the U.S. acts alone. Given that the costs imposed by EPA's proposed rules are real, and will fall entirely on U.S. industry and citizens alone, EPA's use of the "social cost of methane" to suggest that the benefits of its rules will exceed their cost is unreasonable.

### **Comment Response:**

EPA disagrees with the commenter's assertion that the Clean Air Act prohibits use of a global SC-CO<sub>2</sub> or global SC-CH<sub>4</sub> value to estimate the benefits of GHG reductions. The application of the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> to estimate the social benefits of emission reductions is entirely separate from regulating emissions. Conducting an economic analysis does not confer any legal or regulatory obligations. The SC-CH<sub>4</sub> and SC-CO<sub>2</sub> estimates allowed EPA to account for the

monetized climate benefits of the estimated methane and CO<sub>2</sub> impacts, respectively, in the benefit-cost analysis presented in the regulatory impact analysis (RIA). See also the preamble, including section III, for discussion about EPA's statutory authority and other factors relevant to the final rule.

The social cost of carbon Interagency Working Group (IWG) concluded that the only way to achieve an efficient allocation of resources for emissions reduction on a global basis is for all countries to base their policies on global estimates of damages. The IWG has therefore continued to recommend the use of global SC-CO<sub>2</sub> estimates in regulatory impact analyses. EPA agrees with the IWG conclusion and has used the global SC-CO<sub>2</sub> estimates in the RIA for this rulemaking. Moreover, EPA had determined that the basis for using global estimates of the SC-CO<sub>2</sub> applies also to use of the SC-CH<sub>4</sub> estimates, given that methane is also a global pollutant and that the SC-CH<sub>4</sub> methodology is linked to the SC-CO<sub>2</sub> methodology. See EPA's response to comment EPA-HQ-OAR-2003-0215-0202, excerpt 12, for additional discussion about the reasoning for using global estimates in the benefit costs analysis.

In addition, EPA notes that the commenter's back-of-the-envelope calculation to approximate the CO<sub>2</sub> and CH<sub>4</sub> benefits on a per capita basis is both misleading and irrelevant. The relatively small benefits per person add up to a substantial total benefit estimate when aggregating across the entire population. See also EPA's response to comment EPA-HQ-OAR-2003-0215-0202, excerpt number 12, under comment code 8o, for discussion about the basis for using global estimates.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 13

**Comment Excerpt:**

But perhaps the most troubling aspect of EPA's heavy reliance on the social cost estimates is the quiet recognition that those estimates will be entirely meaningless if the rest of the world does not follow suit with the EPA's efforts to address climate change. Specifically, all three versions of the technical support document for the social cost of carbon contain the following discussion:

[C]limate change presents a problem that the United States alone cannot solve. *Even if the United States were to reduce its greenhouse gas emissions to zero, that step would be far from enough to avoid substantial climate change.* Other countries would also need to take action to reduce emissions if significant changes in the global climate are to be avoided.

This statement confirms that only "[in]significant changes" can be avoided if the U.S. acts alone. Given that the costs imposed by EPA's proposed rules are real, and will fall entirely on U.S. industry and citizens, EPA should reconsider its use of the "social cost of methane" to suggest that the benefits of its rules will exceed their cost.

**Comment Response:**

See response to EPA-HQ-OAR-2014-0451-0176, excerpt number 79, under comment code 8o.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist  
**Commenter Affiliation:** Union of Concerned Scientists et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0196  
**Comment Excerpt Number:** 27

**Comment Excerpt:**

In particular, *global* Social Cost of Methane values are appropriate to use in EPA’s regulatory impact analyses. The many strategic, economic, and legal grounds that justify use of a global SCC apply with equal force to the Social Cost of Methane. For example, other countries already use a global social cost of methane value.<sup>109</sup> The United States, together with several other countries, has been trying to prioritize global action on methane reductions, because as "a powerful, short-lived greenhouse gas," methane has a greater potential to affect "warming in the near to medium term."<sup>110</sup> And the United States has highlighted its planned actions on methane—including these standards for landfills—in its joint statements on climate with China.<sup>111</sup> To demonstrate the U.S. commitment to reducing methane emissions specifically, and to encourage other countries to follow suit in prioritizing efforts on this powerful and fast-acting pollutant, it is strategically important for the United States to continue valuing the global effects of its methane regulations. Under the Clean Air Act, EPA has clear authority to do so.<sup>112</sup> In its final emission guidelines and performance standards on landfills, and in its final regulatory impact analysis, EPA should bolster the rationales for the use of a global Social Cost of Methane value, as articulated in the underlying Interagency Working Group Technical Support Documents.

[Footnote 109] *E.g.*, Defra, U.K., *Methodological Approaches for Using SCC Estimates in Policy Assessment* at 58 (2005) (reporting the PAGE results for the social cost of methane).

[Footnote 110] *E.g.*, U.S. Dep’t of State, *Joint Statement on Climate Change and the Arctic*, Aug. 31, 2015 (made following the GLACIER conference, at which Canada, Denmark, Finland, Iceland, Norway, Sweden, and Russia were also represented).

[Footnote 111] White House Press Secretary, *U.S.-China Joint Presidential Statement on Climate Change*, Sept. 25, 2015.

[Footnote 112] *See supra* on the use of a global SCC number and the role of Clean Air Act § 115.

**Comment Response:**

EPA agrees that a focus on global SC-CO<sub>2</sub> and global SC-CH<sub>4</sub> estimates in RIAs is appropriate and has applied them to the analysis of the benefits in the final rulemaking. In particular, EPA agrees with the commenter’s discussion in DCN EPA-HQ-OAR-2014-0451-0196, excerpts 5 through 9, 11, and 27, of the global nature of GHG emissions—that each ton of GHGs emitted by the United States creates damages within the country and abroad—and with the commenter’s conclusion that “each ton of carbon pollution abated in another country will benefit the United States along with the rest of the world.” As noted by the commenter, the global economy is tightly interconnected and the United States is especially vulnerable to international spillover effects. The impacts of climate change that occur beyond the borders of the United States will

affect the interests of U.S. citizens and U.S. national security interests. EPA agrees with the commenter's interpretation, as described in this excerpt, of recent reports on geopolitical instability associated with climatic disruptions abroad and the threat such disruptions may pose to the United States. For example, the National Research Council Climate and Social Stress assessment concluded that it is prudent to expect that some climate events "will produce consequences that exceed the capacity of the affected societies or global systems to manage and that have global security implications serious enough to compel international response."<sup>[1]</sup> As discussed in section III.B of the preamble, the NRC National Security Implications assessment recommends that, due to climate change, the United States should be preparing for increased needs for humanitarian aid; responding to the effects of climate change in geopolitical hotspots, including possible mass migrations; and addressing changing security needs in the Arctic as sea ice retreats. Section IV.B of the preamble discusses other scientific assessments about the impacts of climate change and presents additional examples of climate change impacts within the United States.

Regarding the recommendation that EPA bolster its rationale for use of a global SC-CH<sub>4</sub> value, the Agency has reviewed the discussion in the preamble and RIA and clarified that the rationale for using a global SC-CO<sub>2</sub> value applies equally to using a global SC-CH<sub>4</sub> estimate. EPA recognizes the importance of the SC-CH<sub>4</sub> and SC-CO<sub>2</sub> estimates to be as complete as possible and continues to engage in research on modeling and valuation of climate impacts, which would support improvements to SC-CH<sub>4</sub> and SC-CO<sub>2</sub> estimates.

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[1] National Research Council. (2013). Climate and Social Stress: Implications for Security Analysis. Committee on Assessing the Impacts of Climate Change on Social and Political Stresses, J.D. Steinbruner, P.C. Stern, and J.L.

Husbands, Eds. Board on Environmental Change and Society, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press. See page 20. Available at [http://www.nap.edu/download.php?record\\_id=14682#](http://www.nap.edu/download.php?record_id=14682#)

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 5

**Comment Excerpt:**

*The IWG Correctly Used a Global SCC Value.*

To design the economically efficient policies necessary to forestall severe and potentially catastrophic climate change, all countries must use a global SCC value. Given that the United States and many other significant players in the international climate negotiations have already applied a global SCC framework in evaluating their own climate policies, the continued use of the global value in U.S. regulatory decisions may be strategically important as the United States seeks to set an example for other countries, harmonize regulatory systems, and take the lead in

ongoing international negotiations. Binding legal obligations, basic ethical responsibilities, and practical considerations further counsel in favor of the United States using a global SCC value.

**Comment Response:**

EPA agrees that a focus on global SC-CO<sub>2</sub> and global SC-CH<sub>4</sub> estimates in RIAs is appropriate and has applied them to the analysis of the benefits in the final rulemaking. See also EPA response to DCN EPA-HQ-OAR-2014-0451-0196, excerpt number 27, under comment code 8o.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 6

**Comment Excerpt:**

To avoid a global "tragedy of the commons" and an economically inefficient degradation of the world's climate resources, all countries should set policy according to a global SCC value. The climate and clean air are global common resources, meaning they are free and available to all countries, but any one country's use—i.e., pollution—imposes harms on the polluting country as well as the rest of the world. Because greenhouse gases do not stay within geographic borders but rather mix in the atmosphere and affect climate worldwide, each ton of carbon pollution emitted by the United States not only creates domestic harms, but also imposes additional and large externalities on the rest of the world, including disproportionate harms to some of the least-developed nations. Conversely, each ton of carbon pollution abated in another country will benefit the United States along with the rest of the world.

If all countries set their greenhouse gas emission levels based on only their domestic costs and benefits, ignoring the large global externalities, the collective result would be substantially sub-optimal climate protections and significantly increased risks of severe harms to all nations, including to the United States. "[E]ach pursuing [only its] own best interest . . . in a commons brings ruin to all."<sup>16</sup> By contrast, a global SCC value would require each country to account for the full damages of its greenhouse gas pollution and so to collectively select the efficient level of worldwide emissions reductions needed to secure the planet's common climate resources.

[Footnote 16] Garrett Hardin, *The Tragedy of the Commons*, 162 *SCIENCE* 1243 (1968).

**Comment Response:**

EPA agrees that a focus on global SC-CO<sub>2</sub> and global SC-CH<sub>4</sub> estimates in RIAs is appropriate and has applied them to the analysis of the benefits in the final rulemaking. See also EPA response to DCN EPA-HQ-OAR-2014-0451-0196, excerpt number 27, under comment code 8o.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 7



### **Comment Excerpt:**

Thus, well-established economic principles demonstrate that the United States stands to benefit greatly if all countries apply a global SCC value in their regulatory decisions. A rational tactical option in the effort to secure that economically efficient outcome is for the United States to continue using a global SCC value itself. The United States is engaged in a repeated strategic game of international negotiations and regulatory coordination, in which several significant players—including the United States—have already adopted a global SCC framework.<sup>17</sup> For the United States to now depart from this implicit collaborative dynamic by reverting to a domestic-only SCC estimate could undermine the country's long-term interests in future climate negotiations and could jeopardize emissions reductions underway in other countries, which are already benefiting the United States.<sup>18</sup> A domestic-only SCC value could be construed as a signal that the United States does not recognize or care about the effects of its policy choices on other countries, and signal that it would be acceptable for other countries to ignore the harms they cause the United States. Further, a sudden about-face could undermine the United States' credibility in negotiations. The United States has recently reasserted its desire to take a lead in both bilateral and international climate negotiations.<sup>19</sup> To set an example for the rest of the world, to advance its own long-term climate interests, and to secure greater cooperation toward reducing global emissions, strategic factors support the continued use a global SCC value in U.S. regulatory decisions.

Though the Constitution balances the delegation of foreign affairs power between the executive and legislative branches, "[t]he key to presidential leadership is the negotiation function. Everyone agrees that the President has the exclusive power of official communication with foreign governments."<sup>20</sup> The development and analysis of U.S. climate regulations are essential parts of the dialogue between the United States and foreign countries about climate change. Using a global SCC value communicates a strong signal that the United States wishes to engage in reciprocal actions to mitigate the global threat of climate change. The President is responsible for developing and executing the negotiation strategy to achieve the United States' long-term climate interests. Currently, the President has instructed federal agencies to use a global SCC value as one important step that encourages other countries to take reciprocal actions that also account for global externalities. The President's constitutional powers to negotiate international agreements would be seriously impaired if federal agencies were forced to stop relying on a global SCC value.<sup>21</sup>

In fact, the United States has already begun to harmonize with other countries its policies on climate change and on the valuation of regulatory benefits. The recent U.S.-China agreement is but the latest example. For instance, the United States has entered into a joint Regulatory Cooperation Council with Canada, which has adopted a work plan that commits the two countries to synchronizing "aggressive" greenhouse gas reductions, especially in the transportation sector.<sup>22</sup> A separate Regulatory Cooperation Council with Mexico calls generally for improving and harmonizing policy "by strengthening the analytic basis of regulations,"<sup>23</sup> and its work plan acknowledges the transboundary nature of environmental risks.<sup>24</sup> Mexico and Canada have both adopted greenhouse gas standards for vehicles that harmonize with the U.S. standards<sup>25</sup> and that calculate benefits according to a global SCC value.<sup>26</sup> Canada has also used the IWG's global SCC value in developing carbon dioxide standards for its coal-fired power plants, estimating \$5.6 billion (Canadian dollars) worth of global climate benefits.<sup>27</sup> The direct

U.S. share of the net benefits from that Canadian regulation will likely total in the hundreds of millions of dollars.<sup>28</sup>

Further efforts at regulatory harmonization are currently underway. For example, the United States is now negotiating a Transatlantic Trade and Investment Partnership with the European Union, and a key element is regulatory coordination.<sup>29</sup> The European Union has already adopted an Emissions Trading Scheme (ETS) to cap its greenhouse gas emissions, and its Aviation Directive is just one of the climate policies that could be shaped by these negotiations.<sup>30</sup> The European Commission has indicated its willingness to further reduce its ETS cap if other major emitters make proportional commitments<sup>31</sup>—a result that will only occur if countries consider more than their own domestic costs and benefits from reducing greenhouse gas emissions. Moreover, several individual European nations—including the United Kingdom,<sup>32</sup> France,<sup>33</sup> Germany,<sup>34</sup> and Norway<sup>35</sup>—have adopted a global SCC value for use in their regulatory analyses. Some other European countries, such as Sweden, have adopted carbon taxes that implicitly operate as a high SCC that accounts for global externalities.<sup>36</sup>

As further evidence of how the United States' use of a global SCC value is already influencing other international actors to follow suit, the International Monetary Fund (IMF) applies in its policy reviews an SCC estimate based on the IWG number.<sup>37</sup> Given the potential influence of the IMF on the environmental policies of developing countries,<sup>38</sup> the pull that the IWG's global estimate has at the IMF could be very advantageous to the United States, by motivating industrializing countries to use similar numbers in the future.

[Footnote 17] See *infra* notes 26 and 32 to 35, and accompanying text, detailing use of a global SCC value by Canada, Mexico, the United Kingdom, France, Germany, and Norway.

[Footnote 18] See ROBERT AXELROD, *THE EVOLUTION OF COOPERATION* 10-11 (1984) (on repeated prisoner's dilemma games).

[Footnote 19] EXEC. OFFICE OF THE PRES., *THE PRESIDENT'S CLIMATE ACTION PLAN* 17-21 (2013).

[Footnote 20] Phillip R. Trimble, *The President's Foreign Affairs Power*, 83 AM. J. OF INTL. L. 750, 755 (1989).

[Footnote 21] See David Remnick, *The Obama Tapes*, NEW YORKER, Jan. 23, 2014, available at <http://www.newyorker.com/online/blogs/newsdesk/2014/01/the-obama-tapes.html> (quoting interview with President Obama: "[M]y goal has been to make sure that the United States can genuinely assert leadership in this issue internationally, that we are considered part of the solution rather than part of the problem. And if we are at the table in that conversation with some credibility, then it gives us the opportunity to challenge and engage the Chinese and the Indians, as long as we take into account the fact that they've still got, between the two of them, over a billion people in dire poverty. . . . This is why I'm putting a big priority on our carbon action plan here. It's not because I'm ignorant of the fact that these emerging countries are going to be a bigger problem than us. It's because it's very hard for me to get in that conversation if we're making no effort.").

[Footnote 22] UNITED STATES-CANADA REGULATORY COOPERATION COUNCIL, *JOINT ACTION PLAN*, at 16 (2011), available at [http://www.whitehouse.gov/sites/default/files/omb/oira/irc/us-canada\\_rcc\\_joint\\_action\\_plan.pdf](http://www.whitehouse.gov/sites/default/files/omb/oira/irc/us-canada_rcc_joint_action_plan.pdf).

[Footnote 23] UNITED STATES-MEXICO HIGH-LEVEL REGULATORY COOPERATION COUNCIL, WORK PLAN at 3 (2012), *available at* <http://www.whitehouse.gov/sites/default/files/omb/oira/irc/united-states-mexico-high-level-regulatory-cooperation-council-work-plan.pdf>.

[Footnote 24] *Id.* at 11 (noting that oil drilling activities in the Gulf of Mexico conducted by either country "present risks for both countries, and both countries would benefit from a common set of drilling standards").

[Footnote 25] *See* INT'L COUNCIL ON CLEAN TRANSP., MEXICO LIGHT-DUTY VEHICLE CO<sub>2</sub> AND FUEL ECONOMY STANDARDS 4 (Policy Update, July 2013), *available at* [http://www.theicct.org/sites/default/files/publications/ICCTupdate\\_Mexico\\_LDVstandards\\_july2013.pdf](http://www.theicct.org/sites/default/files/publications/ICCTupdate_Mexico_LDVstandards_july2013.pdf) (noting that Mexico's standards were based on the U.S. and Canadian standards).

[Footnote 26] *See* Heavy-Duty Vehicle and Engine Greenhouse Gas Emission Regulations, SOR/2013-24, 147 Can. Gazette pt. II, 450, 544 (Can.), *available at* <http://canadagazette.gc.ca/rp-pr/p2/2013/2013-03-13/html/sor-dors24-eng.html> ("The SCC is used in the modelling of the cost-benefit analysis . . . . It represents an estimate of the economic value of avoided climate change damages *at the global level*. . . . The values used by Environment Canada are based on the extensive work of the U.S. Interagency Working Group on the Social Cost of Carbon.") (emphasis added); Instituto Nacional de Ecología, Mexico, Regulatory Impact Analysis on *PROY-NOM-163- SEMARNAT-ENER-SCFI-2012, Emisiones de bióxido de carbono (CO<sub>2</sub>) provenientes del escape y su equivalencia en términos de rendimiento de combustible, aplicable a vehículos automotores nuevos de peso bruto vehicular de hasta 3857 kilogramos* (July 5, 2012), *available at* <http://207.248.177.30/mir/formatos/defaultView.aspx?SubmitID=273026> ("[S]e obtienen beneficios ambientales por la reducción del consumo de combustible, los cuales se reflejan en beneficios a la salud de la población en el caso de contaminantes criterio, y en *beneficios globales para las emisiones evitadas de CO<sub>2</sub>*.") (emphasis added).

[Footnote 27] Reduction of Carbon Dioxide Emissions from Coal-Fired Generation of Electricity Regulations, SOR/2012-167, 146 Can. Gazette pt. II, 1951, 2000, 2044 (Can.), *available at* <http://www.gazette.gc.ca/rp-pr/p2/2012/2012-09-12/html/sor-dors167-eng.html>.

[Footnote 28] \$5.6 billion in Canadian dollars is worth \$5.0 billion in U.S. dollars (using February 2014 conversion rates). Seven to twenty-three percent of \$5 billion is between \$350 million and \$1.15 billion. *See* 2010 TSD, *supra* note 4, at 11 (provisionally calculating the direct U.S. share of a global SCC value at between 7-23%, though ultimately recommending "that using the global (rather than domestic) value . . . is the appropriate approach," for reasons consistent with these comments).

[Footnote 29] *See* EUR. COMM'N, TRANSATLANTIC TRADE AND INVESTMENT PARTNERSHIP: THE REGULATORY PART (2013).

[Footnote 30] *See* SIERRA CLUB, THE TRANSATLANTIC FREE TRADE AGREEMENT: WHAT'S AT STAKE FOR COMMUNITIES AND THE ENVIRONMENT at 9-10 (2013).

[Footnote 31] Eur. Comm'n, Working with International Partners, <http://www.e.europa.eu/clima/policies/international> ("The EU is offering to step up its 2020 reduction targets to 30% if other major economies commit.").

[Footnote 32] ECONOMICS GROUP, DEFRA, U.K., THE SOCIAL COST OF CARBON AND THE SHADOW PRICE OF CARBON: WHAT THEY ARE, AND HOW TO USE THEM IN ECONOMIC APPRAISAL IN THE UK 1 (2007); *see also* Ministry of Finance, Norway, Cost-Benefit Analysis: Carbon Price Paths, *available at* <http://www.regjeringen.no/en/dep/fin/Documents-and-publications/official-norwegian-reports-/2012/nou-2012-16-2/10.html?id=713585> ("The United Kingdom has changed its method for the valuation of greenhouse gas emissions. Prior to 2009, the estimated global social cost of carbon was used, but one [sic] has now switched over to pricing in line with the necessary marginal cost of meeting long-term domestic emission reduction targets in conformity with the EU Climate and Energy Package.").

[Footnote 33] *See* Balázs Égert, *France's Environmental Policies: Internalising Global and Local Externalities* 8-10 (OECD Economics Department Working Papers No. 859, 2011), *available at* <http://dx.doi.org/10.1787/5kgdpn0n9d8v-en> (discussing global impacts and France's history of calculating the SCC); Oskar Lecuyer & Philippe Quirion, funded by the European Union's Seventh Framework Programme, *Choosing Efficient Combinations of Policy Instruments for Low-Carbon Development and Innovation to Achieve Europe's 2050 Climate Targets—Country Report: France* at 8 (2013) (noting the prospects for a carbon tax in 2014-15, and explaining that "A 2009 stakeholder and expert group led by the 'Conseil d'analyse stratégique' (a public body in charge of expertise and stakeholder dialogue) set the optimal level of the carbon tax (the social cost of carbon) at € 32/tCO<sub>2</sub> in 2010, and rising to € 100 in 2030 and € 200 in 2050.").

[Footnote 34] Testimony of Howard Shelanski, OIRA Admin., before the H. Comm. on Oversight & Gov't Reform's Subcomm. on Energy Policy, Healthcare, and Entitlements, July 18, 2013, at 3 (explaining that the global SCC value estimated by the IWG is consistent with values used by Germany and the United Kingdom).

[Footnote 35] *See* Ministry of Finance, *supra* note 32 (explaining that, for projects not already covered by a binding emission limitation, the carbon price should "be based on the marginal social cost of carbon," meaning "the global cost of emitting one additional tonne of CO<sub>2</sub>e"). Note that Norway has joined the E.U.'s trading scheme.

[Footnote 36] Henrik Hammar, Thomas Sterner & S. Åkerfeldt, *Sweden's CO<sub>2</sub> Tax and Taxation Reform Experiences*, in REDUCING INEQUALITIES: A SUSTAINABLE DEVELOPMENT CHALLENGE (Genevey, R. et al. eds., 2013).

[Footnote 37] *E.g.*, Benedict Clements et al., International Monetary Fund, *Energy Subsidy Reforms: Lessons and Implications* 9 (IMF Policy Paper, Jan. 28, 2013).

[Footnote 38] *See* Natsu Taylor Saito, *Decolonization, Development, and Denial*, 6 FL. A & M U. L. REV. 1, 16 (2010) (quoting former IMF counsel as saying "today it is common to find these institutions [IMF and World Bank] requiring their borrowing member countries to accept and adhere to prescribed policies on environmental protection").

### **Comment Response:**

EPA agrees that a focus on global SC-CO<sub>2</sub> and global SC-CH<sub>4</sub> estimates in RIAs is appropriate and has applied them to the analysis of the benefits in the final rulemaking. See also EPA response to DCN EPA-HQ-OAR-2014-0451-0196, excerpt number 27, under comment code 8o.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist  
**Commenter Affiliation:** Union of Concerned Scientists et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0196  
**Comment Excerpt Number:** 8

**Comment Excerpt:**

In addition to this compelling strategic argument—namely, that it is rational for the United States and other countries to continue their reciprocal use of a global SCC value to achieve the economically efficient outcome on climate change (and avoid catastrophic climate impacts)—legal obligations further prescribe using a global SCC value. A basic ethical responsibility to prevent transboundary environmental harms has been enshrined in customary international law.<sup>39</sup> For the United States to knowingly set pollution levels in light of only domestic harms, willfully ignoring that its pollution directly imposes environmental risks—including catastrophic risks—on other countries, would violate norms of comity among countries. The United States would be knowingly causing foreseeable harm to other countries, without compensation or just cause. Given that the nations most at risk from climate change are often the poorest countries in the world, such a policy would also violate basic and widely shared ethical beliefs about fairness and distributive justice. Indeed, taking a global approach to measuring climate benefits is consistent with the ideals of transboundary responsibility and justice that the United States commits to in other foreign affairs.<sup>40</sup>

Binding international agreements also require consideration and mitigation of transboundary environmental harms. Notably, the United Nations Framework Convention on Climate Change—to which the United States is a party—declares that countries' "policies and measures to deal with climate change should be cost-effective so as to ensure *global benefits* at the lowest possible cost."<sup>41</sup> The Convention further commits parties to evaluating global climate effects in their policy decisions, by "employ[ing] appropriate methods, for example *impact assessments* . . . with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change."<sup>42</sup> The unmistakable implication of the Convention is that parties—including the United States—must account for global economic, public health, and environmental effects in their impact assessments.

Similar obligations exist in domestic U.S. law as well. For example, the U.S. National Environmental Policy Act recognizes "the worldwide and long-range character of environmental problems"<sup>43</sup> and requires federal agencies to include reasonably foreseeable transboundary effects in their environmental impact statements.<sup>44</sup> While some individual statutes under which federal agencies will craft climate policies may be silent on the issue of considering extraterritorial benefits, arguably the most important statute for U.S. climate policy—the Clean Air Act—requires the control of air emissions that affect other countries and so encourages a global assessment of greenhouse gas effects. Specifically, Section 115 of the Clean Air Act directs EPA and the states to mitigate U.S. emissions that endanger foreign health and welfare.<sup>45</sup>

The global perspective on climate costs and benefits required by that provision should inform all regulatory actions developed under the Clean Air Act, and may provide useful guidance under other statutes as well.<sup>46</sup>

[Footnote 39] See PHILIPPE SANDS, *PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW* 241 (2d ed. 2003) (noting that "the responsibility not to cause damage to the environment of other states or of areas beyond national jurisdiction has been accepted as an obligation by all states[;] . . . there can be no questions but that Principle 21 [of the Stockholm Declaration on the Human Environment] reflects a rule of customary international law").

[Footnote 40] See Paul Baer & Ambuj Sagar, *Ethics, Rights and Responsibilities*, in *CLIMATE CHANGE SCIENCE AND POLICY* (Stephen Schneider et al., eds., 2009).

[Footnote 41] United Nations Framework Convention on Climate Change, May 9, 1992, S. Treat Doc. No. 102-38, 1771 U.N.T.S. 107, Article 3(3) (emphasis added); see also *id.* at Article 3(1) ("The Parties should protect the climate system for the *benefit of present and future generations of humankind*, on the basis of *equity* and in accordance with their common but *differentiated responsibilities* and respective capabilities.") (emphasis added); *id.* at Article 4(2)(a) (committing developed countries to adopt policies that account for "the need for equitable and appropriate contributions by each of these Parties to the global effort").

[Footnote 42] *Id.* at Article 4(1)(f) (emphasis added); see also *id.* at Article 3(2) (requiring parties to give "full consideration" to those developing countries "particularly vulnerable to the adverse effects of climate change"). See also North American Agreement on Environmental Cooperation (1993), 32 I.L.M. 1480, art. 10(7) (committing the United States to the development of principles for transboundary environmental impact assessments).

[Footnote 43] 42 U.S.C. § 4332(2)(F).

[Footnote 44] COUNCIL ON ENVIRONMENTAL QUALITY, *GUIDANCE ON NEPA ANALYSIS FOR TRANSBOUNDARY IMPACTS* (1997), available at <http://www.gc.noaa.gov/documents/transguide.pdf>; see also CEQ, *DRAFT NEPA GUIDANCE ON CONSIDERATION OF THE EFFECTS OF CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS* at 2 (2010), available at <http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-consideration-effects-ghg-draft-guidance.pdf> (defining climate change as a "global problem"); see also Exec. Order No. 12,114, *Environmental Effects Abroad of Major Federal Actions*, 44 Fed. Reg. 1957 §§ 1-1, 2-1 (Jan. 4, 1979) (applying to "major Federal actions . . . having significant effects on the environment outside the geographical borders of the United States," and enabling agency officials "to be informed of pertinent environmental considerations and to take such considerations into account . . . in making decisions regarding such actions").

[Footnote 45] 42 U.S.C. § 7415.

[Footnote 46] For details on the applicability of Section 115, see Petition from the Institute for Policy Integrity, to EPA, for Rulemakings and Call for Information under Section 115, Title VI, Section 111, and Title II of the Clean Air Act to Regulate Greenhouse Gas Emissions (Feb. 19, 2013); see also Nathan Richardson, *EPA and Global Carbon: Unnecessary Risk*, COMMON

RESOURCES, Feb. 28, 2013 (explaining how Section 115 authorizes use of a global SCC value when regulating under other Clean Air Act provisions).

**Comment Response:**

Without taking a specific position on all of the commenter's assertions, EPA agrees that a focus on global SC-CO<sub>2</sub> and global SC-CH<sub>4</sub> estimates in RIAs is appropriate and has applied them to the analysis of the benefits in the final rulemaking. See also EPA response to DCN EPA-HQ-OAR-2014-0451-0196, excerpt number 27, under comment code 8o.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 9

**Comment Excerpt:**

Presidential orders on regulatory analysis also support use of a global SCC value. In 2012, President Obama issued Executive Order 13,609 on promoting international regulatory cooperation.<sup>47</sup> The Order built on his previous Executive Order 13,563, which in turn had affirmed its 1993 predecessor, Executive Order 12,866, in requiring benefit-cost analysis of significant federal regulations.<sup>48</sup> Though White House guidance published in 2003 on regulatory impact analysis under E.O. 12,866 assumed that most analyses would focus on domestic costs and benefits, it ultimately deferred to the discretion of regulatory agencies on whether to evaluate "effects beyond the borders of the United States."<sup>49</sup> More importantly, since the publication of that guidance, President Obama has issued his own supplemental orders on regulatory analysis, including E.O. 13,609, which clarified the importance of international cooperation to achieve U.S. regulatory goals. This 2012 order explicitly recognizes that significant regulations can have "significant international impacts,"<sup>50</sup> and it calls on federal agencies to work toward "best practices for international regulatory cooperation with respect to regulatory development."<sup>51</sup> By employing a global SCC value in U.S. regulatory development, and by encouraging other countries to follow that best practice and account for the significant international impacts of their own climate policies, federal agencies will advance the mission of this presidential order on regulatory harmonization.

[Footnote 47] 77 Fed. Reg. 26,413 (May 4, 2012).

[Footnote 48] *Id.* § 1 (explaining the order intends to "promot[e] the goals of Executive Order 13563"); *see also* Exec. Order No. 13,563, *Improving Regulation and Regulatory Review*, § 1(b), 76 Fed. Reg. 3821 (Jan. 18, 2011) (reaffirming Exec. Order No. 12,866, 58 Fed. Reg. 51,741 (Sept. 30, 1993) and requiring benefit-cost analysis).

[Footnote 49] OMB, CIRCULAR A-4, at 15 (2003). In sharp contrast to the Circular's ultimate deferral to agencies on the issue of considering transboundary efficiency effects, the Circular makes very clear that international transfers and distributional effects should be assessed as costs and benefits to the United States: "Benefit and cost estimates should reflect real resource use. Transfer payments are monetary payments from one group to another that do not affect total resources available to society. . . . However, transfers from the United States to other nations

*should* be included as costs, and transfers from other nations to the United States as benefits, as long as the analysis is conducted from the United States perspective." *Id.* at 38 (emphasis original). In other words, even if federal agencies use a global SCC value to assess efficiency effects relating to their climate policies, that global valuation will not prevent the agencies from also counting international transfers or distributional effects that benefit the United States as benefits. *See* Comments from the Institute for Policy Integrity, to EPA, on Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards, at 12-13 (Nov. 27, 2009) (explaining that, depending on the relevant statutory mandate, agencies may calculate a monopsony benefit to the United States even while using a global SCC value).

[Footnote 50] 77 Fed. Reg. at 26,414, § 3(b).

[Footnote 51] 77 Fed. Reg. at 26,413, § 2(a)(ii)(B) (defining the goals of the regulatory working group).

### **Comment Response:**

EPA agrees that a focus on global SC-CO<sub>2</sub> and global SC-CH<sub>4</sub> estimates in RIAs is appropriate and has applied them to the analysis of the benefits in the final rulemaking. *See also* EPA response to DCN EPA-HQ-OAR-2014-0451-0196, excerpt number 27, under comment code 8o.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 11

### **Comment Excerpt:**

Two practical considerations counsel in favor of a global SCC value. First, unlike some other significant international environmental impacts, no methodological limitations block the quantitative estimation of a global SCC value. In recent regulatory impact analyses for major environmental rules, EPA has qualitatively considered important transnational impacts that could not be quantified. For example, in the Mercury and Air Toxics Standards, EPA concluded that a reduction of mercury emissions from U.S. power plants would generate health benefits for foreign consumers of fish, both from U.S. exports and from fish sourced in foreign countries. EPA did not quantify these foreign health benefits, however, due to complexities in the scientific modeling.<sup>52</sup> Similarly, in the analysis of the Cross-State Air Pollution Rule, EPA noted—though could not quantify—the "substantial health and environmental benefits that are likely to occur for Canadians" as U.S. states reduce their emissions of particulate matter and ozone—pollutants that can drift long distances across geographic borders.<sup>53</sup> Yet where foreign costs or benefits are important and quantifiable, other federal agencies frequently include those calculations.<sup>54</sup> Given that sophisticated models already exist to quantify the global SCC, the global estimate is appropriate to use.

Second, a global SCC value is in the national interest because harms experienced by other countries could significantly impact the United States. Climate damages in one country could generate large spillover effects to which the United States is especially vulnerable. The mesh of the global economy is woven tightly, and disruptions in one place can have consequences around



the world. As seen historically, economic disruptions in one country can cause financial crises that reverberate globally at a breakneck pace.<sup>55</sup> In a similar vein, national security analysts in government and academia increasingly emphasize that the geopolitical instability associated with climatic disruptions abroad poses a serious threat to the United States.<sup>56</sup> Due to its unique place among countries—both as the largest global economy with trade-and investment-dependent links throughout the world, and as a military superpower—the United States is particularly vulnerable to international spillover effects.

[Footnote 52] EPA, REGULATORY IMPACT ANALYSIS FOR THE FINAL MERCURY AND AIR TOXICS STANDARDS at 65 (2011) ("Reductions in domestic fish tissue concentrations can also impact the health of foreign consumers . . . [and] reductions in U.S. power plant emissions will result in a lowering of the global burden of elemental mercury . . .").

[Footnote 53] Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone, 75 Fed. Reg. 45,209, 45,351 (Aug. 2, 2010).

[Footnote 54] *E.g.*, Unique Device Identification System, 78 Fed. Reg. 58,786 (Sept. 24, 2013) ("[I]n our final regulatory impact analysis we include an estimate of the costs to foreign labelers."); Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 78 Fed. Reg. 3504 (Jan. 16, 2013) (including costs to foreign farms); U.S. Customs and Border Protection Regulatory Agenda, RIN 1651-AA96 Definition of Form I-94 to Include Electronic Format (2013) (preliminarily estimating net benefits to foreign travelers and carriers).

[Footnote 55] Steven L. Schwarz, *Systemic Risk*, 97 GEO. L.J. 193, 249 (2008) (observing that financial collapse in one country is inevitably felt beyond that country's borders).

[Footnote 56] *See, e.g.*, Department of Defense, Climate Change Adaptation Roadmap (2014); CNA Military Board, National Security and the Accelerating Risks of Climate Change (2014).

### **Comment Response:**

EPA agrees that a focus on global SC-CO<sub>2</sub> and global SC-CH<sub>4</sub> estimates in RIAs is appropriate and has applied them to the analysis of the benefits in the final rulemaking. See also EPA response to DCN EPA-HQ-OAR-2014-0451-0196, excerpt number 27, under comment code 8o.

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## **8.12 Uncertainty**

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 11

### **Comment Excerpt:**

The wide range of results presented as the conclusion of those analyses suggests an extremely high level of uncertainty. The primary driver of this wide disparity in results is the discount rate

used to convert the result of the analysis into present day dollars—a critical variable in the analysis, over which EPA admits there is no consensus. 80 Fed. Reg. at 52,144 (Table 7, note a). The fact that the value of the "social cost of methane" is so highly sensitive to a variable over which there is no consensus contradicts EPA's claim that the results of its analysis are well-accepted.

### **Comment Response:**

EPA disagrees that uncertainty over discount rate selection undermines the use of the SC-CH<sub>4</sub> or SC-CO<sub>2</sub> estimates in the benefit cost analysis. The same rates are applied to SC-CO<sub>2</sub> and SC-CH<sub>4</sub>. As explained in the 2010 SC-CO<sub>2</sub> TSD, after a thorough review of the discounting literature, the interagency working group (IWG) chose to use three discount rates to span a plausible range of constant discount rates: 2.5, 3, and 5 percent per year. The central value, 3 percent, is consistent with estimates provided in the economics literature and OMB's Circular A-4 guidance for the consumption rate of interest. The upper value of 5 percent represents the possibility that climate damages are positively correlated with market returns, which would suggest a rate higher than the risk-free rate of 3 percent. Additionally, this discount rate may be justified by the high interest rates that many consumers use to smooth consumption across periods. The low value, 2.5 percent, is included to incorporate the concern that interest rates are highly uncertain over time. It represents the average rate after adjusting for uncertainty using a mean-reverting and random walk approach as described in Newell and Pizer (2003), starting at a discount rate of 3 percent. Further, a rate below the riskless rate would be justified if climate investments are negatively correlated with the overall market rate of return. Use of this lower value also responds to the ethical concerns discussed above regarding intergenerational discounting.

The EPA recognizes that disagreement remains in the academic literature over the appropriate discount rate to use for regulatory analysis of actions with significant intergenerational impacts, such as CO<sub>2</sub> emissions changes that affect the global climate on long time scales. The EPA and the members of the IWG will continue to follow and evaluate the latest science on intergenerational discounting and seek external expert advice on issues related to discounting in the context of climate change.

Furthermore, EPA notes that all regulatory impact analysis involves uncertainty. EPA acknowledges uncertainty in the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> estimates but disagrees that the uncertainty is so great as to undermine use of the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> estimates in regulatory impact analysis. The uncertainty of these estimates is fully acknowledged and comprehensively discussed in the TSDs, the supporting academic literature, and the Regulatory Impact Analysis (RIA) for the rulemaking. While uncertainty must be acknowledged and addressed in regulatory impact analyses, even an uncertain analysis provides useful information to decision makers and the public. For example, if an analysis shows that benefits of a policy option consistently do (or do not) justify costs even over a broad range of estimates, this may increase confidence in the robustness of this conclusion. Conversely, if choices among parameter estimates within a plausible range significantly affect the conclusions of the analysis, this is an important consideration in deciding how to weigh the analytical results in the decision making process. The presence of uncertainty is thus not a reason to exclude the best available estimates of quantified/monetized benefits, as long as it is appropriately characterized. Rather, good regulatory practice requires that agencies use the best available scientific, technical and

economic information to derive the best estimates of costs and benefits that they can, and then communicate to the public the limitations and uncertainties of the analyses. The RIA for this rulemaking and the supporting technical documents clearly discuss the limitations and uncertainties of the analysis. As noted in the RIA and supporting technical documents, EPA is committed to periodic updates in the estimates to reflect ongoing developments in our understanding of the science and economics of climate change, including the treatment of uncertainty.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 78

**Comment Excerpt:**

Details of the climate change analyses aside, the wide range of results presented as the conclusion of those analyses suggests an extremely high level of uncertainty. The social cost of methane estimates are between 500 and 600 percent higher at the top-end of the range than they are at low-end, *see* 80 Fed. Reg. at 52,144, and the range is even wider for the estimate of the social cost of carbon. SC-CO<sub>2</sub> at 3. The primary driver of this wide disparity in results is the uncertainty associated with the discount rate used to convert the result of the analysis into present day dollars—an issue over which EPA admits there is no consensus. 80 Fed. Reg. at 52,144 (Table 7, note a). In short, EPA benefit calculations are based on an estimate that is highly sensitive to a variable over which there is no scientific consensus, contradicting EPA’s claim that the results of its analysis are well-accepted. *Id.*

**Comment Response:**

See EPA’s response to DCN EPA-HQ-OAR-2003-0215-0202, excerpt number 11, [under comment code 8p](#).

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 4

**Comment Excerpt:**

**The SCC is an important and accepted tool for regulatory policy-making based on well-established law and fundamental economics.**

The legal and analytic basis for using the SCC is clear and well established. *As a matter of law and economics, uncertainty in benefits estimates does not mean they should be excluded from regulatory impact analyses.* No benefit or cost estimates are certain. Further, the courts have explicitly rejected the argument that uncertainty in assessing the costs of climate impacts provided a basis for ignoring them in assessing the benefits and costs of regulations, and

executive orders dating back as far as the Reagan administration have all issued guidelines specifying explicit consideration of benefits even if the precise size of the benefit is uncertain.

In 2008, the U.S. Court of Appeals for the Ninth Circuit determined that agencies could not assign a zero dollar value to the social costs of the impacts of climate change. It determined that *failing* to count SCC benefits would be illegal. In this case, the National Highway Traffic Safety Administration (NHTSA) had decided not to count any avoided climate damages in issuing fuel economy standards. The court concluded: "NHTSA's reasoning is arbitrary and capricious for several reasons. First while the record shows that there is a *range of values*, the value of carbon emission reductions is certainly *not zero* (emphasis added)."<sup>13</sup>

Like the Court of Appeals, executive orders dating back to 1981 have also required agencies to assess benefits and costs even when significant uncertainty exists. Every president since (and including) Ronald Reagan has issued directives requiring that agencies conduct cost-benefit analyses of proposed regulations where permitted by statute.<sup>14</sup> Specifically, agencies are directed to "take into account benefits and costs, both quantitative and qualitative . . . and use the *best available techniques* to quantify anticipated present and future benefits and costs as accurately as possible."<sup>15</sup> The IWG's use of Integrated Assessment Models (IAMs) reflects the best available, peer-reviewed science to tally the benefits and costs of specific regulations with impacts on carbon dioxide emissions. While we address ways for improvement in the next section, current IAMs include benefits and costs that have been quantified to date.

The bottom line is that the IWG has properly and lawfully used the best available techniques to quantify the benefits of carbon emission reductions, basing its analysis on the peer-reviewed literature. When agencies use the IWG's estimates of the SCC to calculate the benefits of a rulemaking, they have taken, and will continue to take, comment on the SCC and the process used to derive that value. That is what the law—and good policy—requires.

[Footnote 13] *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1200 (9th Cir. 2008) (emphases added).

[Footnote 14] Stuart Shapiro, *The Evolution of Cost-Benefit Analysis in U.S. Regulatory Decisionmaking*, in HANDBOOK ON THE POLITICS OF REGULATION 385-392 (David Levi-Faur ed., 2011).

[Footnote 15] Exec. Order No. 13,563 §§ 1(a)-(c), 76 Fed. Reg. 3,821 (Jan. 18, 2011) (emphasis added).

### **Comment Response:**

The EPA agrees with this comment.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 18

**Comment Excerpt:**

*The IWG used solid economic tools to address uncertainty and ought to go further in capturing the full extent of its implications.*

The IWG was rigorous in addressing **uncertainty**. First, it conducted Monte Carlo simulations over the IAMs specifying different possible outcomes for climate sensitivity (represented by a Roe and Baker Distribution).<sup>83</sup> It also used five different emissions growth scenarios and three discount rates. Second, the IWG reported the various moments and percentiles<sup>84</sup> of the resulting SCC estimates. Third, the IWG put in place an updating process, e.g., the 2013 revision, which updates the models as new information becomes available.<sup>85</sup> As such, the IWG used the various tools that economists have developed over time to address the uncertainty inherent in estimating the economic cost of pollution: reporting various measures of uncertainty, using Monte Carlo simulations, and updating estimates as evolving research advances our knowledge of climate change.

The Monte Carlo framework took a step toward addressing what is the most concerning aspect of climate change, the potential for **catastrophic damages**, i.e., low probability/high damage events. These damages come from: uncertainty in the underlying parameters in IAMs,<sup>86</sup> including the climate sensitivity parameter; climate tipping points<sup>87</sup>—thresholds that, when crossed, cause rapid, often irreversible changes in ecosystem characteristics; and "black swan" events—which refer to unknown unknowns.<sup>88</sup>

The analysis used a right-skewed distribution of temperature (as captured in the Roe Baker climate sensitivity parameter) and an increasing, strictly convex damage function;<sup>89</sup> this correctly results in right-skewed distributions of damage and SCC estimates. By using the mean values of these estimates instead of the median, IWG estimates partially captured the effects of small probability, higher damages from high-level warming events.<sup>90</sup> To reflect uncertainty in estimates resulting from the right-skewed distribution of SCC estimates, the IWG reported the SCC value for the 95th percentile from the central 3% discount rate distribution.<sup>91</sup> This is done to reflect the estimation uncertainty in terms of the possibility of higher-than-expected economic impacts from climate change.

While the IAMs take different approaches to explicitly modeling tipping points, which to a great extent is lacking in current versions of FUND and DICE, the IWG improved (but in no way fixed) the representation of uncertain catastrophic damages with the Monte Carlo analysis. Still, black swan events go completely unaddressed in the IWG modeling framework, and therefore the SCC estimates do not reflect the value of preventing the occurrence of catastrophic events.<sup>92</sup>

In addition to choosing an appropriate discount rate and sensitivity analyses around different SSPs, another important parameter to which the SCC estimates are sensitive is Equilibrium Climate Sensitivity (ECS)—how the climate system responds to a constant radiative forcing, which is typically expressed as the temperature response to a doubling of CO<sub>2</sub> concentration in the atmosphere.<sup>93</sup> In its current iteration, the IWG conducted extensive sensitivity analyses over a range of equilibrium climate sensitivity estimates.<sup>94</sup> The assumptions are clearly stated in the TSD. In addition to its sensitivity analysis, the IWG conducted a Monte Carlo simulation over the climate sensitivity parameter and the other random variables specified within the three IAMs.<sup>95</sup>

The range for the Equilibrium Climate Sensitivity (ECS) is derived from a combination of methods that constrain the values from measurements in addition to models. These include

measured ranges from paleoclimate records, observed comparisons with current climate, as well as responses to recent climate forcings. The currently agreed "likely" range for the ECS (from both the IPCC TAR and AR5) is 1.5-4.5 degrees Celsius. Physical constraints make it "extremely unlikely" that the ECS is less than 1 degree Celsius and "very unlikely" greater than 6 degrees Celsius.<sup>96</sup>

A host of analyses points to the costs of such uncertainty—both for values that go outside the "likely" range and for uncertainty within it: in short, the optimal SCC tends to increase with increased uncertainty, sometimes dramatically so.<sup>97</sup> While the current treatment of uncertainty around climate sensitivity by the IWG highlights a range of possible uncertainties, a reconsideration of the assumptions feeding into the SCC ought to take the latest advances highlighting the potentially higher costs of deep-seated uncertainty into account. Additionally, the IWG should consider whether it relies too heavily on its 95th percentile estimates as a catchall to cover for limitations in its treatment of uncertainty and catastrophic damages.

[Footnote 83] *See infra* note 95.

[Footnote 84] *See supra* note 60.

[Footnote 85] The federal government has committed to continuing to update SCC estimates to account for new information. The IWG stated in its 2010 TSD that "[i]t is important to emphasize that the interagency process is committed to updating these estimates as the science and economic understanding of climate change and its impacts on society improves over time. Specifically, we have set a preliminary goal of revisiting the SCC values within two years or at such time as substantially updated models become available, and to continue to support research in this area. In the meantime, we will continue to explore the issues raised in this document and consider public comments as part of the ongoing interagency process." 2010 TSD, *supra* note 4, at 3.

[Footnote 86] In this case, parameters are the various characteristic that describe the underlying climate and economic systems.

[Footnote 87] *See generally* Timothy M. Lenton et al., *Tipping Elements in the Earth's Climate System*, 105 PNAS 1786 (2008).

[Footnote 88] Standard decision theory under uncertainty addresses "known unknowns," which are unknowns for which we can specify a probability distribution function. In the cases of "unknown unknowns," i.e., 'black swan' events, we cannot specify a probability distribution function, raising a host of additional questions. *See, e.g.*, Richard J. Zeckhauser, *Investing in the Unknown and Unknowable*, CAPITALISM & SOCIETY vol. 1, iss. 2, art. 5 (2006).

[Footnote 89] An increasing, strictly convex climate damage function implies a damage function that is strictly increasing in temperature at an increasing rate.

[Footnote 90] The point here is that we miss the big picture if we ignore the "tails" (the uppermost values in the case of the right-skewed SCC), and as a result come to the wrong conclusions. An everyday analogy is airplane safety regulation: safety is protected by guarding against the low-probability but highly dangerous events. With climate change we do not have the luxury of knowing with certainty how damaging the extremes could be or whether they will be triggered

by greenhouse gases accumulating in the atmosphere; all we know is that there is a very real possibility they could occur and could be devastating.

[Footnote 91] This approach partially captures catastrophic damages via tipping points through the PAGE model.

[Footnote 92] *See, e.g.,* Peter Howard, *Omitted Damages: What's Missing from the Social Cost of Carbon* (Cost of Carbon Project Report, 2014), and van den Bergh, J. C. J. M., and W. J. W. Botzen, *A lower bound to the social cost of CO<sub>2</sub> emissions*, 4 NATURE CLIMATE CHANGE 4 (2014).

[Footnote 93] *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS—SUMMARY FOR POLICYMAKERS 14 (2013).

[Footnote 94] Specifying the climate sensitivity parameter as a random variable has a basis in PAGE02, which species a probability distribution function for the parameter. The IWG calibrated the Roe and Baker distribution, a right-skewed distribution, to characterize the probability distribution function of this parameter. The 2010 TSD explains the IWG's choice of the Roe and Baker distribution. The right-skewed nature of the climate sensitivity parameter's probability distribution function is independent of the IWG's choice of the Roe and Baker distribution. Rather, this skewness results from the IPCC's finding that values of the climate sensitivity parameter above 4.5 degree Celsius cannot be excluded. As a result, all of the probability distribution functions fit by the IWG for the climate sensitivity parameter were skewed to the right (see Figure 2 in the 2010 TSD), including Roe and Baker. *See* 2010 TSD, *supra* note 4, at 14, fig. 2.

[Footnote 95] A Monte Carlo simulation will run an integrated assessment model thousands of times, each time randomly picking the value of uncertain parameters from a probability distribution function, i.e. a function that assigns a probability to each possible parameter value. In the case of the SCC, the IWG ran 10,000 Monte Carlo simulations for each of the three IAMs and five socio-economic scenarios, randomizing the value of climate sensitivity, i.e., the change in average global temperature associated with a doubling of CO<sub>2</sub>, and all other uncertain parameters in the IAMs by the original authors. For each randomly drawn set of values, the IAM estimated the associated damages, with the final SCC estimate equaling the average value across all 10,000 runs, five socio-economic scenarios, and then across all three models. Therefore, each SCC estimate is calculated using 150,000 runs.

[Footnote 96] IPCC, *supra* note 93, at 14.

[Footnote 97] *E.g.,* Robert S. Pindyck, *Uncertain Outcomes and Climate Change Policy*, 63 J. ENVTL. ECON. & MGMT. 289 (2012); Martin L. Weitzman, *GHG Targets as Insurance Against Catastrophic Climate Damages*, 14 J. PUB. ECON. THEORY 221 (2012); Robert S. Pindyck, *The Climate Policy Dilemma*, 7 REV. ENVTL. ECON. & POL'Y 219 (2013); Gernot Wagner & Richard J.

### **Comment Response:**

The EPA acknowledges the commenters' recommendations for potential opportunities to improve the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> estimates and has considered each one in the context of this

rulemaking. The EPA and other members of the IWG on the SC-CO<sub>2</sub> are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. Going forward, the EPA will evaluate its approach to estimating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> based upon any feedback received from the Academies' panel.

EPA recognizes that it is important to update the SC-CO<sub>2</sub> periodically to incorporate improvements in the understanding of greenhouse gas emissions impacts and will continue to follow and evaluate the latest science on impact categories that are omitted or not fully addressed in the IAMs. EPA and other members of the U.S. Interagency Working Group on the social cost of carbon are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. Going forward, the EPA will evaluate its approach to estimating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> based upon any feedback received from the Academies' panel.

After careful evaluation of the full range of comments and associated technical issues described in this Response to Comments, EPA has determined that it will continue to use the Marten et al. SC-CH<sub>4</sub> estimates in the final rulemaking analysis. In particular, the Marten et al. SC-CH<sub>4</sub> estimates represent the best scientific information on the impacts of climate change available in a form appropriate for incorporating the damages from incremental emissions changes into regulatory analysis. Therefore, EPA has presented the Marten et al. SC-CH<sub>4</sub> estimates in this rulemaking. EPA will continue to consider these comments, including the commenters' question about use of the 95th percentile estimate, and will share the recommendations with the IWG as it moves forward with the Academies process.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 29

**Comment Excerpt:**

In using the estimates in its regulatory impact analyses, however, EPA should also include a qualitative assessment of all significant climate effects that are not currently quantified in the monetized estimate. The IWG acknowledged its incomplete treatment of both catastrophic and non-catastrophic damages, and instructed agencies that "These caveats . . . are necessary to consider when interpreting and applying the SCC estimates."<sup>114</sup> Those instructions are consistent



with Executive Orders on regulatory analysis, which tell agencies to "assess . . . qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider."<sup>115</sup> Before the IWG published its first estimates in 2010, some agencies included a detailed chart of unquantified climate effects in their regulatory impact analyses.<sup>116</sup> However, most recent rulemakings only reference unquantified benefits from non-CO<sub>2</sub> gases and from co-pollutants, and list none of the significant, unquantified climate effects from carbon dioxide.<sup>117</sup> In the final emissions guidelines and standards, and in the final regulatory impact analysis, EPA should detail all significant, unquantified climate effects, as consistent with administration-wide policy, the IWG's instructions, past agency practices, and best economic practices.

[Footnote 114] 2010 TSD, *supra* note 4, at 29.

[Footnote 115] Exec. Order No. 12,866 § 1(a); *see also* OMB, Circular A-4.

[Footnote 116] *E.g.*, EPA, 420-D-09-001, DRAFT REGULATORY IMPACT ANALYSIS:CHANGES TO RENEWABLE FUEL STANDARD PROGRAM 690 tbl. 5.3-4 (2009).

[Footnote 117] *Compare* EPA, Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants, EPA-452/R-14-002, at tbl. ES-5 (2014) (listing multiple unquantified effects from co-pollutants, but marking "global climate impacts from CO<sub>2</sub>" as fully monetized) *with* Peter Howard, *Omitted Damages: What's Missing from the Social Cost of Carbon* (Cost of Carbon Project Report, 2014) (detailing the many significant effects not quantified in the SCC).

### **Comment Response:**

EPA notes that it is not possible at this time to provide a precise list of each model's treatment (i.e., included, excluded) of climate impacts. EPA further notes that the table referenced by the commenter,<sup>[1]</sup> which was published in a May 2009 draft regulatory impact analysis that was issued prior to the interagency working group's development of the 2010 SC-CO<sub>2</sub> estimates, itemizes some of the impacts omitted from only one model. Subsequent to the publication of this draft RIA, the interagency working group (IWG) developed SC-CO<sub>2</sub> estimates based on an ensemble of three models. The IWG's 2010 SC-CO<sub>2</sub> Technical Support Document presents a robust discussion of this key analytical issue, e.g., how each model estimates climate impacts, the known parameters and assumptions underlying those models, and the implications of incomplete treatment of impacts (catastrophic and non-catastrophic) for the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> estimates. Moreover, the discussion in the SC-CO<sub>2</sub> TSD underscores the difficulty in accurately distilling the treatment of impacts in table-form for all three models. Most notably, the use of aggregate damage functions—which consolidate information about impacts from multiple studies—in two of the models, which were not addressed in the table referenced by the commenter, poses a challenge in listing included impacts. For example, within the broad agricultural impacts category, some of the sub-grouped impacts are not explicitly modeled but are highly correlated to other subcategories that are explicitly modeled. Therefore, EPA continues to determine that it is more appropriate to rely on the qualitative discussion in the TSDs about uncertainty. EPA has also updated the RIA Section 4 discussion to reference several publications that identify and discuss some of the important, unquantified climate effects.

EPA agrees that it is important to update the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> periodically to incorporate improvements in the understanding of greenhouse gas emissions impacts and will continue to follow and evaluate the latest science on impact categories that are omitted or not fully addressed in the IAMs. As previously noted, EPA and the other IWG members are seeking external expert advice on the technical merits and challenges of potential approaches to update the damage functions in future revisions to the SC-CO<sub>2</sub> estimates, which would likely inform updates to the SC-CH<sub>4</sub> estimates. Finally, the RIA also continues to discuss climate change impacts, specifically an overview of the 2009 Endangerment Finding and climate science assessments released since then (see RIA, Chapter 4).

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[1] EPA, 420-D-09-001, DRAFT REGULATORY IMPACT ANALYSIS:CHANGES TO RENEWABLE FUEL STANDARD PROGRAM 690 tbl. 5.3-4 (2009).

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### 8.13 Discount Rates

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 12

**Comment Excerpt:**

**Recommendations on further refinements to the SCC.**<sup>59</sup>

*The IWG appropriately used consumption discount rates rather than returns on capital.*

With respect to the **discount rate**, the IWG conducted sensitivity analysis of the results to three constant consumption discount rates: 2.5%, 3%, and 5%; for each of the discount rates, the TSDs reported the various moments and percentiles<sup>60</sup> of the SCC estimates.

The discount rate is one of the most important inputs in models of climate damages, with plausible assumptions easily leading to differences of an order of magnitude in the SCC. The climate impacts of present emissions will unfold over hundreds of years. When used over very long periods of time, discounting penalizes future generations heavily due to compounding effects. For example, at a rate of 1%, \$1 million 300 years hence equals over \$50,000 today; at 5% it equals less than 50 cents.<sup>61</sup> The discount rate changed by a factor of five, whereas the discounted value changed by more than five orders of magnitude. Depending on the link between climate risk and economic growth risk, even a rate of 1% may be too high.<sup>62</sup> Uncertainty around the correct discount rate pushes the rate lower still.<sup>63</sup>

The IWG correctly excluded a 7% discount rate, a typical private sector rate of return on capital, for several reasons. First, typical financial decisions, such as how much to save in a bank account or invest in stocks, focus on private decisions and utilize private rates of return. Private market participants typically have short time horizons. However, here we are concerned with social discount rates because emissions mitigation is a public good, where individual emissions choices

affect public well-being broadly. Rather than evaluating an optimal outcome from the narrow perspective of investors alone, economic theory would require that we make the optimal choices based on societal preferences (and social discount rates). Second, climate change is expected to affect primarily consumption, not traditional capital investments.<sup>64</sup> OMB guidelines note that in this circumstance, consumption discount rates are appropriate.<sup>65</sup> Third, 7% is considered much too high for reasons of discount rate uncertainty and intergenerational concerns (further discussed below).

[Footnote 59] The following section relies heavily on Richard L. Revesz et al., *Global Warming: Improve Economic Models of Climate Change*, 508 NATURE 173 (2014), on Gernot Wagner & Martin L. Weitzman, *Climate Shock*, Princeton University Press (2015), on Frank J. Convery & Gernot Wagner, *Reflections—Managing Uncertain Climates: Some Guidance for Policy Makers and Researchers* (forthcoming in REVIEW OF ENVIRONMENTAL ECONOMICS AND POLICY) as well as on several papers cited in footnotes throughout.

[Footnote 60] The moments of a distribution (of SCC estimates in this case) are, loosely speaking, the various values that describe the distribution's shape: what value is the distribution centered around (mean); how wide is the distribution (the variance); whether the distribution is lopsided (skewness); and whether it is tall and skinny or short and fat (kurtosis). A percentile is a statistical measure of the value (the SCC value in this case) below which a specified percentage of (SCC) observations falls. The 1st percentile indicates the SCC value above which (the other) 99% of observed SCC values fall. The 99th percentile indicates the SCC value below which 99% of all observed SCC values fall.

[Footnote 61] Dallas Burtraw & Thomas Sterner, *Climate Change Abatement: Not "Stern" Enough?* (Resources for the Future Policy Commentary Series, Apr. 4, 2009), available at [http://www.rff.org/Publications/WPC/Pages/09\\_04\\_06\\_Climate\\_Change\\_Abatement.aspx](http://www.rff.org/Publications/WPC/Pages/09_04_06_Climate_Change_Abatement.aspx).

[Footnote 62] "If climate risk dominates economic growth risk because there are enough potential scenarios with catastrophic damages, then the appropriate discount rate for emissions investments is lower than the risk-free rate and the current price of carbon dioxide emissions should be higher. In those scenarios, the "beta" of climate risk is a large negative value and emissions mitigation investments provide insurance benefits. If, on the other hand, growth risk is always dominant because catastrophic damages are essentially impossible and minor climate damages are more likely to occur when growth is strong, times are good, and marginal utility is low, then the "beta" of climate risk is positive, the discount rate should be higher than the risk-free rate, and the price of carbon dioxide emissions should be lower." Robert B. Litterman, *What Is the Right Price for Carbon Emissions?*, REGULATION, Summer 2013, at 38, 41, available at <http://www.cato.org/sites/cato.org/files/serials/files/regulation/2013/6/regulation-v36n2-1-1.pdf>

[Footnote 63] See following subsection.

[Footnote 64] "There are two rationales for discounting future benefits—one based on consumption and the other on investment. The consumption rate of discount reflects the rate at which society is willing to trade consumption in the future for consumption today. Basically, we discount the consumption of future generations because we assume future generations will be wealthier than we are and that the utility people receive from consumption declines as their level of consumption increases . . . . The investment approach says that, as long as the rate of return to investment is positive, we need to invest less than a dollar today to obtain a dollar of benefits in

the future. Under the investment approach, the discount rate is the rate of return on investment. If there were no distortions or inefficiencies in markets, the consumption rate of discount would equal the rate of return on investment. There are, however, many reasons why the two may differ. As a result, using a consumption rather than investment approach will often lead to very different discount rates." Maureen Cropper, *How Should Benefits and Costs Be Discounted in an Intergenerational Context?*, 183 RESOURCES 30, 33.

[Footnote 65] See CIRCULAR A-4, *supra* note 49, at 33.

### **Comment Response:**

EPA acknowledges these comments and notes that the discount rates have not changed in the final analysis.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 13

### **Comment Excerpt:**

*The IWG correctly adopted as one of its discount rates a value reflecting long-term interest rate uncertainty, and—as a primary extension to current results—should go further by directly implementing a declining discount rate.*

The IWG was correct in choosing as one of its discount rates an estimate based upon declining discount rates (2.5%). Since the IWG undertook its initial analysis, a consensus has emerged among leading climate economists that a declining discount rate should be used for climate damages to reflect long-term uncertainty in interest rates. Arrow *et al* (2013) presents several arguments that strongly support the use of declining discount rates for long-term benefit-cost analysis.<sup>66</sup>

Perhaps the best reason is the simple fact that there is considerable uncertainty around which interest rate to use: uncertainty in the rate points directly to the need to use a declining rate, as the impact of the uncertainty grows exponentially over time. The uncertainty about future discount rates could stem from a number of reasons particularly salient to climate damages, including uncertainties in future economic growth, consumption, and the interest rate reaped by investments.

A possible declining interest rate schedule for consideration by the IWG is the one proposed by Weitzman (2001).<sup>67</sup> It is derived from a broad survey of top economists and the profession at large in a climate change context and explicitly incorporates arguments around interest rate uncertainty. Arrow *et al* (2013, 2014), Cropper *et al* (2014), and Gollier and Weitzman (2010), among others, similarly argue for a declining interest rate schedule and lay out the fundamental logic.<sup>68</sup>

Moreover, the United States would not be alone in using a declining discount rate. It is standard practice for the United Kingdom and French governments, among others.<sup>69</sup> The U.K. schedule explicitly subtracts out an estimated time preference.<sup>70</sup> France's schedule is roughly similar to the

United Kingdom's. Importantly, all of these discount rate schedules yield lower present values than the constant 2.5% Newell-Pizer rate, suggesting that even the lowest discount rate evaluated by the IWG is too high.<sup>71</sup> The consensus of leading economists is that a declining discount rate schedule should be used, consistent with the approach of other countries like the United Kingdom. Adopting such a schedule would increase the SCC substantially from the administration's central estimate, suggesting that even the high end of the range presented by the administration is likely too low.

[Footnote 66] The arguments here are primarily based on: Kenneth J. Arrow et al., *Determining Benefits and Costs for Future Generations*, 341 SCIENCE 349 (2013); Kenneth J. Arrow et al., *Should Governments Use a Declining Discount Rate in Project Analysis?*, REV ENVIRON ECON POLICY 8 (2014); Richard G. Newell & William A. Pizer, *Discounting the Distant Future: How Much Do Uncertain Rates Increase Valuations?*, 46 J. ENVTL. ECON. & MGMT. 52 (2003); Maureen L. Cropper et al., *Declining Discount Rates*, AMERICAN ECONOMIC REVIEW: PAPERS AND PROCEEDINGS (2014); S.K. Rose, D. Turner, G. Blanford, J. Bistline, F. de la Chesnaye, and T. Wilson. *Understanding the Social Cost of Carbon: A Technical Assessment*. EPRI Report #3002004657 (2014).

[Footnote 67] Martin L. Weitzman, *Gamma Discounting*, 91 AM. ECON. REV. 260, 270 (2001). Weitzman's schedule is as follows:

1-5 years	6-25 years	26-75 years	76-300 years	300+ years
4%	3%	2%	1%	0%

[Footnote 68] Arrow et al. (2013, 2014), Cropper et al. (2014), *supra* note 66. Christian Gollier & Martin L. Weitzman, *How Should the Distant Future Be Discounted When Discount Rates Are Uncertain?* 107 ECONOMICS LETTERS 3 (2010).

[Footnote 69] *Id.*

[Footnote 70] Joseph Lowe, H.M. Treasury, U.K., *Intergenerational Wealth Transfers and Social Discounting: Supplementary Green Book Guidance 5* (2008), available at [http://www.hm-treasury.gov.uk/d/4\(5\).pdf](http://www.hm-treasury.gov.uk/d/4(5).pdf). The U.K. declining discount rate schedule that subtracts out a time preference value is as follows:

0-30 years	31-75 years	76-125 years	126-200 years	201-300 years	301+ years
3.00%	2.57%	2.14%	1.71%	1.29%	0.86%

[Footnote 71] Using the IWG's 2010 SCC model, Johnson and Hope find that the U.K. and Weitzman schedules yield SCCs of \$55 and \$175 per ton of CO<sub>2</sub>, respectively, compared to \$35 at a 2.5% discount rate. Laurie T. Johnson & Chris Hope, *The Social Cost of Carbon in U.S. Regulatory Impact Analyses: An Introduction and Critique*, 2 J. ENVTL. STUD. & SCI. 205, 214 (2012).

## **Comment Response:**

EPA agrees that declining discount rates are an important area of emerging research and will share these recommendations with the U.S. Interagency Working Group (IWG). However, no widely-accepted declining discount rate schedule has yet been developed. Some key technical issues warrant careful consideration before adopting a declining discount rate schedule, such as determining how to update the discount rate schedule as uncertainty is resolved over time and ensuring that the use of declining discount rates does not lead to the possibility of time-inconsistent choices. A workshop sponsored by the federal government resulted in a paper in *Science* authored by thirteen prominent economists who concluded that a declining discount rate would be appropriate to analyze impacts that occur far into the future (Arrow et al., 2014). However, additional research and analysis is still needed to develop a methodology for implementing a declining discount rate and to understand the implications of applying these theoretical lessons in practice. The EPA will continue to follow and evaluate the latest science on the use of declining discount rates in intergenerational discounting.

In addition, EPA and other members of the IWG on the social cost of carbon are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. Going forward, the EPA will evaluate its approach to estimating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> based upon any feedback received from the Academies' panel.

## **8.14 Process**

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 2

### **Comment Excerpt:**

The IWG's analytic process was science-based, open, and transparent.

To facilitate accounting for the costs of climate impacts and the benefits of reducing carbon pollution in regulatory proceedings undertaken by different agencies, the United States government assembled an Interagency Working Group (IWG) to develop an estimate of a social cost of carbon that can be utilized in rulemakings and other pertinent settings across the federal government.<sup>4</sup> The IWG's estimates—first released in 2010 and updated in 2013 and 2015—have been used in numerous benefit-cost analyses related to federal rulemakings.<sup>5</sup> The IWG recently released an updated set of SCC estimates, centered at approximately \$40 per metric ton of CO<sub>2</sub> for emissions in the year 2015, in 2015 dollars at a 3% discount rate.<sup>6</sup> The 2015 SCC estimates

are higher than those from 2010, reflecting the growing understanding of the costs that climate impacts will impose on society.

The increase in the SCC estimate is important because it reflects the growing scientific and economic research on the risks and costs of climate change, but is still very likely an underestimate of the economic cost of carbon emissions. The increase also reflects the costs of climate change that we are already experiencing, such as those associated with sea level rise and rising temperatures. Climate change is making coastal flooding, drought, and impacts from extreme weather worse. A rapidly increasing body of evidence has linked ever more recent events directly to climate change.<sup>7</sup>

The analytic work of the IWG has been transparent. The 2010 Technical Support Document (TSD) set out in detail the IWG's decision-making process with respect to how it assessed and employed the models.<sup>8</sup> Furthermore, the Government Accountability Office (GAO) found that "the working group's processes and methods reflected the following three principles: *Used consensus-based decision making, Relied on existing academic literature and models, and Took steps to disclose limitations and incorporate new information.*"<sup>9</sup>

Because the 2013 IWG made no changes to the input assumptions and procedures for deriving its SCC estimates, the 2013 TSD discussed only how the three Integrated Assessment Models (IAMs) used in the analysis were updated in the academic literature over the three-year interim period by the independent researchers who have developed these models. The 2013 TSD also established that the increase in the SCC estimate from 2010 to 2013 resulted solely from updates to the three underlying IAMs.<sup>10</sup>

The 2015 TSD update provided detailed responses<sup>11</sup> to public comments collected through an opportunity for public participation initiated by the Office of Management and Budget (OMB).<sup>12</sup> Additionally, the comment period on these proposed guidelines and standards are yet another opportunity for continued dialogue about areas requiring further study. Such repeated comment processes and updates demonstrate that the IWG's SCC estimates were developed—and are being used—transparently. Given the strong grounding in the best science available, nothing should prevent the current, continued use of this well-established estimate. As economic and scientific research continues to develop, future revisions will be able to further refine existing estimates based on the latest peer-reviewed literature and the latest updates to the quality of the overall modeling exercise.

[Footnote 4] The IWG involved a large number of agencies, including the Council of Economic Advisers, Council on Environmental Quality, Department of Agriculture, Department of Commerce, Department of Transportation, Environmental Protection Agency, National Economic Council, Office of Energy and Climate Change, Office of Management and Budget, Office of Science and Technology Policy, and the Department of the Treasury. *See* INTERAGENCY WORKING GROUP ON THE SOCIAL COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866 (2010) [hereinafter "2010 TSD"], *available at* <http://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>.

[Footnote 5] The SCC has been used in numerous notice-and-comment rulemakings by various agencies since it was published in 2010, and each of these occasions has provided opportunity

for public comment on the SCC. *See, e.g.*, Energy Conservation Program: Energy Conservation Standards for Residential Clothes Washers, 77 Fed. Reg. 32,381 (May 31, 2012); Energy Conservation Program: Energy Conservation Standards for Residential Dishwashers, 77 Fed. Reg. 31,964 (May 30, 2012); Energy Conservation Program: Energy Conservation for Battery Chargers and External Power Supplies, 77 Fed. Reg. 18,478 (Mar. 27, 2012); Energy Conservation Program: Energy Conservation Standards for Standby Mode and Off Mode for Microwave Ovens, 77 Fed. Reg. 8526 (Feb. 14, 2012); Energy Conservation Program: Energy Conservation Standards for Distribution Transformers, 77 Fed. Reg. 7282 (Feb. 10, 2012); Energy Conservation Program for Certain Industrial Equipment: Energy Conservation Standards and Test Procedures for Commercial Heating, Air-Conditioning, and Water-Heating Equipment, 77 Fed. Reg. 2356 (Jan. 17, 2012); 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 76 Fed. Reg. 74,854 (Dec. 1, 2011); Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews, 76 Fed. Reg. 52,738 (Aug. 23, 2011); Energy Conservation Program: Energy Conservation Standards for Residential Furnaces and Residential Central Air Conditioners and Heat Pumps, 76 Fed. Reg. 37,549 (June 27, 2011); Energy Conservation Program: Energy Conservation Standards for Residential Clothes Dryers and Room Air Conditioners, 76 Fed. Reg. 22,324 (Apr. 21, 2011); Energy Conservation Program: Energy Conservation Standards for Fluorescent Lamp Ballasts, 76 Fed. Reg. 20,090 (Apr. 11, 2011); National Emission Standards for Hazardous Air Pollutants: Mercury Emissions from Mercury Cell Chlor-Alkali Plants, 76 Fed. Reg. 13,852 (Mar. 14, 2011); Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 75 Fed. Reg. 74,152 (Nov. 30, 2010); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units, 75 Fed. Reg. 63,260 (Oct. 14, 2010); Energy Conservation Program: Energy Conservation Standards for Residential Refrigerators, Refrigerator-Freezers, and Freezers, 75 Fed. Reg. 59,470 (Sept. 27, 2010); Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone, 75 Fed. Reg. 45,210 (Aug. 2, 2010). The undersigned organizations have provided comment on the SCC in a number of these proceedings.

[Footnote 6] INTERAGENCY WORKING GROUP ON THE SOCIAL COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866 (2015); *see also* INTERAGENCY WORKING GROUP ON THE SOCIAL COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866 (2013) [hereinafter "2013 TSD"], *available at* <http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf>.

[Footnote 7] *See generally* Thomas C. Peterson et al. eds., *Explaining Extreme Events of 2012 from a Climate Perspective*, 94 BULL. AMER. METEOR. SOC. S1-74 (2013), and IPCC, *Special Report: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* (2012). On the scientific research connecting weather and other climate-related events to climate change, see Peter A. Stott et al., "Attribution of Weather and Climate-Related Events." In *Climate Science for Serving Society*, edited by Ghassem R. Asrar and James W. Hurrell. Netherlands: Springer s307-37 (2013).



[Footnote 8] *See generally* 2010 TSD, *supra* note 4.

[Footnote 9] GAO, REGULATORY IMPACT ANALYSIS: Development of Social Cost of Carbon Estimates, GAO-14-663 (2014).

[Footnote 10] The 2010 and 2013 IWGs did very little to adjust the three IAMs. The main adjustment by IWG was to DICE to ensure that the IAM had an exogenous growth path that matched FUND and PAGE for the purposes of modeling various socio-economic and emission scenarios. *Id.* at 24.

[Footnote 11] OMB & Interagency Working Group, Response to Comments on Social Cost of Carbon (July 2015).

[Footnote 12] OMB, Notice of Availability and Request for Comments, Technical Support Documents: Social Cost of Carbon for Regulatory Impact Analysis, 78 Fed. Reg. 70,586 (Nov. 26, 2013).

**Comment Response:**

EPA acknowledges this comment and agrees that the process was science-based, open, and transparent.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 15

**Comment Excerpt:**

*The IWG should update its socio-economic assumptions to reflect the latest Shared Socio-economic Pathways (SSPs).*

One key input is the use of socio-economic scenarios reflected in the choice of economic growth rates and emissions trajectories. Current IWG socio-economic and emissions scenarios were chosen from the Stanford Energy Modeling Forum exercise, EMF-22, and consist of projections for income/consumption, population, and emissions (CO<sub>2</sub> and non-CO<sub>2</sub>). The IWG selected five sets of trajectories, four of which represent business as usual (BAU) trajectories (MiniCAM, MESSAGE, IMAGE, and MERGE models) and a fifth that represents a CO<sub>2</sub> emissions pathway with CO<sub>2</sub> concentrations stabilizing 550 ppm. Given the possibility of increases in emissions above those expressed by Business As Usual Scenarios, a high-CO<sub>2</sub> emissions pathway should also be considered. The assumptions used in calculating the SCC should be updated regularly to reflect the latest thinking around possible scenarios, reflecting the latest Shared Socio-economic Pathways (SSPs).<sup>79</sup> These SPPs represent the latest, consistent pathways, feeding, for example, into the latest IPCC report.

[Footnote 79] Kristie L. Ebi et al., *A New Scenario Framework for Climate Change Research: Background, Process, and Future Directions*, 122 CLIMATIC CHANGE 363, 368 (2014).

**Comment Response:**

EPA acknowledges the commenters' recommendations for potential opportunities to update the scenarios and has considered each one in the context of this rulemaking. EPA has acknowledged that the projection of the scenarios beyond 2100 has greater uncertainty than shorter-term projections and will continue to monitor the literature, including the development of extended RCP/SSP scenarios, for ways to improve the estimated trajectories and improve internal consistency. EPA and other members of the IWG on the SC-CO<sub>2</sub> are seeking independent expert advice on technical opportunities to update the SC-CO<sub>2</sub> estimates from the National Academies of Sciences, Engineering, and Medicine. A committee convened by the Academies is reviewing the state of the science on estimating the SC-CO<sub>2</sub>, and will provide expert, independent advice on the merits of different technical approaches for modeling and highlight research priorities going forward. The Academies' review will focus on the SC-CO<sub>2</sub> methodology, but recommendations on how to update many of the underlying modeling assumptions will also likely pertain to the SC-CH<sub>4</sub> estimates. Going forward, the EPA will evaluate its approach to estimating the SC-CO<sub>2</sub> and SC-CH<sub>4</sub> based upon any feedback received from the Academies' panel.

After careful evaluation of the full range of comments and associated technical issues described in this RTC, EPA has determined that it will continue to use the current SC-CO<sub>2</sub> estimates and the Marten et al. SC-CH<sub>4</sub> estimates in the final rulemaking analysis. In particular, current SC-CO<sub>2</sub> estimates and the Marten et al. SC-CH<sub>4</sub> estimates represent the best scientific information on the impacts of climate change available in a form appropriate for incorporating the damages from incremental emissions changes into regulatory analysis. Therefore, EPA has presented the current SC-CO<sub>2</sub> estimates and the Marten et al. SC-CH<sub>4</sub> estimates in this rulemaking. EPA will continue to consider these comments and will share the recommendations with the IWG as it moves forward with the Academies process.

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 30

**Comment Excerpt:**

We suggest that EPA encourage the IWG to regularly update the SCC and Social Cost of Methane, as new economic and scientific consensus emerges. Such updates are in line with the stated intentions of the IWG, which committed to "updating these estimates as the science and economic understanding of climate change . . . improves."

**Comment Response:**

EPA will share with the interagency working group (IWG) the commenters' recommendation to consider reviewing and updating both SC-CO<sub>2</sub> and the SC-CH<sub>4</sub>. EPA will continue to follow and evaluate the latest science on impact categories that are omitted or not fully addressed in the IAMs. As previously noted, EPA and the other IWG members are seeking external expert advice on the technical merits and challenges of potential approaches to update the damage functions in future revisions to the SC-CO<sub>2</sub> estimates, which would likely inform updates to the SC-CH<sub>4</sub> estimates.

## 8.15 GWP-Based Approach to Estimating SC-CH4

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**Commenter Name:** Rachel Cleetus, Senior Climate Economist

**Commenter Affiliation:** Union of Concerned Scientists et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0196

**Comment Excerpt Number:** 28

### Comment Excerpt:

If EPA for some reason declines to follow the Marten *et al.* approach, it could still use the global warming potential adjustment as a less accurate, lower-bound estimate. However, instead of the outdated multiplier of 25 for methane, EPA should utilize the latest global warming potential estimates for methane issued by the IPCC: 85 to 87 times greater than carbon dioxide after 20 years and 30 to 36 times greater than carbon dioxide after 100 years (after making the recommended adjustment for fossil methane).<sup>113</sup> Given the short life of methane, EPA should at least conduct sensitivity analysis over the entire global warming potential range, instead of merely utilizing the lower 100-year timescale range. Again, though, the Social Cost of Methane approach is the more reasonable and preferred way to value this rule's important methane reductions.

[Footnote 113] IPCC Working Group I, Fifth Assessment Report, Climate Change 2013: The Physical Science Basis, Chapter 8: Anthropogenic and Natural Radiative Forcing (2014) at 633, 711-712, 714 (Table 8.7), available at [https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5\\_Chapter08\\_FINAL.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf) (see the adjustment identified in note B for fossil methane).

### Comment Response:

EPA acknowledges this comment and notes it is no longer relevant because the Agency has applied the Marten et al. approach to the final rulemaking analysis.

## 8.16 Application of the SC-CH4 to the Rulemaking

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**Commenter Name:** Stephanie Jones and Jason Schwartz

**Commenter Affiliation:** Institute for Policy Integrity

**Document Control Number:** EPA-HQ-OAR-2014-0451-0177

**Comment Excerpt Number:** 7

### Comment Excerpt:

The modeled value of the Social Cost of Methane—an important component of the rule's benefits—is likely an underestimate of the true value. For complete discussion of the use of the Social Cost of Methane in regulatory decision making, please see the separate comments on the subject that Policy Integrity and other organizations submitted to these Dockets. Given that avoided climate change damages monetized using the Social Cost of Methane are the

predominant source of the Proposed Rule's monetized benefits,<sup>29</sup> the true net social benefits of a more stringent option are likely to be even higher than EPA's benefit-cost analysis reveals.

Footnote:

29 RIA, at 4-14 to 4-15.

**Comment Response:**

EPA acknowledges this comment and notes that the Agency has responded to the letter that focused on the social cost of methane, EPA-HQ-OAR-2014-0451-0196. Regarding commenter's observation about a likely underestimate of the true value, see EPA's response to DCN EPA-HQ-OAR-2014-0451-0196, excerpt [number 24](#), [under comment code 8m](#).

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**Commenter Name:** Frank L. Kohlasch, Manager, Air Assessment Section Environmental Analysis and Outcome Division

**Commenter Affiliation:** Minnesota Pollution Control Agency (MPCA)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0197

**Comment Excerpt Number:** 4

**Comment Excerpt:**

EPA has used the "social cost of methane" (SC-CH<sub>4</sub>), a metric that assigns a cost of ongoing damages from uncontrolled methane. While the MPCA offers no comment on the value of SC-CH<sub>4</sub> chosen for assessment in this standard, the MPCA is very supportive of the use of such a metric. It is entirely appropriate to use a damage cost metric because it appropriately focuses on actual damages from uncontrolled methane emissions as the emissions contribute to climate change. Other metrics evaluate other costs involved in mitigating climate change and are useful within their context (e.g. cost of controls or market values).

**Comment Response:**

EPA agrees with this comment.

## 8.17 Other Comments about Impacts

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 8

**Comment Excerpt:**

Cost Effectiveness. In other section 111 rulemakings, EPA has recognized that controls can result in reduction of multiple pollutants, both of which are regulated. In particular, EPA's proposed section 111(b) methane standards for the oil and natural gas sector directly regulate both methane and VOCs, and the standards secure proportionate reductions in both pollutants.

EPA performed a cost-effectiveness analysis, in which the agency allocated the entire cost of control measures to each pollutant, individually. EPA noted, however, that:

[T]his approach, which is often used for assessing single pollutant controls, evaluates emission reduction of each pollutant separately, assuming that each bears the entire cost, and thus inflates the control cost in the multiple of the number of additional pollutants being reduced. This type of approach therefore over-estimates the cost of obtaining emissions reductions with a multipollutant control as it does not recognize the simultaneity of the reductions achieved by the application of the control option.<sup>38</sup>

Accordingly, EPA also assessed cost on a multipollutant basis, which "apportions the annualized cost across the pollutant reductions addressed by the control option in proportion to the relative percentage reduction of each pollutant controlled."<sup>39</sup>

The features of landfill emissions and available controls are very similar to those in the oil and gas sector. Landfill gas (LFG), the regulated pollutant, is composed of both methane and NMOCs, and both of these pollutants are proportionately reduced by EPA's proposed standards. Accordingly, in addition to the single-pollutant cost-effectiveness analysis EPA includes in the proposal, we urge EPA to analyze multipollutant cost-effectiveness.

[Footnote 38] 80 FR 56,617.

[Footnote 39] *Id.* at 56,617.

**Comment Response:**

As the commenter notes, while EPA's proposed section 111(b) methane standards for the oil and natural gas sector directly regulate both methane and VOCs, landfill gas (LFG) is the regulated pollutant for this rule. While LFG is composed of approximately 50 percent methane, 50 percent CO<sub>2</sub>, and less than 1 percent non-methane organic compounds (NMOC), NMOC has been regulated as a surrogate for LFG and as such the EPA feels that it is most appropriate to present the cost-effectiveness analysis in terms of this pollutant. However, as the EPA recognizes that significant methane reductions could also be achieved through the regulation of LFG, an additional single-pollutant cost-effectiveness analysis is presented for methane.

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**Commenter Name:** Stephanie Jones and Jason Schwartz

**Commenter Affiliation:** Institute for Policy Integrity

**Document Control Number:** EPA-HQ-OAR-2014-0451-0177

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Agencies should maximize net social benefits of regulation whenever feasible. This objective is consistent with longstanding executive branch and agency practice and promotes sound regulatory policy.<sup>5</sup> For over thirty years, agencies have been encouraged to use cost-benefit analysis to maximize the net social benefit of regulation. Federal agencies are required by Executive Order to weigh the costs and benefits of proposed rulemakings and select the regulation that maximizes net benefits. Executive Orders 12,866 and 13,563 require agencies to "propose or adopt a regulation only upon a reasoned determination that the benefits of the

intended regulation justify its costs.”<sup>6</sup> For significant regulatory actions, like the Proposed Rule on existing landfills, Executive Orders require agencies to use cost-benefit analysis unless such analysis is prohibited by statute.<sup>7</sup> The Office of Management and Budget has also provided guidance to agencies in Circular A-4, stating that cost-benefit analysis is “a primary tool for regulatory analysis.”<sup>8</sup> When properly conducted, cost-benefit analysis identifies which policies maximize net benefits.<sup>9</sup>

Footnotes:

5 See U.S. ENVTL. PROT. AGENCY, GUIDELINES FOR PREPARING ECONOMIC ANALYSES 4-2 (2010) (“Conceptually, the socially optimal level is determined by reducing emissions until the benefit of abating one more unit of pollution (i.e., the marginal abatement benefit)—measured as a reduction in damages—is equal to the cost of abating one additional unit (i.e., the marginal abatement cost).”).

6 Exec. Order No. 12,866, Sec. 1(b)(6), 58 Fed. Reg. 51,735, 51,736 (Oct. 4, 1993).

7 Id. § 6(a)(3)(C), at 51,741; see also id. § 1(a), at 51,735 (“[I]n choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits . . . , unless a statute requires another regulatory- approach.”).

8 OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, CIRCULAR A-4, at 2 (2003), available at [http://www.whitehouse.gov/omb/circulars\\_a004\\_a-4](http://www.whitehouse.gov/omb/circulars_a004_a-4) [hereinafter OMB CIRCULAR A-4].

9 See id. at 2 (“Where all benefits and costs can be quantified and expressed in monetary units, benefit-cost analysis provides decision makers with a clear indication of the most efficient alternative, that is, the alternative that generates the largest net benefits to society (ignoring distributional effects).”).

### **Comment Response:**

For the proposal, the EPA’s standard-setting duties and authority are derived under section 111 of the CAA, and its decisions are made within the confines of that authority. Although the EPA must consider the costs of control, it may not base the setting of standards on a broad-ranging benefit-cost analysis. The Regulatory Impact Analysis (RIA) prepared by the EPA under Executive Order 12866 may inform the standard-setting process, but cannot provide the direct basis for the standards and does not “create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States...” (Executive Order 12866, Section 10).

Section 111(b)(1)(A) of the Clean Air Act (CAA) requires the EPA to establish performance standards for new, modified, and reconstructed sources for source categories which cause or contribute significantly to air pollution that may reasonably be anticipated to endanger public health or welfare. The performance standard must reflect the application of the “best system of emission reduction” (BSER) that (taking into consideration the cost of achieving such emission reductions, any non-air quality health and environmental impact, and energy requirements) the Administrator determines has been adequately demonstrated (CAA section 111(a)(1)). This determination commonly centers on a cost-effectiveness analysis.

The RIA presents the costs and benefits of several regulatory options, and in accordance with OMB guidance includes both a less stringent and more stringent option to the proposed option.

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**Commenter Name:** Stephanie Jones and Jason Schwartz

**Commenter Affiliation:** Institute for Policy Integrity

**Document Control Number:** EPA-HQ-OAR-2014-0451-0177

**Comment Excerpt Number:** 3

**Sort Order:** 201

**Comment Excerpt:**

EPA has conducted benefit-cost analysis on its identified alternatives for the Proposed Rule on existing landfills, in its Regulatory Impact Analysis, but its discussion of alternatives in the Notice of Proposed Rulemaking is centered on a cost-effectiveness analysis.<sup>10</sup> While cost-effectiveness analysis is appropriate in particular circumstances—such as when a regulation has a single, difficult-to-monetize benefit and the alternatives presented are simply different routes to achieve that fixed target (e.g. saving an endangered species)—cost-effectiveness analysis is less useful and can be misleading when a regulation has multiple benefits and non-fixed targets.<sup>11</sup> In the case of the Proposed Rule on existing landfills, EPA has calculated that the cost effectiveness of reducing methane emissions is between \$107–\$122 per megagram<sup>12</sup> for its identified alternatives.<sup>13</sup> EPA justifies the choice of its preferred option on cost-effectiveness grounds, stating, for example, that “[r]equiring controls at landfills in the 2.0 million to 2.5 million Mg size range would be less cost effective . . . .”<sup>14</sup> Unfortunately, a cost-effectiveness metric does not provide the best basis for choosing between the alternatives. For example, a policy that costs \$10 to reduce a single ton of methane sounds more cost effective (\$10/ton) than a policy that costs \$10 million to reduce a half a million tons of methane (\$20/ton). However, at a value of \$1500 in benefits per ton methane reduced, the first policy produces net benefits of merely \$1490, while the second generates net benefits of \$750 million. In this example, applying a cost-benefit framework would allow a regulator to choose the most socially beneficial alternative, while a cost-effectiveness framework would not, and would leave millions of dollars of benefits on the table.

Footnotes:

10 U.S. Env'tl. Prot. Agency, Notice of Proposed Rulemaking: Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills, 80 Fed. Reg. 52100, 52122 (Aug. 27, 2015) [hereinafter “Proposed Rule”].

11 OMB CIRCULAR A-4, at 11.

12 A megagram is also known as a metric ton, which is equal to 1.1 U.S. short tons or about 2,205 pounds.

13 Proposed Rule, 80 Fed. Reg. at 52122.

14 Id. at 52120.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0177, excerpt number 2, under comment code 8z.

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**Commenter Name:** Stephanie Jones and Jason Schwartz

**Commenter Affiliation:** Institute for Policy Integrity

**Document Control Number:** EPA-HQ-OAR-2014-0451-0177

**Comment Excerpt Number:** 4

**Sort Order:** 202

**Comment Excerpt:**

With regard to this Proposed Rule on existing landfills, there is no need to rely on cost-effectiveness analysis because the major benefits of the rule are monetized (thus paving the way for benefit-cost analysis). EPA has used the best available science to quantify and monetize the climate-related benefits of reducing methane emissions.<sup>15</sup> For complete discussion of the use of the Social Cost of Methane in regulatory decisionmaking, please see the separate comments on this subject that Policy Integrity submitted jointly to these regulatory Dockets with other organizations on October 26, 2015. The net benefits of the more stringent option EPA has identified (\$300 million - \$1.9 billion)<sup>16</sup> are significantly higher than the net benefits of EPA's proposed option (\$270 million - \$1.7 billion).<sup>17</sup> (Indeed, the net benefits of the more stringent alternative may even be higher, as EPA does not explain why the monetized carbon dioxide co-benefits are reported as identical for the more stringent alternative and the preferred alternative, while EPA predicts that greater methane capture under the more stringent alternative would lead to greater electricity generation by landfills, which should offset even more carbon dioxide from traditional electricity sources.<sup>18</sup>) EPA should either select the option that maximizes net social benefits, or else articulate its rationale for not selecting the option that has the highest net social benefits of the three alternatives it has identified.<sup>19</sup> Though EPA notes that reducing the capacity threshold would have a "disproportionate impact on small entity- and municipally-owned sites, and closed landfills,"<sup>20</sup> this observation, alone, does not demonstrate that it would not be desirable from a social welfare maximizing perspective to regulate these landfills.<sup>21</sup> If EPA believes that these distributional effects are important enough to determine its regulatory choice, it should describe these effects "quantitatively to the extent possible, including the magnitude, likelihood, and severity of impacts."<sup>22</sup>

Footnotes:

15 RIA at 4-5-4-14.

16 RIA at 6-4.

17 Id. at 6-2.

18 See id. at 4-14 to 4-15.

19 See Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Oct. 4, 1993).

20 Proposed Rule, 80 Fed. Reg. at 52123.



21 See generally Institute for Policy Integrity, Suggested Improvements to the Implementation of the Regulatory Flexibility Act (Feb. 24, 2012), available at [http://policyintegrity.org/documents/Policy\\_Integrity\\_Letter\\_to\\_SBA\\_on\\_RFA.pdf](http://policyintegrity.org/documents/Policy_Integrity_Letter_to_SBA_on_RFA.pdf).

22 OMB CIRCULAR A-4 at 14.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0177, excerpt number 2, under comment code 8z.

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**Commenter Name:** Stephanie Jones and Jason Schwartz

**Commenter Affiliation:** Institute for Policy Integrity

**Document Control Number:** EPA-HQ-OAR-2014-0451-0177

**Comment Excerpt Number:** 5

**Sort Order:** 203

**Comment Excerpt:**

EPA has identified three regulatory alternatives to the baseline guidelines for existing landfills, all of which are more stringent than and have net benefits relative to the baseline. EPA's three alternatives differ from each other only with regard to the stringency of the thresholds at which landfills must monitor and/or control emissions (and not with regard to what such monitoring or control actually requires). EPA's proposed option would retain the capacity threshold at 2.5 million Mg and reduce the emission threshold to 34 NMOC Mg/year.<sup>25</sup> EPA has identified one less stringent alternative option (capacity threshold: 2.5 million Mg; emission threshold: 40 NMOC Mg/year) and one more stringent alternative option (capacity threshold: 2.0 million Mg; emission threshold: 40 NMOC Mg/year).<sup>26</sup> EPA should identify and conduct a benefit-cost analysis on further options—particularly more stringent alternative options. While the Notice of Proposed Rulemaking on existing landfills and the Regulatory Impact Analysis discuss many aspects of the landfill industry, landfill emissions, methods and technologies for reducing emissions, and regulatory components, EPA presents a full benefit-cost analysis of three alternatives that differ only with regard to the capacity and/or emission thresholds. EPA "should carefully consider all appropriate alternatives for the key attributes or provisions of the rule," as required for all significant rulemakings under OMB guidance.<sup>27</sup>

Footnotes:

25 RIA at 3-7.

26 Id.

27 OMB CIRCULAR A-4 at 16.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0177, excerpt number 2, under comment code 8z.

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**Commenter Name:** Stephanie Jones and Jason Schwartz  
**Commenter Affiliation:** Institute for Policy Integrity  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0177  
**Comment Excerpt Number:** 6  
**Sort Order:** 204

**Comment Excerpt:**

There are features of this rule that indicate the possibility that more stringent options not yet identified may have higher net benefits than the most stringent option EPA has identified. First, the shape of the benefit curve is not yet clear—based on the trajectory of the three options identified, it appears possible that net social benefits could continue to increase with stringency beyond the most stringent option EPA has analyzed so far. The most stringent option identified has higher net benefits than the preferred option, which has higher net benefits than the less stringent option, which has higher net benefits than the (even less stringent) baseline. EPA should continue identifying and evaluating more stringent options, as resource constraints allow, until it can better identify the approximate level of stringency where net social benefits are maximized (i.e. the point where marginal benefits of additional regulation equalize marginal costs).<sup>28</sup>

Footnote:

28 Id. at 8.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0177, excerpt number 2, under comment code 8z.

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**Commenter Name:** Stephanie Jones and Jason Schwartz  
**Commenter Affiliation:** Institute for Policy Integrity  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0177  
**Comment Excerpt Number:** 8  
**Sort Order:** 205

**Comment Excerpt:**

Just as with the Proposed Rule on existing landfills, the most stringent alternative option identified for the supplemental performance standards for new sources has the highest net social benefits,<sup>33</sup> and EPA should either select that option or else explain why it is choosing a less net-beneficial option.<sup>34</sup> One potentially valid justification for regulating new and modified sources at a less stringent level than would be optimal in isolation is to avoid the inefficient incentives that can be created by disparate regulatory treatment of new and existing sources. “Grandfathering” existing sources means regulating them less stringently than new sources. The disparity that grandfathering creates in regulatory compliance costs shifts the incentives that industry actors face as they decide whether to continue operating their existing facilities, to expand or substantially modify their existing facilities, or build new facilities to replace existing ones that have reached the end of their lives.<sup>35</sup> Grandfathering makes modifying or building a new source relatively more expensive—and so makes continuing to operate an existing source comparatively

less expensive than it would be absent the regulatory disparity.<sup>36</sup> Thus, if the gap between costs of compliance for existing source and new source standards is sufficiently large, existing sources may continue operating for longer than they would have absent disparate regulatory standards, rather than closing down or modifying.<sup>37</sup> If a more stringent, more costly standard for new sources incentivizes the continued operation of older, less efficient facilities with higher emissions, the resulting effect on aggregate emissions can offset or even totally undermine the goal of stringent standards for new sources.<sup>38</sup> For example, consider if annual operating costs (including annualized capital cost) are \$100 for an existing facility and \$90 for a new (cleaner and more efficient) facility. In the absence of environmental regulation—or in a regulatory scheme where costs of compliance are equal for existing and new facilities—it would be rational from the perspective of the facility owner to switch to a new facility. However, in a regulatory scheme where annual costs of compliance are \$0 for an existing facility and \$20 for a new facility, total operating costs would be \$100 for an existing facility and \$110 for a new facility. Under this scheme, it would be rational from the perspective of the facility owner to continue operating the existing facility, even if the net social benefits would be higher if he switched to a new facility. Thus, it is theoretically possible that regulating all landfills at the same level, as EPA has implicitly suggested with its supplemental new source proposal, would be benefit-cost justified on the whole because it could mitigate inefficient grandfathering effects. However, if concern about grandfathering effects is indeed EPA’s reason for proposing to regulate new and modified sources at the same level as existing sources, it should make this reasoning explicit and support it with analysis. Besides weakening the new source standard, other ways to combat grandfathering’s inefficient effects include strengthening the existing source standard or putting a sunset limit on the existing source standard, after which existing sources must comply with the new source standard. All such options and more should be considered in a collective assessment of the new and existing source standards. EPA should conduct a benefit-cost analysis of the full, coordinated regulatory scheme—existing source Emission Guidelines and new source performance standards—to ensure that it collectively maximizes net social benefits.<sup>39</sup>

Footnotes:

33 *Id.* at 7-2.

34 See Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Oct. 4, 1993).

35 Jonathan Remy Nash & Richard L. Revesz, *Grandfathering and Environmental Regulation: The Law and Economics of New Source Review*, 101 Nw. U. L. REV. 1677, 1708 (2007).

36 *Id.*

37 See *id.* at 1710–12; Richard L. Revesz & Allison L. Westfahl Kong, *Regulatory Change and Optimal Transition Relief*, 105 Nw. U. L. REV. 1581, 1615–17 (2010).

38 See Nash & Revesz, *supra* note 39 at 1709-10; Revesz & Kong, *supra* note 41 at 1615–17.

39 Revesz & Kong, *supra* note 41 at 1617–18.

### **Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0177, excerpt number 2, under comment code 8z.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

While the intention of the rule-making is to further reduce emissions, our review of the proposed rule and accompanying technical analyses indicates EPA identified only limited additional means to obtain further, cost-effective methane and NMOC reductions. Our constituents are concerned that many of the proposed measures will do little, if anything, to achieve the goal of more reductions. Indeed, the proposed provisions in some circumstances make it more difficult for landfills to optimize GCCS performance by perpetuating prescriptive standards and system adjustments that can hamper emissions controls.

**Comment Response:**

The EPA feels that the rule is flexible in that the best system of emission reduction (BSER) is a well-designed GCCS that allows for flexible design. As the EPA does not specify the path that must be used to control, open flares, enclosed flares, or treatment of LFG are all options. The final rule reflects additional flexibility through an expanded definition of treatment system, as well as the finalization of a non-numeric approach to treatment.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 15

**Comment Excerpt:**

The costs in Tables 2, 3 and 5 of the Proposed Rule do not consider the unnecessary expenditures by landfill owners and operators as a result of the exclusive concentration measurement approach in 40 CFR part 60, to the exclusion of the emission rate measurement approach. In particular, the concentration measurement approach can result in costs for installing, operating, maintaining, and monitoring additional LFG collection infrastructure that achieves little towards the goals of the Methane Strategy.

A 500 ppm concentration measurement could be associated with an emission rate that is far lower than an emission rate associated with a 450 ppm concentration measurement, depending on conditions. For example for stability class 4 (D), a 500 ppm measured concentration for a 30 x 3 m source has a modelled emission rate of 0.92 g/s, compared with a 450 ppm concentration for a 30 m x 30 m source having a modelled emission rate of 7.1 g/s.

Thus, from the perspective of achieving methane emission reductions in a cost effective manner, the concentration measurement approach falls short. In the above example, there would

be a cost for installing, operating, maintaining, and monitoring additional LFG collection infrastructure to collect the 0.92 g/s emitted from the 30 x 3 m source, but no cost associated with 7.1 g/s emitted from a 30 x 30 m source because of the latter's 450 ppm concentration being below the regulatory limit. The emission from the 30 x 3 m source would be only 13% of that of the 30 x 30 m source. This example demonstrates that continuing on an exclusive concentration measurement approach for regulatory purposes can result in unnecessary expenditures by landfill owners and operators at negligible benefit to the goals of the Methane Strategy. A holistic approach that considers all costs of the rule, including the cost of unnecessary expenditures mandated by the current rule (such as the cost of installing, operating maintain and monitoring infrastructure that delivers little benefit), and not just the cost of monitoring and measurement, is required to understand the true costs of emissions reductions.

**Comment Response:**

Monthly monitoring of pressure, oxygen/nitrogen levels are required to inform the owners or operators of necessary adjustments to the gas collection and control system. See sections VI.A.1 of the preambles for the NSPS and Emission Guidelines for additional discussion on wellhead monitoring. The EPA considered all available information when estimating the costs of the rule.

## **9.0 ALTERNATIVE EMISSION MEASUREMENT**

### **9.1 Method 18 and 25A -Initial Removal and the addition of Method 25A**

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 75

**Sort Order:** 100

**Comment Excerpt:**

Republic does not support the removal of EPA Method 25A and Method 18 from the proposed rule. These test methods have been relied upon to demonstrate compliance for performance testing of enclosed flares as a part of EPA policy for over a decade under 40 C.F.R. § 60.764. EPA has not provided any justification for removing these methods.

The removal of Method 25A presents the greatest concern since this method was added to 40 CFR Part 60 as an amendment to the Federal Register on October 17, 2000 as a part of a legal action that successfully challenged the applicability of Method 25. In fact, 40 CFR §60.754(d) was edited to indicate that if the outlet concentration was expected to be 50 ppmv NMOC as carbon or less, then Method 25A should be used in place of Method 25. Issues with Method 25 and 25C, which are essentially the same laboratory method, have still not been resolved. The major drawbacks to using these test methods in place of Method 25A have not changed since the October 2000 amendment and include the following: highly inconsistent results (especially at low concentrations) even among different runs on the same source, positive bias (especially when CO, CO<sub>2</sub> and/or water vapor are present in the sample), higher cost, and lack of real-time results.

The majority of LFG destruction devices show NMOC concentrations below 50 ppmv as carbon. Due to the issues with Methods 25/25C in measuring NMOC content under this level, the proposed Subpart XXX rule effectively removes the ability to accurately measure compliance with the 20 ppmv outlet standard for a large class of enclosed combustors. This inaccuracy at low concentrations also leads to distorted destruction efficiencies whether or not these are used directly for compliance. In addition, such inaccuracies can lead to future AP-42 updates based on non-representative data. Within the last several years Method 25A has specifically been added in other published NSPS sections including reciprocating engine (RICE) rules for measuring NMOC or VOC emissions for compliance purposes. EPA should be consistent among source categories and should not treat landfills differently than other sources. In addition, EPA did not provide any factual data, methodology, or any legal or policy justification for its proposed exclusion of Method 25A or Method 18. Thus, EPA appears to have failed to satisfy the notice-and-comment requirements of the Clean Air Act. 42 U.S.C. § 7607(d)(3). Specifically, § 307(d)(3) of the Clean Air Act requires the Agency to provide a statement of basis and purpose for any proposed rule. The statement of basis and purpose must include a summary of “(A) the factual data on which the proposed rule is based; (B) the methodology used in obtaining the data and in analyzing the data; and (C) the major legal interpretations and policy considerations underlying the proposed rule.” Since EPA failed to comply with these requirements in its decision to change test methods, Republic and other industry representatives have had no opportunity to examine and comment on the studies, data, or other information (if any) underlying the Agency’s decision-making in this context.

Republic believes the current test methods should be preserved so landfills can continue to use the most appropriate test method to meet site-specific conditions as proven to be effective over the last decade. If the EPA intends to proceed with revisions to remove the test methods, then it must provide a supplemental proposal, with supporting information and soliciting comment with respect to a proposed removal of Method 25A and Method 18.

**Comment Response:**

The EPA thanks you for your comments. EPA Method 25A and Method 18 (limited to specific compounds like methane) are included in the final rules. Please see final NSPS Preamble Section VI.F.1. See final Emission Guidelines preamble section VI.E.1.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 58

**Sort Order:** 101

**Comment Excerpt:**

EPA Has Not Explained Its Apparent Removal of Performance Test Methods. EPA currently anticipates the use of Method 25A in place of Method 25 under subpart WWW in cases "where the outlet concentration is less than 50 ppm NMOC as carbon (8 ppm NMOC as hexane)." 40 CFR § 60.754(d). As a result, for the last fourteen years, nearly all landfill gas-fired internal combustion engines have been subject to Method 25A testing,<sup>28</sup> as these devices typically have

NMOC emissions less than 50 ppm NMOC as carbon. Although the proposed rule's preamble indicates that the results of its *Gas control system technology review* were identical to the results used in promulgating subpart WWW, EPA has failed to include explicit authorization for Method 25A in proposed § 60.764(d), which undercuts the validity of the *Gas control system technology review*. The Agency provides no explanation in the preamble for its deviation from the testing requirements set forth in Subpart WWW or the failure to include Method 25A or Method 18 as a pre-authorized test methods in Subpart XXX.

WM requests inclusion of Method 25A in Subpart XXX for four reasons: (1) EPA failed to satisfy the procedural requirements of the Clean Air Act; (2) Method 25A is the superior testing methodology for certain circumstances; (3) EPA's analysis, as set forth in the Gas control system technology review relies on inclusion of Method 25A, and (4) EPA failed to evaluate the economic impact of excluding Method 25A.<sup>29</sup>

[Footnotes]

(28) Although subpart WWW allows for use of either test methods 25A or 18 in these instances, our comments are focused on method 25A as it is more commonly used in practice.

(29) WM believes Method 18 should also be retained as a test method for limited purposes, e.g., subtracting methane or addressing parameters that may be exempt VQCs, etc.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 75 under comment code 9a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 63

**Sort Order:** 102

**Comment Excerpt:**

The proposed rule removes EPA Test Methods 18 and 25A as options for performance tests. The industry relies on these test methods for its compliance testing. The preamble to the rule is silent on the removal and the docket contains no information regarding this change. As such, the industry only discovered the change when it looked at a redlined copy of the rule. We initially thought that this must have been done in error. Without any justification, it is difficult for the industry to respond to this change other than to request that the test methods be maintained. Therefore, we request maintaining both EPA Test Methods 18 and 25A for its performance tests.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 75 under comment code 9a.

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**Commenter Name:** Comment submitted by Mark C. Messics, Senior Business Development Manager

**Commenter Affiliation:** PPL Renewable Energy, LLC

**Document Control Number:** EPA-HQ-OAR-2003-0215-0110.1

**Comment Excerpt Number:** 1

**Sort Order:** 103

**Comment Excerpt:**

In the Proposed Rule, EPA Test Methods 25A and 18 were not included as options for measuring compliance with the 98 percent destruction efficiency or the 20 ppmvd outlet limit for NMOCs in enclosed combustors. These methods were added to 40 CFR 60, Subpart WWW and are now widely used for compliance demonstration. Method 25A is important because its use is required for (the many) sources with an outlet concentration of less than 50 PPMV NMOC as carbon.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 75 under comment code 9a.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 24

**Sort Order:** 104

**Comment Excerpt:**

The agency has removed Method 18 from Tier 2 testing options.

The agency has removed Method 18 from Tier 2 testing options.

The agency has removed Method 18 from performance test options.

The agency removed Method 25A from performance test options.

What is the justification for these changes?

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 75 under comment code 9a.

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**Commenter Name:** Comment submitted by Catharine Fitzsimmons, Chief, Air Quality Bureau

**Commenter Affiliation:** Iowa Department of Natural Resources (DNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0078.1

**Comment Excerpt Number:** 3

**Sort Order:** 105

**Comment Excerpt:**



EPA should allow the use of Method 25A for new landfills in Subpart XXX, as currently allowed in Subpart WWW. EPA recognized in WWW that there are limitations to using Method 25 for testing flares where the outlet concentration is low. In proposed Subpart XXX, EPA did not include the additional language to allow for the use of Method 25A. The DNR could not find any discussion of this discrepancy in the preamble to XXX.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 75 under comment code 9a.

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**Commenter Name:** Juene Franklin, P.E.

**Commenter Affiliation:** Franklin Engineers & Consultants, LLC

**Document Control Number:** EPA-HQ-OAR-2003-0215-0122

**Comment Excerpt Number:** 7

**Sort Order:** 106

**Comment Excerpt:**

a. Cause – The following limitations of the EPA Method 25 Test: i. The sensitivity of the test method to water and carbon dioxide. These two parameters are present in large quantities/concentrations in landfill gas.

ii. The lower applicability limit of this test is about 50 ppm as carbon. In many situations where you have exhaust gases from combustion devices (e.g. flares and engines) the NMOC concentrations will be less than 50 ppm.

iii. Based on information currently available to us, it appears that the Method 25A test was developed by the USEPA to address some of the limitations of the Method 25 Test.

b. Recommendation – Please allow the use of the EPA Method 25A test to remain in the proposed NSPS XXX Regulations. Based on some of the research that we have read, it appears that the Method 25A test is more accurate than the EPA Method 25 test for detecting VOC/NMOC emissions in exhaust gases from LFG-fired IC engines.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 75 under comment code 9a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 60

**Comment Excerpt:**

Method 25A is the Superior Testing Methodology for Certain Circumstances. EPA's decision to exclude Method 25A from Subpart XXX is in direct conflict with EPA's previous guidance and regulation, as well as other available technical information. Method 25A remains a widely

accepted testing method for evaluating NMOC emissions in the landfill gas context. Method 25A is superior to Method 25 for a number of reasons-technical, economic, and practical.

Specifically, Method 25A has been identified as the superior method for measuring emissions in cases where expected NMOC concentrations are less than 50 ppm as carbon. *See, e.g., 40 C.F.R. § 60.754(d); in re: CDT Landfill Corporation, 2003 EPA App. LEXIS 5 (E.A.B. 2003)* (holding that Method 25A is the "superior" test method where NMOC concentrations are low); EPA Memorandum from John B. Rasnic, Director of the Stationary Source Compliance Division of the Office of Air Quality Planning and Standards, EPA's VOC Test Methods 25 and 25A, Apr. 4, 1995 (discussing the circumstances under which Method 25A should be used in lieu of Method 25). Method 25, in contrast, is not sensitive enough to determine outlet emissions from LFG control devices (or similar sources) where NMOC concentrations are below 50 ppm as carbon.

It is our understanding that EPA developed Method 25A specifically to address some of the limitations inherent in Method 25. It is our further understanding that in a number of recent rulemakings, EPA selected Method 25A over Method 25 for testing the exhaust concentrations from combustion sources. For example, 40 CFR Part 63, Subpart ZZZZ requires Method 25A testing for total hydrocarbons when demonstrating compliance with the 98% destruction or 20 ppm outlet concentration requirement for spark ignition engines including those fired by landfill gas. *See 40 CFR § 63.6630(c)(4)* ("If you are demonstrating compliance with the THC percent reduction requirement, you must measure THC emissions using Method 25A, reported as propane, of 40 CFR part 60, appendix A"); *See also 40 CFR § 63.6640(c)(4)*. Similarly 40 CFR Part 60, Subpart JJJJ allows use of Method 25A, but does not allow use of Method 25, for outlet testing for VOC.<sup>32</sup>

In addition and in contrast to Method 25, Method 25A is an effective and accurate testing methodology in cases where the gas stream has high concentrations of moisture and CO<sub>2</sub>. When water vapor and CO<sub>2</sub> are present together in the stack, EPA recognizes that Method 25 can produce a positive bias in the sample results. 40 C.F.R. Part 60, App. A-7, Meth. 25. EPA considers the bias to be significant where the CO<sub>2</sub> concentration, expressed as a volume percent, multiplied by the water vapor concentration exceeds 100. Exhaust gases from engines and enclosed flares routinely exceed this significance threshold as water vapor concentrations and CO<sub>2</sub> concentrations often exceed 10% each (10% x 10% = 100). Therefore, Method 25 is often not a viable option for measuring NMOC emissions from engines and enclosed flares due to the high potential for bias. Method 25A, on the other hand, is not affected by high moisture and high CO<sub>2</sub> levels because the sample is transported above the water vapor condensation temperature.

WM reviewed 39 company stack test results of LFG-fired internal combustion engines and found that in every instance, the product of CO<sub>2</sub> and moisture concentrations exceeded 100, with values ranging from a low of 118.7 (11.6% moisture and 10.2% CO<sub>2</sub>) to a high value of 194.5 (14.13% moisture and 13.76% CO<sub>2</sub>). As a result, use of Method 25A was critical to accurately demonstrating the NMOC emission rate and reliance on Method 25 would have been subject to unnecessary uncertainty.<sup>33</sup>

As proposed, subpart XXX would require use of Method 25 for testing the exhaust of landfill gas-fired internal combustion engines, as well as other control devices, despite the fact that the EPA has previously determined that Method 25 cannot accurately measure low NMOC concentration streams and cannot adequately handle high moisture/CO<sub>2</sub> levels. By comparison, the Method

25A has repeatedly been determined by EPA as a test method that does provide accurate test results for low NMOC concentration and high moisture/CO<sub>2</sub> airstreams.<sup>34</sup>

To the extent that EPA removed Method 25A due to the method's response to oxygenated hydrocarbons, like formaldehyde, EPA's concern would be misplaced. (As noted above, EPA's rationale for removing Method 25A is completely absent from the proposed rule making it difficult or impossible to effectively comment). The emission limit in Subpart XXX is based on the control efficiency of control device. Control efficiency is determined by subtracting NMOC<sub>out</sub> by NMOC<sub>in</sub> and then dividing by NMOC<sub>in</sub>. Formaldehyde is not present in LFG prior to combustion. Therefore, when evaluating the control efficiency of formaldehyde only, the NMOC<sub>in</sub> denominator would be zero, which is impossible. In other words, the emission limit in Subpart XXX is not intended to address formaldehyde emissions (a byproduct of combustion), which have nothing to do with the underlying LFG.

[Footnotes]

(32) Although Method 25A may not measure formaldehyde, an NMOC and VOC, EPA concluded within the context of the subpart JJJJ and zzzz rulemakings that the issues with the Method 25A were minor and that Method 25A represented a better test method than Method 25 for determining emissions. Formaldehyde is not typically found in landfill gas, although it can be produced as a product of combustion.

(33) Method 25A has several other advantages, which further strengthen its efficacy for testing devices under existing subpart WWW and proposed subpart XXX. For example, Method 25A provides immediate real-time sampling results whereas Method 25 results may not be available for one to two months. The lag time in sampling results for Method 25 means that non-compliant equipment, as well as any sampling/testing errors, may not be known for several months. Method 25A is also a less complex testing method, which reduces the risk of errors and significantly decreases costs. Method 25A test results can also be replicated easily. By comparison, Method 25 testing can produce scattered results, which can make it difficult to diagnose problems.

(34) EPA should also provide flexibility to utilize other recognized test methodologies in evaluating compliance with Subpart XXX. For example, South Coast Air Quality Management Division's ("SCAQMD") Method 25.3 is widely accepted by permitting agencies as a valid means of evaluating VOC concentrations in particular circumstances. *See, e.g.*, EPA Letter from Andrew Steckel, Chief, Rulemaking Office to Dr. Elaine Chang, Assistant Deputy Executive Officer for SCAQMD, Approval of South Coast Method 25.3 - Determination of Low Concentration Non-Ethane Non-Methane Organic Compound Emissions from Clean Fueled Combustion Sources, Mar. 29, 2000 (approving SCAQMD 25.3 for use in SIP-approved rules in California). SCAQMD Method 25.3 shares similar analytical procedures to Method 25 - including some of the disadvantages (*e.g.*, cost and complexity) discussed above. However, unlike Method 25, SCAQMD Method 25.3 can accurately measure low VOC concentrations (less than 50 ppm) and high levels of stack CO<sub>2</sub> and moisture. Another advantage of SCAQMD Method 25.3 is that it is not reliant on response factors when measuring certain chemicals, which can be issue with Method 25A in certain situations.

**Comment Response:**

The EPA thanks you for your comments. The EPA agrees that EPA Method 25A and Method 18 (limited to specific compounds like methane) need to be included in the finalized rule. Please see Preamble Section VI.F.1, Test Methods, for more information.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 61

**Comment Excerpt:**

EPA's Failure to Include Method 25A Invalidates the Agency's Gas Control System Technology Review. As stated in the preamble to the proposed rule, EPA conducted the required initial Best System of Emission Reduction ("BSER") review as part of the promulgation of subpart WWW. The Agency's BSER review determined that flares were capable of achieving 98% destruction, and that other devices generally and internal combustion engines specifically "can and do achieve 98% destruction at most locations" despite the scant availability of actual testing data. EPA, Air Emissions from Municipal Solid Waste Landfills - Background Information for Final Standards and Guidelines, EPA-453/R-94-021, EPA Office of Air and Radiation/Office of Air Quality Planning and Standards, Emission Standards Division, Dec. 1995, page 4-3. As a result of that determination, EPA selected a reduction of 98 percent as the level representing BSER for control of landfill gas, and alternately allowing compliance to be demonstrated by an outlet concentration of 20 ppmvd of NMOC (as hexane).

Method 25A has been the presumptive method set forth in subpart WWW for testing devices with outlet concentrations below 50 ppm (*i.e.*, essentially all internal combustion engines) for the last fourteen years. Furthermore, testing for certain landfill gas-fired internal combustion engines has been required pursuant to either 40 CFR Part 60, Subpart JJJJ or 40 CFR Part 63, Subpart ZZZZ, and those results will similarly and absolutely have been generated from Method 25A, and not Method 25, testing programs.

In other words, to the extent that the "current data" relied upon in the BSER determination were obtained from actual test results, EPA's determination that 98% is BSER for landfill gas-fired internal combustion engines is wholly dependent on Method 25A test results. It should also be noted in this context that Method 25A is the method typically used by engine manufacturers when certifying engines under various EPA programs and regulations.

As part of EPA's current BSER review of landfill gas control technologies, EPA determined that 98% remains BSER for control of landfill gas, and continued to allow compliance to be demonstrated by an outlet concentration of 20 ppmvd of NMOC (as hexane). EPA made this active, current determination of BSER for ((devices that burn landfill gas to recover energy, such as boilers, turbines, and internal combustion engines" because these technologies continue to achieve this "level" because "current data are consistent with 98 percent destruction." 79 Fed. Reg. at 41,803. Requiring future compliance demonstrations for sources with emission rates below 50 ppm to be made with Method 25 invalidates the basis for EPA's BSER analysis, which is dependent on Method 25A results.

**Comment Response:**

The EPA thanks you for your comments. EPA Method 25A and Method 18 (limited to specific compounds like methane) will be included in the final rule. Please see Preamble Section VI.F.1, Test Methods, for more information.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 62

**Comment Excerpt:**

EPA Failed to Properly Evaluate the Economic Impact of Excluding Method 25A. EPA also failed to consider the cost implications associated with its decision to exclude Method 25A as a pre-authorized test method. As mentioned above, Method 25A is a more cost-effective testing option. Method 25A costs significantly less than Method 25 (and other available testing methods) primarily because the equipment involved is easier to set-up and requires less labor. In addition, because Method 25A is less complicated, it is less likely to produce erroneous results and would therefore avoid additional, expensive rounds of sampling and "snipe" hunts for non-existent problems.

Furthermore, the near instantaneous availability of Method 25A results allows for noncompliant devices to be repaired or deactivated immediately. We also note that Method 25A is widely required by various control agencies, in some instances independent of federal testing requirements, and omission of Method 25A will result in double-testing of some devices. This is an economically inefficient outcome.

**Comment Response:**

The EPA thanks you for your comments. EPA Method 25A and Method 18 (limited to specific compounds like methane) will be included in the final rule. Please see Preamble Section VI.F.1, Test Methods, for more information.

## **9.2 Alternative Monitoring Technologies**

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 61  
**Comment Excerpt:**

Republic supports the consideration of emerging technologies. However, Republic is not aware of any data that would demonstrate long-term performance, effectiveness, and/or maintenance requirements for the above technologies in full-scale use at a landfill. In addition, these methods have not been validated for measuring fugitive methane or other hydrocarbons at landfills and therefore should not be considered a reliable method. Rather, as EPA has recognized, these

methods as applied to landfills are still *research methods* and are not appropriate to impose as a mandatory requirement at this time.

The exclusion of using these techniques is consistent with the EPA GHG Mandatory Reporting Rule preamble which includes a discussion of proposed methods for estimating emissions from landfills, including modeling, engineering, and direct measurement methods. EPA states that, “[t]he direct measurement methods available (e.g., flux chambers and optical remote sensing) are currently being used for research purposes, but are complex and costly, their application to landfills is still under investigation and they may not produce accurate results if the measure system has incomplete coverage.”<sup>1</sup> The proposed GHG reporting rule specifically omits use of direct measurement methods from its recommended approach for estimating landfill emissions because of their technical complexity and the significant uncertainties in using them to measure entire landfills. If these technologies are not even sufficiently reliable and cost-effective for reporting purposes, they certainly are not ready for mandatory application under the NSPS program. Therefore, Republic asks EPA to refrain from imposing these options as mandatory requirements in the final rule.

[Footnote]

(1) 74 Fed. Reg. at 16558-16559 (Apr. 10, 2009)

**Comment Response:**

The EPA thanks the commenter for their insight. The EPA will continue to consider the emerging technologies. EPA recognizes these technologies are still research methods and will not be a mandatory requirement at this time. See preamble Section VI. B.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 29

**Comment Excerpt:**

The list of alternative remote measurement and monitoring techniques cited in the preamble] includes methods of chemical detection and analysis (FTIR, TDL, CRDS) as well as can be characterized as measurement techniques (RPM, optical remote sensing, tracer correlation, micro-meteorological eddy-covariance, static flux chamber) that are typically used to determine the mass flux emissions for a defined area. The measurement techniques typically utilize one or more of the formerly listed methods of detection. For example, radial plume mapping, which is a form of optical remote sensing, can be performed using a variety of open path instruments (e.g. FTIR, TDL).

WM has experience with the application of these techniques to research landfill emissions and the results of those efforts have been reported (see list of references). [Refer to pages 55-56 of the original comment letter at DCN EPA-HQ-OAR-2003-0215-0100.1 for references.] As the majority of measurement techniques listed [in the preamble] are most commonly used to determine mass flux emissions they are not direct replacements for the current surface emissions monitoring method, which determines methane concentration five to ten centimeters above the

landfill surface. Notwithstanding the costs of implementation, which are significantly higher than the SEM procedure in Subpart WWW and proposed in Subpart XXX, a horizontal RPM method or other open path method could conceivably be useful for hotspot detection. The technique can be used to produce a concentration map of the surface. However, in our experience with this approach, the instrumentation and retro reflectors are configured in a manner which results in measurements being made at approximately one meter above the landfill surface. We recommend that additional field validation of this method which includes a comparison to the surface scan method be conducted prior to consideration as an alternate method. One important part of the field validation would be to compare the path-integrated measurements produced from an HRPM with the point concentration data of the serpentine FID measurements.

The methods of detection listed can detect minute quantities of methane and can have large dynamic measurement ranges making them useful when employed in optical remote sensing and tracer correlation work. The solid state nature of the laser systems such as TOL or CROS make them reliable and relatively robust. However, fundamentally, **we do not recommend using direct measurement techniques such as OTM 10 with TOL or CRDS for regulatory purposes at this time.** EPA has recognized that these methods as applied to landfills are still *research methods* and not appropriate for emission inventory purposes at this time. Per USEPA's Emission Measurement Center's Interim Policy on Posting Methods, test methods are divided into four categories. For example, Category C: Other Methods includes test methods, which have not yet been subject to the Federal rulemaking process. Other Test Method (OTM)-10 and CRDS both have not been subject to the Federal rulemaking process; they are both still considered research methods.

These methods have not been validated for measuring fugitive methane or other hydrocarbons at landfills and therefore should not be recommended as reliable methods at this time. The use of the OTM 10 method to develop landfill methane emission factors requires the use of models to approximate the surface area contributing to flux (ACF) in order to develop mass emissions per time per unit area for multiple areas of a landfill. Two models have been developed to estimate the ACF for OTM 10 measurements, the multiple linear regression model described by Thoma et al. 2010 [see list of references on pages 55-56 and Attachments of DCN EPA-HQ-OAR-2003-0215-0100.1] and the stability class model described by Abichou et al. 2010 [see list of references on pages 55-56 and attachments of DCN EPA-HQ-OAR-2003-0215-0100.1].

The overall measurement uncertainty associated with the use of these models is estimated to be 10-30 percent.

From our perspective, emission factors would need to be developed for each combination of cover type (e.g. daily, intermediate and final) and gas collection condition present. The results from our study of 20 landfills indicate that emissions appear to vary by these operational characteristics as well as climate. Therefore, to develop a whole landfill emission estimate, each unit emission rate, in mass per time per unit area, would be extrapolated to like areas (according to cover type and gas collection status, etc.) and summed. Examples of this approach are shown in a paper on a method comparison study performed in 2008 in collaboration with Veolia (Babilotte et al. 2010) [see list of references on pages 55-56 and Attachments of DCN EPA-HQ-OAR-2003-0215-0100.1] and a study using OTM 10 at three California landfills (Green et al. 2009) [see list of references on pages 55-56 and Attachments of DCN EPA-HQ-OAR-2003-0215-0100.1]. While these studies do derive whole landfill emission estimates from unit

emission rates, **there are significant uncertainties in using this approach.** It has been our experience that OTM 10 measurements practically can cover only 5 to 20 percent of the total landfill surface (Babilotte et al. 2010) [see list of references on pages 55-56 and Attachments of DCN EPA-HQ-OAR-2003-0215-0100.1]. As a consequence, this technique is subject to some of the same criticism regarding spatial representativeness that is leveled at the use of static flux chambers to determine emission rates.

Additionally, after more than 50 weeks of measurement at 20 landfills, we are still unsure of how many measurements are required to accurately capture the temporal variability of emission rates. For example, we have observed that the unit emission rate calculated for a given cover type at a single landfill can vary by more than a factor of three over the course of several months. This temporal variation in observed emissions is linked to changing rates of gas production and collection, as well as to the extent of methane oxidation; all of which are also affected by climate (Chanton et al. 2010) [see list of references on pages 55-56 and Attachments of DCN EPA-HQ-OAR-2003-0215-0100.1].

As a practical matter, we are very concerned that only 31 percent of the 72,500 measurements obtained over 50 weeks data collected are usable (i.e., meet the quality assurance/quality control (QA/QC) requirements). The measurement technique is difficult to set-up and use due to the complex topography associated with landfills and the strong influence weather (e.g., wind direction and speed, precipitation, barometric pressure) plays on the ability to obtain usable TDL readings. The large source size, heterogeneous source area, and interference from proximate or distant sources of emissions (from an adjacent landfill cell outside the measurement area or a wholly separate site) can create very significant uncertainties in measuring methane flux.

While WM has invested significant time and resources in trying to resolve methodological uncertainties and develop best practices to make OTM 10 and CRDS practical tools for landfill emissions estimation, we cannot recommend using direct measurement techniques such as OTM 10 or CRDS for regulatory compliance purposes, for calculating landfill gas collection efficiencies, or even for estimating whole landfill emission factors without first resolving these methodological problems. Best management practices or method protocols for using the technique at landfills should be developed and made publicly available for review and comment. We believe the technique is far better suited to researching emissions associated with small defined areas rather than measuring emissions for an entire landfill.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 61 under comment code 9b.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 34

**Comment Excerpt:**



The above list includes methods of chemical detection and analysis (FTIR, TDL, CRDS) as well as measurement techniques (RPM, optical remote sensing, tracer correlation, micrometeorological eddy-covariance, static flux chamber) that determine the mass flux emissions for an area. The measurement techniques typically utilize one or more of the methods of detection. For example, RPM, which is a form of optical remote sensing, can be performed using a variety of open path instruments (e.g. FTIR, TDL).

Waste Management, a SWANA and NW&RA member, has experience with the application of all of these techniques in their efforts to research landfill emissions, and has published the results of those efforts. These techniques are most commonly used to determine mass flux emissions and were never meant to be direct substitutes for routine SEM. Routine SEM, which instead determines methane concentration 5 to 10 cm above the landfill surface and is suitable for compliance purposes.

The listed techniques cost significantly more than SEM, and each has implementation and logistical issues for application at the landfill surface, and thus at this point remain a research tool only. At this point, we recommend that EPA maintain SEM as BSER for collection systems. However, these techniques should continue to be studied.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 61 under comment code 9b.

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1

**Comment Excerpt Number:** 7

**Comment Excerpt:**

Foth and the BOW Group do support allowing the use of alternative monitoring techniques to determine surface methane concentrations as technology becomes available and economically practical.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 61 under comment code 9b.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 17

**Comment Excerpt:**

Alternative remote measuring and monitoring techniques still seem to be research tools and not suited to routine use for regulatory compliance data collection. Techniques for these methods

still require more training and interpretation than is suitable for a monitoring technician. Feedback received during professional conferences, such as the various Global Waste Management Symposia, supports this opinion. One monitoring technique that may be worth developing is a utility terrain vehicle-mounted system instead of walking traverses.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 61 under comment code 9b.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 29

**Comment Excerpt:**

EPA along with companies, such as Waste Management, has conducted research on various other test methods of surface emission quantification. These include but are not limited to radial plume mapping, optical remote sensing, and cavity ringdown spectroscopy. DSWA does not have any experience using these test methods. Although we find new technologies interesting, we are concerned that the added cost of implementing them along with the specialty equipment required and the limited number of people experienced with the test makes these methods unsuitable for required testing.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 61 under comment code 9b.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 12

**Comment Excerpt:**

Direct measurement of landfill emissions should be incorporated into the final standards.

Direct measurement of landfill emissions are now available and have been touted by members of the landfill industry. With their ability to assess large areas of the landfill surface, they can be particularly useful in identifying hot spots and could serve as an alternative to the surface emissions monitoring requirements. They could also form as a more rigorous and accurate basis for the proposed Tier 4 emissions threshold, as a surface emissions standard is not effective in determining emissions.

The EPA has consistently stated its preference for actual emissions data in place of modeled or projected emissions. Since 1996, when landfill NSPS regulations were last promulgated, significant progress has been made with regard to the measurement of methane emissions from landfills. The Solid Waste Association of North America noted the following:

“Fortunately, there have been a number of breakthroughs recently with respect to measurement technologies, analytical methods to allocate emissions to the entire footprint, and the development of standard operating procedures for field measurements which have resulted in the ability of the landfill manager to more accurately quantify fugitive [landfill gas] emissions.”<sup>39</sup>

In particular, Waste Management concluded that the Vertical Radial Plume Mapping (VRPM) method, “can now give quantitative estimates of surface emissions from landfills.”<sup>40</sup>

[Footnote 39] See p1 of SWANA (2013) *Practical Methods for Measuring Landfill Methane Emissions and Cover Soil Oxidation*

[Footnote 40] See p9 of SWANA (2013)

**Comment Response:**

The EPA thanks the commenter on their perspective. The final NSPS and Emission Guidelines incorporate site specific measurements for surface methane emissions as outlined in the discussion of Tier 4 in the preambles (see section VI.A.2 of the 2016 NSPS Final Preamble). Use of emerging technologies, such as the vertical radial plume mapping, are still under investigation and are not finalized as requirements in these final rules. See section VI.B of the 2016 NSPS Final Preamble for additional information.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 19

**Comment Excerpt:**

EPA should also adopt the several optical scanning and remote wellhead sensing technologies referenced in the AMPRM.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0451-0185, excerpt 12 under comment code 9b.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 71

**Comment Excerpt:**

The ANPRM asks for opinions on the several forms of optical scanning.<sup>73</sup> Optical scanning is a major advance over discredited first order decay models and flux boxes for estimating the volume of methane and HAPs that are escaping. However, scanning remains too uncertain at this time to form the basis of reliable assessments of collection efficiencies or enforce emission rate limits. It can, however, provide useful comparative insights, and we urge EPA to continue to

support their development. Chief among the problems that elude precise measurement of methane concentrations in the scanned vertical plane is the fact that gases in the atmosphere upwind of that plane mix with it. If upwind gases that cross the plane are not accounted for and subtracted from the observed fluxes in that plane, the results will be erroneous. To distinguish the two requires first defining the boundaries of the contributing area, which defies clear delineation, and choosing from among the two published models to measure the upwind contribution, which are predicated on general regression equations derived from controlled releases of tracer gases or from computer simulations. The fact that the two produce different results raises a question about the validity of one or both of the estimation methodologies. Also, to different degrees, both models are predicated upon a simplified assumption of contributory winds crossing a *flat* surface, which usually does not describe the more complex and irregular landfill terrain being scanned in most cases.

Unless observations are limited to days when there is no wind, shifting wind speed and direction, which is common given that the top of many landfills hundreds is of feet above grade, make conducting reliable observations considerably more challenging and subjective, even with a four plane configuration of the optical scanners.

In the field, with landfills' vast expanses, irregular terrain, high reaches and shifting winds, there is no single uniform protocol to manage all these contingencies, requiring any number of subjective adjustments and compromises not set forth in OTM-10. Moreover, because of inherent difficulties in taking measurements there, neither the working face nor side slopes are likely to be included, which means that the vast majority of emissions will not be captured.

[Footnote]

<sup>73</sup> ANPRM, 79 Fed. Reg. 41790.

**Comment Response:**

The EPA thanks the commenter for their perspective. Currently optical gas imaging (OGI) does not provide quantitative readings as required in 60.36f.c(4). An OGI instrument can only visualize emissions and not provide the corresponding concentration. It also cannot reliably see 500 ppm in real world conditions.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 13

**Comment Excerpt:**

Fugitive emissions should be routinely monitored at landfills as a surrogate for uncontrolled emissions of hazardous air pollutants. Since landfill MACT standards were finalized in 2003, the EPA, landfill industry, and academia have used a variety of area source measurement techniques to quantify landfill methane emissions, including flux chambers, air dispersion modeling using surface methane measurements, and optical remote sensing. In particular, optical remote sensing is of particular interest, given its use by landfill operators, the EPA, and the National Oceanic

and Atmospheric Administration (NOAA).<sup>41,42,43</sup> In fact, in reference to this technology, the EPA Office of Research and Development concluded:

“Breakthroughs in technology, data analysis in allocating emissions to the entire footprint, and method development to standardize operating procedures have resulted in the ability to more accurately quantify fugitive landfill gas emissions using optical remote sensing technology.”<sup>44</sup>

As explained by the EPA ORD 2012 report, optical remote sensing using EPA method OTM-10 “has been successfully employed to characterize emissions from a variety of sources including landfills, wastewater treatment plants, waste lagoons from hog farms, and variety of industrial sites.”<sup>45,46,47,48,49</sup>

[Footnote 41] Thoma, E. D., R. B. Green, G. R. Hater, C. D. Goldsmith, N. D. Swan, M. J. Chase, and R. A. Hashmonay. Development of EPA OTM 10 for Landfill Applications. *Journal of Environmental Engineering*. American Society of Civil Engineers (ASCE), Reston, VA, Vol 136, No. 8, pp. 769-776, 2010

[Footnote 42] Goldsmith, C.D., J. Chanton, T. Abichou, N. Swan, R. Green, G. Hater, 2012, Methane emissions from 20 landfills across the United States using vertical radial plume mapping, *Journal of the Air & Waste Management Association*, 62(2):183–197, 2012

[Footnote 43] Peischl, P. *et al.* (2013) *Quantifying sources of methane using light alkanes in the Los Angeles basin, California*. <http://onlinelibrary.wiley.com/doi/10.1002/jgrd.50413/abstract>

[Footnote 44] EPA (2012) *Quantifying Methane Abatement Efficiency at Three Municipal Solid Waste Landfills*. <http://www.epa.gov/nrmrl/pubs/600r12003.html>

[Footnote 45] Thoma, E.D., Shores, R.C, Thompson, E.L., Harris, D.B., Thorneloe, S.A., Varma, R.V., Hashmonay, R.A., Modrak, M.T., Natschke, D.F., and Gamble, H. A., Open path tunable diode laser absorption spectroscopy for acquisition of fugitive emission flux data, *J. Air & Waste Manage Assoc.*, 55, 658-668, 2005

[Footnote 46] EPA (2004) Measurement of Fugitive Emissions at Region I Landfill (EPA-600/R-04-001, January 2004). Available at: <http://www.epa.gov/appcdwww/apb/EPA-600-R-04-001.pdf>

[Footnote 47] EPA, Other Test Method 10, Optical Remote Sensing for Emission Characterization from Non-point Sources, June 2006, available at: <http://www.epa.gov/ttn/emc/prelim/otm10.pdf>

[Footnote 48] EPA, Evaluation of Fugitive Emissions Using Ground-Based Optical Remote Sensing Technology (EPA/600/R-07/032), Feb 2007; available at: <http://www.epa.gov/nrmrl/pubs/600r07032/600r07032.pdf>

[Footnote 49] Shores, R., D. Harris, E. Thompson, C. Vogel, D. Natschke, and R. Hashmonay. 2005. Plane-integrated open-path Fourier transform infrared spectrometry methodology for anaerobic swine lagoon emission measurements. *Appl. Eng. Agric.* 21:487–492

### **Comment Response:**

The EPA thanks the commenter for sharing their perspective. Other Test Methods (OTMs) have not undergone the Federal rulemaking procedure. The OTMs are posted with their technical

support documentation to provide the information to the measurement community and support their continued development and evaluation. See Preamble Section VI.B for additional information.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 16

**Comment Excerpt:**

If other methodologies, such as those listed on page 41823 of the Proposed Rule, are approved by the EPA, then the AMM method should also be approved. As stated above, our 2013 paper provides the first well-documented, calibration of a fugitive emission rate measurement from a large area source, using a controlled release for a standard gas. None of the other methodologies have similar evidence (using the release of a standard into an emission plume to calibrate an emission rate measurement to assess measurement accuracy), or rationale for potential accuracy for measurement of fugitive emissions from large variable area sources such as landfills, as the AMM method.

One of the features of the AMM method is that a particular measurement can be calibrated to provide confidence that the measured emission rate is accurate. The calibration methods involve the release of a standard and encompass the entire measurement process for large, variable, area sources, and not just calibration of instruments.

Other methods of measuring fugitive emission rates stated in the ANPR, such as radial plume mapping (RPM), tracer correlation, micro-meteorological eddy-covariance, and static flux chamber do not share this ability to calibrate the entire measurement process of a large, variable, area source.

**Comment Response:**

The EPA thanks the commenter for their perspective. Emerging technologies, like AMM method are having major advances but require more information and will not be required at this time. See section VI.B of the final NSPS Preamble and section VI.B of the final Emission Guidelines Preamble.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Our main comment is that *direct measurement of fugitive methane emission rates using the Airborne Matter Mapping (AMM) method should be allowed as an alternative to the concentration .. based methane surface emission monitoring method for determining compliance of landfills with the proposed 40 CFR part 60 subpart XXX*. The AMM method is a method of measuring fugitive emission rates that is particularly applicable to large area sources. The

method is in commercial use in Canada and has been described in technical journals and conferences over the past two years. Unlike the method of proposed 40 CFR part 60 subpart XXX 60.765 that only results in a measurement of methane concentrations in the atmosphere near ground surface (e.g. in units of ppm or mg/m<sup>3</sup>) the AMM method measures fugitive methane emission rates (e.g. in units of cubic feet per minute, cubic metres per hour or grams per second). The rate of fugitive methane emissions is directly relevant to EPA's concern regarding climate impacts of methane emissions, whereas methane concentrations in the atmosphere directly above landfills provide only a general indication of the order of magnitude of methane emission rates.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 16, under comment code 9b.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

The Airborne Matter Mapping (AMM) method is a method of mapping the concentrations of airborne matter in the atmosphere through an emission plume, and of measuring the fugitive emission rate to the atmosphere from a point or area source. The AMM method applies the mass balance approach by sampling the emission plume with an appropriate vehicle using multiple sampling runs at different elevations according to the method, and processing the data to develop contour maps of concentrations of the airborne matter of interest in a cross-section through the emission plume. A wind velocity profile is applied to the concentration data to obtain the emission flow rate through the cross-section. Subtraction of the background concentrations provides the emission rate from the source. The method is in commercial use in Canada, and is offered commercially in the USA. However, its regulatory use in the USA is discouraged by the current and proposed prescriptive rules (60.765 of proposed subpart XXX of 40 CFR part 60) that specify the +30 year old South Coast Air Quality Management District concentration measurement approach, to the exclusion of emission rate measurement methods that are more aligned with the objectives of the Climate Action Plan. The following are journal publications and conference presentations on the AMM method over the past two years:

- "Mapping concentrations of airborne matter to quantify the fugitive emissions discharge rate from a landfill", *Greenhouse Gas Measurement & Management*, Volume 2, No. 1, 2012.
- "Calibration of a fugitive emission rate measurement of an area source", *Journal of the Air & Waste Management Association*, Volume 63, Issue 11, 2013.
- "Calibration of a fugitive emission rate measurement of an area source", *Air Quality Measurement Methods and Technology Conference, A&WMA*, Sacramento, November 19-21, 2013.
- "The AMM Method of measuring fugitive emission rates from area sources", *2014 CPANS Conference*, CPANS A&WMA, Edmonton, May 21-22, 2014.

As described in our 2013 paper (second bullet above), AMM method measurements can be calibrated to the release of a standard to provide confidence in the measurement value. The available calibration methodologies test the entire AMM method measurement process.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 16, under comment code 13z.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 17

**Comment Excerpt:**

Thoma et.al (2010) undertook extensive testing of the Radial Plume Mapping method to quantify a "capture efficiency factor", which represents the inferred proportion of an emission plume that is captured by the measurement set-up of EPA's OTM-10. Capture efficiency factors of less than 50% indicate that most of the plume is not measured by the OTM-10 equipment set-up and the rate of emissions associated with this unmeasured portion of the plume must be extrapolated from the available data. According to Thoma et.al (2010), OTM-10 measurement plane distances greater than approximately 200 m can have capture efficiency factors less than 50%, with distances exceeding 295 m potentially having zero capture efficiency. Thus, a proper calibration of an emissions rate measurement using OTM-10 is not practical for large area sources.

We also note that Thoma et.al (2010) do not recommend the continuous use of a tracer (or calibration gas) in conjunction with OTM-10 due to the associated significant expense and potential environmental impact.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 16, under comment code 9b.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 18

**Comment Excerpt:**

The tracer correlation method obtains concentration ratio data of the emission source gas and the tracer gas in a one dimensional sampling line, or of a stationary point and allowing changes in wind direction to provide for sampling of the plume at that point. This tracer correlation method has had extensive use and there are papers suggesting the precision levels of measurements; e.g. Lamb et.al (1995) and Galle et.al (2001). Lamb et.al (1995) also discusses the assumptions of the method. The release of a standard is part of the tracer method.



**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 16, under comment code 9b.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 19

**Comment Excerpt:**

The release of a second standard for a "calibration" is essentially a duplicated tracer release measurement and does not address key method uncertainties, such as:

- The degree of mixing - an inherent part of the method is the assumption of complete mixing. However, the actual degree of mixing, and its effect on the accuracy of a particular measurement, is difficult to ascertain using existing, published analysis techniques.
- The effect of attenuation (including diffusion) - the method is normally applied assuming that there is no attenuation of the tracer or emission source gas, as the gas flows and diffuses through the atmosphere from the source to the measurement point. This would appear to be a valid assumption if the sampling is conducted relatively close to the emission point. However to improve mixing between the tracer gas and the emission source gas, sampling is often done at distances as much as 1 to 5 km from the source. These relatively large distances provide an opportunity for diffusion, especially of methane, into the background thus potentially changing the concentration ratios and calculated emission rates.

It should be noted that Babilotte (2011) concluded that "tracer gas and DiAL methods appear to be the most promising approaches for landfill fugitive methane measurement", while also indicating the total site methane emissions estimates in Table 5 below.

Site	Tracer	DiAL (Differential Absorption LiDAR)
Metro	916 kg/hr	659 kg/hr
Emerald Park	789 kg/hr	314 kg/hr

Babilotte et.al (2010), in an earlier separate study, had indicated that the DiAL method (referred to as LiDAR in the paper) showed a very promising approach and technical performance. However in Table 5, note the large disparities between the results of these two methods, which were both indicated to have promise. It is possible that the large disparities may have been due, in part, to the effect of one or both of the above assumptions on the tracer method results.

In summary, a tracer correlation method measurement cannot be truly calibrated using the release of a standard gas because the release of a standard gas would not test key uncertainties associated with the measurement methodology. True calibration of a tracer correlation measurement of a large variable area source can only be achieved by comparison of tracer results with another method of fugitive emission rate measurement that is either calibrated or has been validated.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 16, under comment code 9b.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 20

**Comment Excerpt:**

It is not practical to calibrate an individual Eddy Covariance method emission rate measurement of a large variable area source using the release of a standard gas. Such a calibration would require the set-up of a system to simulate an area release of the size that the eddy covariance set-up would measure, which is a very costly and time consuming undertaking.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 16, under comment code 9b.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 21

**Comment Excerpt:**

It is not practical to calibrate static flux chamber results with the release of a standard gas. The main uncertainty associated with the static flux chamber method is the representativeness of the number of samples used to quantify landfill emissions. A practical calibration method that can test the effect of this uncertainty does not exist.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 16, under comment code 9b.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 22

**Comment Excerpt:**

The AMM method is proprietary and patented by Golder. We do not see why this should be a reason to exclude its use. We note that while the Radial Plume Mapping method is proprietary and patented by others, the EPA has developed test method OTM-10 as guidance for its application, and the EPA has been involved with the application of the Radial Plume Mapping method. There are many other examples of proprietary intellectual property employed by the US government.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 16, under comment code 9b.

### 9.3 Use of Portable Analyzers for Monitoring Oxygen

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**Commenter Name:** William C. Allison V, Director, Air pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2014-0451-0163

**Comment Excerpt Number:** 6

**Will be summarized and responded to in the preamble:**

**Sort Order:** 100

**Response Status:** Final

**Comment Excerpt:**

The Division supports the use of portable gas composition analyzers for landfill monitoring. The Division has found, and like EPA has allowed, that portable gas composition analyzers (e.g. Landtec GEM 2000) are a standard for conducting MSW landfill well monitoring. A primary advantage of portable gas composition analyzers, for both landfills and regulators, is that these devices take and record the monitored readings, which can then be downloaded into a spreadsheet. The Division has found that the use of portable gas composition analyzers has resulted in landfills rarely missing a well monitoring, not having data after monitoring, having incorrect data after monitoring, or making another mistake with the monitoring data. Further, the Division has found that these devices also provide more information on gas composition than what the Emission Guidelines currently require, which in turn provides operators a better understanding of the landfill's condition. EPA and State Air Pollution Control Agencies would also benefit from this additional data if landfills were required to submit the data in the semi-annual reports.

**Comment Response:**

The EPA is finalizing the use of portable gas composition analyzers in the final NSPS and Emission Guidelines. See Section VI.A.4 of the 2016 NSPS Final Preamble. See Section VI.A.4 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 9

**Will be summarized and responded to in the preamble:**

**Sort Order:** 102

**Response Status:** Final

**Comment Excerpt:**

Test Method 3A and 3C for Oxygen, Paragraph (c)(2) [60.763]. These NSPS test methods are designed to be used in/for ‘quasi-CEMS’ and/or ‘laboratory benchtop’ situations. Most landfill operators are not using this type of equipment; they use handheld-size portable analyzers such as the Landtec GEM and Elkins Earthworks Envision to test wellhead landfill gas. Although the current rule allows an ‘approved alternative,’ Ohio EPA recommends US EPA address this common practice in rule.

**Comment Response:**

See the response to EPA-HQ-OAR-2014-0451-0163, excerpt 6 under [comment code 9e].

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 7

**Will be summarized and responded to in the preamble:**

**Sort Order:** 103

**Response Status:** Final

**Comment Excerpt:**

The Division suggests that EPA specify that portable gas composition analyzers (e.g. Landtec GEM 2000) may be used as an alternative method for well monitoring. The Division has found, and like EPA has allowed, this tool is a standard for conducting MSW landfill well monitoring.

**Comment Response:**

See the response to EPA-HQ-OAR-2014-0451-0163, excerpt 6 under [comment code 9e].

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 70

**Will be summarized and responded to in the preamble:**

**Sort Order:** 104

**Response Status:** Final

**Comment Excerpt:**

Republic agrees that portable gas composition analyzers should be an acceptable alternative to Method 3A or 3C for monitoring oxygen levels. In particular, Republic is aware that Landtec offers portable analyzers that can be calibrated in accordance with Method 3A, and that therefore will be appropriate for use in complying with proposed Subpart Cf. For more information, please see comments submitted by Landtec or request details from Republic at the contact information provided below.

**Comment Response:**

See the response to EPA-HQ-OAR-2014-0451-0163, excerpt 6 under [comment code 9e].

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 108

**Will be summarized and responded to in the preamble:**

**Sort Order:** 105

**Response Status:** Final

**Comment Excerpt:**

We agree that using a portable gas composition analyzer is an acceptable alternative to Method 3A or 3C as discussed in Landtec's comments on portable analyzers for use with proposed 40 CFR Part 60 Subpart Cf and calibration in accordance with Method 3A submitted to the Docket ID Number EPA-HQ-OAR-2014-0451. The comments should apply to both proposed Cf and XXX.

**Comment Response:**

See the response to EPA-HQ-OAR-2014-0451-0163, excerpt 6 under [comment code 9e] and Section VI.A.4 of the preambles for the NSPS and Emission Guidelines.

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**Commenter Name:** Comment submitted by Matt Lamb

**Commenter Affiliation:** Smith Gardner, Inc

**Document Control Number:** EPA-HQ-OAR-2003-0215-0083

**Comment Excerpt Number:** 6

**Will be summarized and responded to in the preamble:**

**Sort Order:** 106

**Response Status:** Final

**Comment Excerpt:**

Both the current subpart WWW and proposed subpart XXX require monitoring of oxygen and nitrogen using EPA method 3C, unless other alternative monitoring is performed. It is requested that the proposed rule be amended to recognize industry standard monitoring using portable infrared monitors made by Landtec, Elkins Earthworks, and others. It is also requested that language be added to recognize that balance gas is commonly used as a surrogate for nitrogen.

**Comment Response:**

See the response to EPA-HQ-OAR-2014-0451-0163, excerpt 6 under [comment code 9e] and additional discussion in section VI.A.4 of the preambles for the NSPS and Emission Guidelines.

Either nitrogen or oxygen levels at the wellheads are to be monitored and recorded as measured on a monthly basis. The EPA is not adjusting the rule to indicate balance gas is a surrogate for nitrogen.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 58

**Will be summarized and responded to in the preamble:**

**Sort Order:** 107

**Response Status:** Final

**Comment Excerpt:**

EPA has requested comments on the use of a portable gas composition analyzer according to Method 3A. Representatives from industry have reached out to one of the manufacturers of portable analyzers to respond. They have submitted comments directly to EPA addressing each of the criteria for Method 3A and verifying that their portable analyzers comply with Method 3A (Landtec letter dated October 2, 2015 pending Docket ID).

**Comment Response:**

See the response to EPA-HQ-OAR-2014-0451-0163, excerpt 6 under [comment code 9e].

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**Commenter Name:** Landtec

**Commenter Affiliation:** Landtec

**Document Control Number:** EPA-HQ-OAR-2014-0451-0159

**Comment Excerpt Number:** 1

**Will be summarized and responded to in the preamble:**

**Sort Order:** 108

**Response Status:** Final

**Comment Excerpt:**

LANDTEC GEM Series analyzers meet the requirements of 40 CFR Part 60 Method 3A. The following table describes the CFR Method 3A requirements, including referenced Method 7E requirements, and LANDTEC Response to each requirement associated to the LANDTEC GEM Series of portable analyzers.

CFR Item	LANDTEC Response									
<p>3A 1.1 Analytes. What does this method determine? This method measures the concentration of oxygen and carbon dioxide</p> <table border="1"> <thead> <tr> <th>Analyte</th> <th>CAS No.</th> <th>Sensitivity</th> </tr> </thead> <tbody> <tr> <td>Oxygen (O<sub>2</sub>)</td> <td>7782-44-7</td> <td>Typically &lt;2% of Calibration Span</td> </tr> <tr> <td>Carbon Dioxide (CO<sub>2</sub>)</td> <td>124-38-9</td> <td>Typically &lt;2% of Calibration Span</td> </tr> </tbody> </table>	Analyte	CAS No.	Sensitivity	Oxygen (O <sub>2</sub> )	7782-44-7	Typically <2% of Calibration Span	Carbon Dioxide (CO <sub>2</sub> )	124-38-9	Typically <2% of Calibration Span	<p>GEM Series instrumentation sensitivity on both Oxygen and Carbon Dioxide is &lt;2% of calibration span when calibrated in accordance with Method 3A</p>
Analyte	CAS No.	Sensitivity								
Oxygen (O <sub>2</sub> )	7782-44-7	Typically <2% of Calibration Span								
Carbon Dioxide (CO <sub>2</sub> )	124-38-9	Typically <2% of Calibration Span								
<p>3A 6.0 Equipment and Supplies</p> <p>3A 6.1 <i>What do I need for the measurement system?</i> The components of the measurement system are described (as applicable) in sections 6.1 and 6.2 of Method 7E, except that the analyzer described in section 6.2 of this method must be used instead of the analyzer described in Method 7E. You must follow the noted specifications in section 6.1 of Method 7E except that the requirements to use stainless steel, Teflon, or non-reactive glass filters do not apply. Also, a heated sample line is not required to transport dry gases or for systems that measure the O<sub>2</sub> or CO<sub>2</sub> concentration on a dry basis, provided that the system is not also being used to concurrently measure SO<sub>2</sub> and/or NO<sub>x</sub>.</p>	<p>LANDTEC GEM Series Analyzers meet the specifications in section 6.1 of Method 7E.</p> <p>7E 6.1(1) - Users can perform Calibration Error Test using the LANDTEC GEM Series Analyzer per 7E 8.2.3</p> <p>7E 6.1(2) – Meets requirements 3A 6.1</p> <p>7E 6.1(3) – Low flow sensitivity can be configured in the instrument to maintain the sample flow rate requirement</p> <p>7E 6.1(4) - Meets requirements 3A 6.1</p>									
<p>3A 6.2 <i>What analyzer must I use?</i> You must use an analyzer that continuously measures O<sub>2</sub> or CO<sub>2</sub> in the gas stream and meets the specifications in section 13.0.</p> <p>13.0 <i>Method Performance [Reserved]</i></p>	<p>LANDTEC GEM Series instruments continuously measure O<sub>2</sub> and CO<sub>2</sub> in the gas stream during the sampling period</p>									
<p>3A 8.2 <i>Initial Measurement System Performance Tests.</i> You must follow the procedures in section 8.2 of Method 7E. If a dilution-type measurement system is used, the special considerations in section 8.3 of Method 7E apply.</p>										
<p>7E 8.2 <i>Initial Measurement System Performance Tests.</i> What initial performance criteria must my system meet before I begin collecting samples? Before measuring emissions, perform the following procedures:</p> <p>(a) Calibration gas verification,</p> <p>(b) Measurement system preparation,</p>	<p>7E 8.2(a) - Users to verify calibration gas certificate from supplier(s)</p> <p>7E 8.2(b) - LANDTEC GEM Series analyzer system is</p>									

<p>(c) Calibration error test,  (d) NO<sub>2</sub> to NO conversion efficiency test, if applicable,  (e) System bias check,  (f) System response time test, and  (g) Interference check</p>	<p>preassembled. Users can assemble sampling tubes apparatus between GEM and sampling location/calibration bottle.</p> <p>7E 8.2(c) - Users can perform Calibration Error Test as described in 7E 8.2.3</p> <p>7E 8.2(d) - N/A for Method 3 reference</p> <p>7E 8.2(e) - Users can perform System Bias Check as described in 7E 8.2.5</p> <p>7E 8.2(f) - Users can perform System Response Time Test described in 7E 8.2.6</p> <p>7E 8.2(g) – Users can perform Interference Test as described in 7E 8.2.7</p>
<p><i>3A 8.3 Interference Check.</i> The O<sub>2</sub> or CO<sub>2</sub> analyzer must be documented to show that interference effects do not exceed 2.5 percent of the calibration span. The interference test in section 8.2.7 of Method 7E is a procedure that may be used to show this. The effects of all potential interferences at the concentrations encountered during testing must be addressed and documented. This testing and documentation may be done by the instrument manufacturer</p>	<p>7E 8.2(g) – Users can perform Interference Test as described in 7E 8.2.7</p>
<p><i>3A 8.4 Sample Collection.</i> You must follow the procedures in section 8.4 of Method 7E</p>	<p>LANDTEC GEM Series Analyzer allow for setting of purge times between samples. Users can perform purging the system as described in 7E 8.4</p>
<p><i>3A 8.5 Post-Run System Bias Check and Drift Assessment.</i> You must follow the procedures in section 8.5 of Method 7E</p>	<p>Users can perform Post-Run System Bias Check and Drift Assessment with the LANDTEC GEM Series Analyzers as described in 7E 8.5.</p>
<p><i>3A 10.0 Calibration and Standardization</i>  Follow the procedures for calibration and standardization in section 10.0 of Method 7E.</p>	<p>Users can perform the calibration requirements as described in section 10.0 with the LANDTEC GEM Series analyzer as applicable for O<sub>2</sub> and CO<sub>2</sub> measurements</p>



### 3A 13.0 Method Performance

*The specifications for the applicable performance checks are the same as in section 13.0 of Method 7E except for the alternative specifications for system bias, drift, and calibration error. In these alternative specifications, replace the term “0.5 ppmv” with the term “0.5 percent O2” or “0.5 percent CO2” (as applicable).*

Users can perform the measurements for the Method Performance requirements as described in 7E 13.0 with the LANDTEC GEM Series analyzer as applicable for O2 and CO2 measurements.

#### **Comment Response:**

See the response to EPA-HQ-OAR-2014-0451-0163, excerpt 6 under [comment code 9e].

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch

**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0156

**Comment Excerpt Number:** 14

**Will be summarized and responded to in the preamble:**

**Sort Order:** 200

**Response Status:** Final

#### **Comment Excerpt:**

Landfills must measure either oxygen or nitrogen using Methods 3A or 3C, unless an alternate method is approved. Method 3A measures only oxygen and carbon dioxide using a continuous instrumental analyzer. Method 3C measures carbon dioxide, methane, nitrogen, and oxygen using gas chromatograph equipment. Method 3A is a fairly straight forward method and does not specify a particular technology. Any analyzer that can measure continuously and that can pass the QA/QC requirements in Method 3A can be used. Method 3C requires the use of gas chromatograph equipment with a thermal conductivity detector and integrator. This is most likely not a portable hand held meter. Since the regulations give the option of measuring either oxygen or nitrogen, the obvious choice is to measure oxygen using Method 3A.

The proposed rules in 40 CFR 60.37f(a)(2) are similar to existing rules in 40 CFR 60.753(c)(1) and (2). Both subparts allow for a modified Method 3A that is not as rigorous as the full Method 3A. Some commenters want EPA to allow portable analyzers that are calibrated according to manufacturer's specifications. Georgia believes that any analyzer or device must be calibrated according to an EPA approved method and not just manufacturer's specifications. Most portable analyzers can be calibrated according to Method 3A if everything in the unit is working correctly. Another method that is used with portable analyzers is ASTM D6522. This method is designed to measure NOX, CO and oxygen from engines and turbines. However, since landfills only need to measure oxygen, an analyzer can easily be calibrated for oxygen alone following ASTM D6522. Georgia EPD has extensive data available on the use of portable analyzers to measure NOx, CO, and Oxygen during tests on engines. The analyzers are routinely calibrated according to ASTM Method D6522. This test method provides an alternate test method to

Method 3A. Some of the QA/QC procedures are different from Method 3A, but they are just as rigorous. Georgia EPD recommends ASTM Method D6522 as an alternative to Method 3A.

**Comment Response:**

The EPA accepts the use of portable gas composition analyzers with Method 3A. If the quality assurance is conducted as required by ASTM D622-11, then ASTM D6522-11 may be used as an alternative to Method 3A for wellhead monitoring (prior to combustion). See Section VI.A.4 of the 2016 NSPS Final Preamble. See Section VI.A.4 of the 2016 Emission Guidelines Final Preamble.

## 9.4 Other-Alternative Monitoring

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 54

**Comment Excerpt:**

Our primary concern about LFGTE is that the technology does not exist for adequate detection and mitigation of fugitive methane emissions. To produce gas with a concentration of methane that is great enough for energy production, landfills must employ a number of techniques to *increase* the production of methane. The problem with intentionally increasing methane emissions is that some, if not an overwhelming percentage, of this methane is leaked and enters the atmosphere, potentially increasing total methane emissions from the landfill beyond what would occur in the absence of LFGTE.

Unfortunately, there are no high-quality data on actual leakage rates from landfills using these techniques. Part of the challenge is setting up a monitoring system that adequately samples over the extensive surface of the landfill over a prolonged time. As explained above, no such monitoring system exists. While we appreciate efforts to develop optical scanning mechanisms and other emission detection technologies, none so far is ready to produce definitive answers.

Because accurate monitoring data are non-existent, leakage rates are estimated at a wide range of values, from EPA's assumed leakage rates that are generally optimistic, i.e. assuming little leakage, to much higher rates (up to 80%) based on data from some landfills and the highly credible IPCC AR4. Of course, without adequate monitoring, leaks cannot be mitigated at landfill sites.

**Comment Response:**

The EPA thanks the commenter for their perspective. However, the EPA is aware of many successful voluntary efforts to implement energy recovery, especially as a component of gas collection systems. The EPA is not advocating for landfill owners and operators to artificially increase methane production, but we do encourage landfill owners and operators to beneficially convert landfill gas to energy where such opportunities exist. Emissions reductions through voluntary landfill gas energy recovery programs is an important part of the White House's

Methane Strategy. For more information on this topic, see Section III.A, Landfill Gas Emissions and Climate Change, in the preamble to the final Emission Guidelines.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 17

**Comment Excerpt:**

We strongly urge EPA to require improved monitoring and testing so that the amount of escaping methane can be quantified with greater certainty and an emission standard, rather than just an operating standard, can be devised.

**Comment Response:**

The EPA thanks the commenter for their perspective. Currently the EPA is setting an emission standard of 34 Mg/year NMOC.

The EPA is investigating emerging technologies and advances in monitoring. However, those technologies still need additional work before the EPA can utilize the emerging technology and measurement techniques in these rules. See sections VI.B of the preambles for the NSPS and Emission Guidelines for additional discussion on these emerging technologies.

## **10.0 ALTERNATIVE EMISSION THRESHOLD DETERMINATIONS**

### **10.1 Alternative Modeling-Equation Format**

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1

**Comment Excerpt Number:** 8

**Comment Excerpt:**

Foth and the BOW Group support allowing alternative Tier 1 default values and techniques based on the amount of organic content in the waste. As stated in the preamble, the average methane generation capacity ( $L_0$ ) values at U.S. landfills have decreased to 79.8 m<sup>3</sup> per Mg in 2012, well below the default  $L_0$  value of 170 m<sup>3</sup> per Mg. The  $L_0$  values, as well as methane generation rate ( $k$ ) values, vary based on site-specific characteristics and different types of waste streams.

**Comment Response:**

Thank you for your comment. EPA agrees that  $L_0$ , and more specifically,  $k$ -values may differ based on site-specific characteristics. We also agree, as stated in the preamble to the proposed rule, the  $L_0$  may indeed be decreasing over time as waste characteristics change. The rule

currently allows for some variation of k-value based on the climate in which the landfill is located. Landfills located in drier locations may use a lower k-value. However at this time, the EPA is not moving forward with revising or allowing alternative Lo values for use in the Tier 1 modeling equation for calculating NMOC emission rates. As in the past, if the Tier 1 result yields the need to install controls, the landfill may take several steps to determine a site-specific NMOC rate or a site-specific methane generation rate and again check the threshold. With the new subparts Cf and XXX, the EPA is further allowing a landfill a final step to conduct site-specific surface emission monitoring (Tier 4) in order to determine if methane generation at the landfill is at a level to require installing controls. See section VI.B of the NSPS Final Preamble and section VI.B of the Emission Guidelines Final Preamble for a detailed discussion of Tier 4.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division  
**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1  
**Comment Excerpt Number:** 19

**Comment Excerpt:**

DEQ believes an approach to setting Lo and k values based on amount of degradable organic carbon in the waste, interpreted as the type of waste streams received, holds merit, but cautions that the approach used in Subpart HH of the Green House Gas Reporting Program rules is complicated and data intensive and may prove too cumbersome to be used if inserted directly in to Subpart XXX for use as emission threshold determination.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0093.1, excerpt number 8, under comment code 10a for a discussion of revised Tier 1 default values. While Subpart HH of the Greenhouse Gas Reporting Program provides more detailed DOC and k-values for specific waste types for calculating methane generation at a landfill, the vast majority of reporters do not break out their waste types to this level of details because they simply do not have the information. Those that do differentiate between waste types do so with the more simplified goal of subtracting out the inert waste from the total disposed and applying the bulk waste DOC and k-values to the remaining waste quantities as is currently allowed under the Greenhouse Gas Reporting Rule. Therefore, the EPA does not have a sufficient level of detailed verified data in order to develop alternative Lo values for use in the Tier 1 calculation. In addition, the lack of reporters using the more detailed breakdown of waste types confirms that individual landfills also do not have that level of detail to develop site specific Lo values.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division  
**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1  
**Comment Excerpt Number:** 18

**Comment Excerpt:**

DEQ could support alternative methods of determining equation constants used in the Tier 1 calculation for emission estimates. The Tier 1 formula currently in place for calculating when a landfill exceeds the threshold for NMOC emission and thus triggering installation of a GCCS uses very conservative values for the constants of potential methane generation capacity (Lo) and methane generation rate (k). Nearly all landfills above the 2.5 million Mg initial design capacity will be required to install controls after performing Tier 1 calculations. The alternative to installing a GCCS is to recalculate the emissions estimate using the Tier 2 process. The Tier 2 process requires conducting expensive on-site testing to establish site specific variables of Lo and k to replace the Tier 1 's default values. It is DEQs experience that Tier 2 results typically return much lower emission rate estimates than the Tier 1 default values. DEQ sees great value in cost savings by the regulated entity and reduction of administrative burden on the delegated authority, by establishing an initial Tier 1 equation that provides a better representation of actual emissions than that currently provided by the default values in the Tier 1 formula.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0093.1, excerpt number 8, under comment code 10a for a discussion of revised Tier 1 default values.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The tiered evaluation technique uses material-specific k& L o values for a first-order decay rate model. Alternative model and modeling parameters would be appropriate, subject to guidance on the parameters and model, to reduce resources spent negotiating with operators on what techniques may be acceptable.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0093.1, excerpt number 8, under comment code 10a for a discussion of revised Tier 1 default values.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 62

**Comment Excerpt:**

Adopting the modeling parameters and model structure from subpart HH of 40 CFR part 98 that provides for waste-specific Lo and k values would theoretically provide better estimates of LFG generation by capturing changes in the disposed waste stream over time. One practical limitation encountered with the implementation of the Greenhouse Gas Reporting Program (GHGRP) multi-component model is that landfill owner/operators do not track waste accepted at the landfill based on the categories provide in the original rule. This limitation can be addressed by developing a set of model parameters for construction and demolition waste, an inert fraction and an MSW fraction. In addition, the model could be adjusted if a landfill has local waste diversion programs or bans in place to address site-specific changes. EPA should adjust the national Lo values based on their annual waste characterization.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0093.1, excerpt number 8, under comment code 10a for a discussion of revised Tier 1 default values and response to EPA-HQ-OAR-2003-0215-0085.1, excerpt number 19, under comment code 10a for additional discussion about the GHGRP.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 41

**Comment Excerpt:**

Similar adjustments are needed to the Tier 1 option as those recommended for the new Tier 4 option.

Although not addressed specifically in the proposal preamble, EPA's proposed Subpart Cf emission guidelines would impose similar provisions to the Tier 1 NMOC applicability modeling requirements currently provided in Subpart WWW. As a result, Republic reiterates here the comments it provided in response to EPA's ANPRM, including Republic's recommendation that EPA should rely on an approach that is similar to EPA's Greenhouse Gas Reporting Rule (40 CFR part 98 subpart HH). Republic's more detailed comments on this issue can be found at EPA-HQ-OAR-2014-0451-0061.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0093.1, excerpt number 8, under comment code 10a and response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 19, under comment code 10a for a discussion of revised Tier 1 default values.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 62

**Comment Excerpt:**

The Tier 1 NMOC applicability modeling values should be re-evaluated to determine when a landfill should install controls. EPA is requesting comments on using alternative modeling parameters similar to the components in the GHGRP (40 CFR part 98 subpart HH) for determining NMOC applicability for Subpart XXX. MSW landfills were required to use the equations under Subpart HH to determine applicability for the GHGRP so it would be consistent to use a similar approach for Subpart XXX. The GHGRP Subpart HH parameters for k and NMOC are more appropriate than the parameters used in Subpart XXX, however the modeling will still overestimate the NMOC emissions.

It is important to recognize that the Subpart HH equations allow default values based on a bulk MSW and/or by a waste stream material basis. Most MSW landfills do not use the waste material-specific values for k and Lo values because specific single waste stream characterization does not occur at landfills when the waste is disposed. The ability to use all the default values in Subpart HH Table HH-1 should be allowed as an alternative emission threshold determination under Subpart XXX.

The GHGRP default values for applicability should not be limited to just re-evaluating the k and Lo values for Subpart XXX applicability values. The GHGRP allows for oxidation and a more representative NMOC mass emission rate. A NMOC value of 595 ppm under the GHGRP is more representative than 4,000 ppm NMOC Tier 1 NSPS value which is excessively high and is not supported by the AP-42 test data compilation. EPA even opted to use the 595 ppm NMOC concentration as a part of the evaluation for Subpart XXX to determine how many landfills would be impacted by lowering the NMOC threshold to 40 Mg/yr applicability instead of 4,000 ppm NMOC. It seems only appropriate to use this same NMOC concentration to determine applicability as well. In addition, the NSPS should allow for oxidization to be accounted for in the landfill gas generation as the GHGRP recognizes this for applicability. The model already overestimates the amount of landfill gas generated which causes landfills to install systems too early or to perform Tier 2 testing that would be unnecessary if more representative default values were used for emission threshold applicability determination in the first place.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0093.1, excerpt number 8, under comment code 10a for a discussion of revised Tier 1 default values. See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 62, under comment code 10a for practical limitations of material specific parameters in the GHGRP.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 109

**Comment Excerpt:**

Waste Management believes that the use of the Subpart HH parameters for k and NMOC value of 595 ppmv would be more appropriate than the parameters currently used in Subpart WWW; however modeling will still overestimate the NMOC emissions.

Adopting the modeling parameters and model structure from subpart HH, which provides for waste specific Lo and k values would theoretically provide better estimates of landfill gas generation by capturing changes in the disposed waste stream over time. One practical limitation encountered with the implementation of the GHGRP multi-component model is that landfill owner/operators do not track and characterize waste accepted at the landfill based on the many categories provided in the original rule, and so cannot take advantage of the more refined default values. EPA has subsequently addressed this limitation by developing a set of model parameters for construction and demolition waste, an inert fraction and an MSW fraction. This more closely conforms to the typical waste characterization conducted at landfills, but offers less refinement of the default Lo and k values. For this reason, WM and the landfill sector continue to advocate for use of measured emissions to determine the proper timing of GCCS installation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0093.1, excerpt number 8, under comment code 10a for a discussion of revised Tier 1 default values. See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 62, under comment code 10a for practical limitations of material specific parameters in the GHGRP.

## 10.2 Alternative Modeling-Applicability

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 37

**Comment Excerpt:**

For both the NSPS and emission guidelines, EPA seeks comment on allowing adjustments to Tier 1 default values and modeling techniques based on how much organic waste is present in the landfilled materials. We believe that this is a viable way for EPA to encourage waste diversion, so long as EPA limits the availability of these adjustments to sources that affirmatively commit to limit the organic waste they landfill.

EPA provides its most detailed discussion of waste diversion in the ANPR, not in the NSPS proposal, but there is no obvious reason why aspects of its ANPR discussion would not apply also to the NSPS. In particular, only in the ANPR does EPA request comment on whether it should limit alternative modeling to landfills that actually employ organic diversion or source separation. 79 Fed. Reg. at 41,791/2. The same question applies logically also to the NSPS. *See* 79 Fed. Reg. at 41,824/1-2 (same substantive discussion of alternative modeling as in ANPRM).



EPA should indeed limit alternative modeling to landfills that can ensure that they will avoid or substantially mitigate the production of methane. But we believe a landfill should be able to meet this requirement either by itself diverting or separating the organic waste or by certifying that its waste stream comes with organics pre-diverted. Requiring landfills to certify that diversion will occur gives an incentive for diversion, whereas making alternative modeling available across-the-board locks in no diversion. Moreover, requiring the landfill to ensure that waste diversion occurs clarifies accountability. And such a requirement would benefit the landfill: when it must commit to a certain level of organic waste diversion, it will have more reliable data to use in any alternative modeling and will not be wholly at the whim of its waste stream. Thus, this limitation would provide a valuable incentive for organic diversion, would make the organic diversion option more easily enforced (should a landfill take advantage of it), and would be easier for EPA, states, and landfills to accurately implement than indiscriminate alternative modeling.

Moreover, limiting alternative modeling to landfills that ensure organics diversion occurs is well within EPA's authority. For gas collection, EPA has promulgated a design and operation standard under 42 U.S.C. § 7411(h), which must "reflect[] the best technological system of continuous emission reduction." *Id.* § 7411(h)(1); *see* 79 Fed. Reg. 41,802 n.6. An "operation" standard plainly contemplates that the source undertake certain activity relevant to its operation. Similarly, the Act defines "technological system of continuous emission reduction" to include "a technological process for production or operation by any source which is inherently low-polluting or nonpolluting." 42 U.S.C. § 7411(a)(7)(A). A "process" again implies some affirmative activity. Thus, the Act contemplates that the standard at issue here reflect a source's actually taking action to reduce its emissions, and EPA has authority in promulgating both the NSPS and the emission guidelines to limit alternative modeling's availability.

**Comment Response:**

Based on available information, including information received in response to our request for comment, EPA has determined not to allow adjustments to Tier 1 default values and modeling techniques based on the amount of organic waste present in the landfilled materials. As with current subparts WWW and Cc, owners/operators will be able to subtract the mass of nondegradable solid waste from the total mass of solid waste in a particular section of the landfill when calculating the value of R (the average annual acceptance rate, megagrams per year) if documentation of the nature and amount of such waste is maintained.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 40

**Comment Excerpt:**

Providing an enforceable mechanism that encourages organic waste diversion fits comfortably within that authority. EPA should require a landfill to provide assurance that it is taking steps in its operations to reduce pollution either by certifying that it undertakes its own diversion or source separation and/or by certifying that it accepts only waste streams that have already been

subject to diversion or source separation. Either way, the landfill has itself taken steps to reduce harmful emissions before they can occur, similar to how EPA exempts thermal dryers at coal prep plants that use natural gas as a fuel from having to meet sulfur dioxide limits they otherwise must meet and how EPA allows "fuel based compliance alternatives" for industrial-commercial-industrial steam generating units that require certifications from fuel suppliers that the necessary conditions have been met. *See* 40 C.F.R. § 60.252(b)(2)(iii) (coal prep plants); *id.* § 60.49b(r)(1) (industrial-commercial-industrial steam generating units). If the landfill breaches its certification, it would violate the NSPS or emission guideline, or could be required to install a gas collection system on an accelerated timeline. Diverting waste—and following through on its commitment to divert waste—would thus also benefit a landfill owner because if a landfill can achieve total diversion of organics, it would not need to install a gas collection system, and significant diversion could allow a landfill to delay that installation. A landfill that breaches its commitment would be subject to sanction.

**Comment Response:**

EPA continues to believe that organics diversion and other BMP can be an effective approach to reducing emissions of landfill gas and strongly encourages owners/operators to adopt organics waste diversion practices. EPA also continues to believe, however, that such approaches are not properly considered a part of BSER due to both the many obstacles to its implementation and the myriad of approaches to implementing it. In theory, an effective organics diversion plan could prevent emissions of landfill gas at a particular landfill from ever exceeding the 34 Mg/yr NMOC emission threshold. In such circumstances, the landfill would never be required to install a GCCS. EPA believes that this provides a strong incentive for owners/operators to engage in organics diversion where circumstances make this feasible.

### 10.3 Tier 4 - General/Other Comments

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 102

**Comment Excerpt:**

EPA should enhance the NSPS and EG by adopting a SEM-based test for determining the appropriate timing for GCCS installation and GCCS removal. Rather than relying on modeling to determine the appropriate timing of GCCS installation or decommissioning, WM recommends the use of surface emission monitoring (SEM) scans as a more accurate and reliable tool for pinpointing the timing of effective gas system installation and shutdown. Small entities requested that EPA consider adding a more flexible option that would allow landfill owner/operators to perform surface emissions monitoring to confirm or improve upon the results of the Tier 1 and 2 modeling, by demonstrating that surface emissions at a site remain low even where the modeled emission rate shows a threshold exceedance (*See* Docket ID Number EPA-HQ-OAR-2003-0051). WM supports the SEM option, and recommends that it be available at any point in the life

of a landfill, either in place of or in addition to performing a Tier 2 analysis to determine when the GCCS installation requirements are triggered. One of the key benefits of the SEM option is that it will incentivize sites to implement methane reduction practices as quickly as possible. Such practices as upgrading cover or installing interim gas collection (horizontal pipes, tie-in to leachate collection system) can be implemented far more quickly than designing, constructing and installing GCCS, and are far more cost-effective than being required to install GCCS prematurely. Agency review and approval of Design Plans can further delay GCCS installation.

A second important benefit is that using SEM will reflect the differentials in gas generation that may be attributable to climate differences across the country. These differentials are lost in the default Tier 1 calculations and to some extent in Tier 2. For example, in wetter, warmer climates where LFG generation tends to occur earlier in a landfill's life, SEM monitoring will quickly identify fugitive emissions of that gas. A landfill owner/operator will quickly be able to determine whether remedial work with the cover or tuning the system will correct the emissions exceedance, or whether installation or expansion of the gas collection system is warranted. It would be far easier and more accurate for the Agency and the regulated community to rely on SEM data, as opposed to trying to account for climate differences by attempting to alter default values in the modeling equations.

**Comment Response:**

The EPA is finalizing Tier 4 SEM procedures for determining when a landfill must install a GCCS. Tier 4 provides operational flexibility and allows owners or operators of landfills that have exceeded the modeled NMOC emission rate threshold to demonstrate that site-specific surface methane emissions are below a specific threshold. However, the EPA is not allowing SEM demonstrations to determine when a GCCS can be capped, removed, or decommissioned. See Section VI.B and Section VI.C. of the 2016 NSPS Final Preamble. See Section VI.B and Section VI.C.2 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 66

**Comment Excerpt:**

By simply relying on a Tier 1 or Tier 2 test, many sites have, and could in the future be required to install a GCCS when site conditions do not warrant control. Although Tier 2 provides for a site specific NMOC concentration, that concentration is then used in a mathematical model. However, we know that the difference between a model of potential generation and actual emissions can be substantial. An example of this can be seen at several sites in arid states that were required to install a GCCS after completing Tier 2 testing. These sites used SEM to make it clear to local state agencies that the landfills did not generate enough LFG to support a GCCS. Additionally, it was shown that the installation of a GCCS would not only cost an exorbitant

amount of money but in fact would harm the environment by requiring large amounts of energy consumption to run blowers and control devices that were not effectively needed. Given that the current NSPS does not allow for a waiver to install based on SEM; several landfills have spent millions of dollars on the installation of a GCCS only to struggle to comply with the operational requirements of the NSPS. This has resulted in unnecessary time, money, electricity, and resources being expended, without the predicted environmental benefits accruing. These sites have never had any SEM exceedances before or after the installation of the GCCS. The use of SEM in determining the need for a GCCS will reduce wasteful spending, consumption of resources, and power consumption at facilities that cannot support operation of a GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 108

**Comment Excerpt:**

Modeling followed by the option to conduct a surface emissions monitoring scan to obtain actual measurements will validate site emissions. Even with enhancements to the modeled emissions estimates, relying solely on models to determine the timing of GCCS installation is not appropriate.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 65

**Comment Excerpt:**

We support this concept and see real value in including a "Tier 4" procedure. Incorporating SEM into the process of requiring when a GCCS must be installed, removed, and/or decommissioned, will provide for a more site specific and data driven approach to making the decision about when landfill gas emissions need to be controlled. Given landfills across the country are faced with different climates, waste acceptance, and cover soil materials, using the SEM method would be a key tool in determining the need for a GCCS based on actual site specific information.

Small entities requested that EPA consider adding a more flexible option that would allow landfill owner/operators to perform surface emissions monitoring (SEM) to show that surface emissions at a site remain low even where the modeled emission rate shows a threshold exceedance. We supports this SEM option, and recommends this option to be used either in place of or in addition to performing a Tier 1 or Tier 2 analysis prior to installing a GCCS for Subpart XXX.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division  
**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1  
**Comment Excerpt Number:** 20

**Comment Excerpt:**

DEQ supports a Tier 4 approach relying on surface emission measurements to demonstrate that site specific emissions are low even if the calculated emission rate exceeds 40 Mg/yr. The approach grants additional flexibility and a new lower cost option that collects site specific information to determine emission rates at a potential cost savings over the Tier 2 method. The caveat to this approach is that a surface monitoring methodology needs to be developed that is functional during windy conditions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 63

**Comment Excerpt:**

We support a “Tier 4” method that incorporates surface emissions monitoring (SEM) into the process of determining when a GCCS must be installed, removed, and/or decommissioned. One of the key benefits of the SEM option is that it will encourage sites to implement methane reduction practices as quickly as possible. Such practices as upgrading cover or installing interim gas collection (horizontal pipes, tie-in to leachate collection system) can be implemented far more quickly than installing GCCS, and are far more cost-effective than being required to install a GCCS prematurely.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 81

**Comment Excerpt:**

If EPA were to accept the industry's recommendation to utilize SEM to verify emissions, landfill owners would be encouraged to further explore biocovers as a method to reduce surface emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 15

**Comment Excerpt:**

As stated previously, TXSWANA continues to see value in the current SEM requirements and would recommend that SEM become more incorporated as a valuable method in determining the timing of the removal as well as the installation of a GCCS. The EPA requested comment on establishing a potential "Tier 4" to be used for determining when a GCCS would need to be installed. TXSWANA supports this and sees real value in including a "Tier 4" procedure. Incorporating SEM into the process of requiring when a GCCS must be installed, removed, and/or decommissioned will provide for a more site specific and data driven approach to making the decision about when landfill gas emissions need to be controlled. Given that Texas landfills are faced with different climates, waste acceptance, and cover soil materials, the use of a SEM method as a key tool would mean that determining the need for a GCCS will be based on actual site specific information.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch  
**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1  
**Comment Excerpt Number:** 9

**Comment Excerpt:**

Support the addition of a Tier 4 emission threshold determination method based on SEM to show that site-specific methane emissions are low.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems  
**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1  
**Comment Excerpt Number:** 42

**Comment Excerpt:**

DSWA expects that performance based testing, such as SEM, will be the most useful tool in determining when gas collection is necessary and/or possible.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Ali Mirzakhali, Director  
**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0191  
**Comment Excerpt Number:** 3

**Comment Excerpt:**

Delaware supports the use of the new Tier 4 monitoring as both a pathway into and out of LFG collection and control.

No means of gas control should be employed at the facility during the Tier 4 exemption.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 35

**Comment Excerpt:**

We appreciate the EPA including the use of Tier 4 as an alternative site-specific emission threshold determination for when a landfill must install and operate a GCCS. As proposed, Tier 4 would be based on surface emission monitoring (SEM), which demonstrates that surface emissions are less than 500 parts per million (ppm) below background. Tier 4 would allow landfills to demonstrate that site-specific surface methane emissions are low, despite modeled emissions from Tier 1, 2 or 3 exceeding the non-methane organic compound (NMOC) threshold. Tier 4 would allow landfills that demonstrate the surface emissions are below 500 ppm for 4 consecutive quarters to avoid the GCCS requirement by continuing to conduct successful SEM on a semi-annual basis.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 39

**Comment Excerpt:**

We applaud the EPA for proposing the use of Tier 4 as an alternative site-specific emission threshold determination for when a landfill must install and operate a GCCS. As proposed, Tier 4 would be based on SEM, which demonstrates that surface emissions are below 500 parts per million (ppm). Tier 4 would allow landfills to demonstrate that site-specific surface methane



emissions are low, despite modeled emissions from Tier 1, 2 or 3 exceeding the NMOC threshold. Tier 4 would require landfills to demonstrate that surface emissions are below 500 ppm for 4 consecutive quarters. If the landfill successfully demonstrated that, it would not need to install a GCCS and could continue to avoid the GCCS requirement by continuing to conduct successful SEM on a semi-annual basis.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 11

**Comment Excerpt:**

NACAA supports the inclusion of Tier 4 to determine when system installation is required.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 14

**Comment Excerpt:**

NACAA supports the inclusion of Tier 4 to determine when system removal can begin, including incremental step-down of collection to parts or all of a facility.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number: 11**

**Comment Excerpt:**

WM Supports EPA's Proposal with Recommended Amendments to Use Tier 4 as an Alternative Approach to Determine when a Landfill must Install and Operate a GCCS, and when a Landfill can Cap or Remove GCCS due to Declining Flow.

WM commends the Agency's proposed use of Tier 4 as an alternative, site-specific emission measurement to determine the appropriate timing for installing and operating a GCCS. We also support the Agency's proposal to allow landfill owner/operators to use this optional approach without the need to conduct each of the tiered analyses. As explained in our 2014 comments on the NSPS proposal and ANPRM, WM believes that a surface emission monitoring ("SEM") option will enhance decision-making regarding the timing and approach for controlling landfill gas emissions, and will incentivize sites to implement methane reduction practices as quickly as possible. EPA's proposal to allow use of Tier 4 SEM for both landfills determining when to install and operate a GCCS and landfills looking to cap or remove GCCS due to declining flow is a welcome approach. Providing landfill sites with the option to conduct a Tier 4 will more accurately identify changes in gas generation attributable to climate differences, waste age and composition, and other factors. In addition, we expect use of a measurement-based approach, as opposed to modeling, will provide a more reliable measurement of emission fluxes, which is particularly important in cases where the results of the available models appear flawed.

Use of Tier 4 SEM to determine when to install and operate a GCCS.

We strongly support EPA's proposal to allow landfills to use Tier 4 SEM to demonstrate that site-specific surface methane emissions are low, despite modeled emissions from either Tier 1, 2 or 3 exceeding the NMOC threshold. In this situation, landfills could use the Tier 4 SEM approach to ground-truth the models, and ensure that installation of a GCCS would be warranted.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Catharine Fitzsimmons, Chief, Air Quality Bureau  
**Commenter Affiliation:** Iowa Department of Natural Resources (Iowa DNR)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0162  
**Comment Excerpt Number:** 3

**Comment Excerpt:**

*Comment Excerpt:*

Tier 4 allows the use of a quarterly surface emission monitoring (SEM) protocol to delay installation of a collection/control system if no readings over 500ppm are detected. The Iowa

DNR supports the Tier 4/SEM alternative, particularly for determining when post-closure care can end at landfills.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Richard L. Goodyear, Bureau Chief, Air Quality Bureau, Environment Department,

**Commenter Affiliation:** State of New Mexico

**Document Control Number:** EPA-HQ-OAR-2014-0451-0190

**Comment Excerpt Number:** 2

**Comment Excerpt:**

We strongly support the inclusion of Tier 4 to provide a site-specific emission threshold alternative for facilities to determine if installation of a gas collection and control system (GCCS) is required. Our experience shows that emission calculations and modeling overestimate emissions. Facilities located in arid climates, as in New Mexico, may not have sufficient gas production for effective and efficient operation of a GCCS. Not including Tier 4 could cause facilities to prematurely install systems, requiring a financial burden that is not warranted.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 11

**Comment Excerpt:**

We strongly support the inclusion of a surface monitoring threshold and note that California has a similar, site-specific monitoring requirement.<sup>22</sup> A monitoring-based applicability prong provides built-in incentives for landfill operators to adopt one or more innovative methane avoidance or mitigation strategies, including organic waste diversion, oxidative landfill covers, and early landfill gas control measures.

[Footnote]

(22) California Code of Regulations, title 17, subchapter 10, article 4, sub article 6, section 95463, Methane Emissions from Municipal Solid Waste Landfills. EPA also requests comment on the other elements of California's applicability demonstration – waste-in-place and heat input.

As we have noted in our white paper, we think these metrics provide an accurate indication of a landfills readiness to install gas capture systems and so support their inclusion in the final rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 34

**Comment Excerpt:**

Republic supports EPA's Tier 4 option but several changes and clarifications are needed.

We support a "Tier 4" method that incorporates surface emissions monitoring (SEM) into the process of determining whether, and when, a GCCS must be installed, removed, and/or decommissioned. One of the key benefits of the Tier 4 option is that it will encourage sites to implement methane reduction practices as quickly as possible. Such practices as upgrading cover or installing interim gas collection (horizontal pipes, tie-in to leachate collection system) can be implemented far more quickly than installing GCCS, and are far more cost-effective than being required to install a GCCS prematurely. This approach was also supported during the outreach with small entities to allow increased flexibility for landfills that exceed the modeled NMOC emission rates if they can demonstrate that site-specific methane emissions are low.

The Tier 4 option will incentivize best practices by encouraging interim gas control measures. We support the ability to perform Tier 4 in areas where gas collection measures are installed early, as this approach will provide an even greater incentive for landfills to perform best management practices. However, we are concerned that the specific requirements imposed on landfills seeking to utilize the proposed Tier 4 approach are unreasonable and could substantially reduce the benefits available through EPA's proposal. Specifically, Republic believes that the lack of available corrective measures for any exceedances identified and the imposition of infeasible wind standards for surface monitoring could eliminate much of the benefit that the proposed Tier 4 option would otherwise provide. Accordingly, Republic asks EPA to make the following changes to its proposed emission guidelines.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 102, under comment code 10k.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number: 1**

**Comment Excerpt:**

EPA also requests comment on the possibility of creating a new path for landfills to show, on a case by case basis, that although they otherwise appear to exceed the threshold for non-methane gas emissions that would trigger the need for a collection system, they do in fact have low methane emissions. This provision appears modelled on a similar (but not identical?) provision built into a set of state rules in California. We recommend that the agency not incorporate this in the final NSPS rule, for reasons of administrative efficiency: this approach is designed solely for the purpose of allowing a subset of new landfills to delay methane capture requirements, even though the landfill will eventually need the collection system. There is no reason to allow this loophole for *new* landfills, since the collection system should be built into the design from the outset. If EPA does decide to include a Tier 4 in the rule for existing landfills, we recommend that the agency make it optional for state programs to implement.

**Comment Response:**

The EPA is finalizing the Tier 4 procedures for determining the timing of installing a GCCS for both new and existing landfills. Because new landfills will be designing the GCCS and planning the operational practices, the Tier 4 provisions will allow owners and operators of new landfills especially, to employ alternative methane reduction practices to reduce emissions of landfill gas from the surface of the landfill. The Tier 4 demonstration is limited to landfills with emissions below 50 Mg/yr, has limitations on when monitoring can be conducted based on wind speed, and does not allow for corrective action. See Section VI.B of the Final NSPS Preamble. See Section VI.B of the Final Emission Guidelines Preamble.

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**Commenter Name:** E. James Ferland, Chairman and Chief Executive Officer

**Commenter Affiliation:** Babcock and Wilcox

**Document Control Number:** EPA-HQ-OAR-2014-0451-0157

**Comment Excerpt Number:** 7

**Comment Excerpt:**

**Tier 4 Alternative Compliance Mechanism Should NOT REQUIRE Installation of LFG Collection and Combustion System; Tier 4 Alternative Compliance Mechanism Should Be Revised to Allow and Encourage Innovation**

The proposed rule's Tier 4 alternative compliance mechanism strongly disincentivizes innovation in that it requires installation of an LFG collection and combustion system within 30 months of reporting a surface emissions value of 500 ppm. Instead of insisting that LFG collection and combustion system be installed, EPA should work with States to reduce production of methane and other landfill emissions through mitigating technologies such as organics diversion, WTE, thermal treatment of biogenic waste, etc. In view of all the organic waste in landfills that is already in the ground slowly decomposing and producing methane, EPA should not require a

measure that will do little to correct this problem. As California's Draft Short-Lived Climate Pollutants Reduction Strategy states: "The science unequivocally underscores the need to immediately reduce emissions of Short-Lived Climate Pollutants . . . While the climate impacts of CO2 reductions take decades or more to materialize, cutting emissions of SLCPs can immediately slow global warming and reduce the impacts of climate change.<sup>36</sup> EPA's Tier 4 alternative compliance mechanism undercuts the likelihood of such quick decisive action to reduce methane.

[FOOTNOTES]

(36) *Draft Short-Lived Climate Pollutant Reduction Strategy* at ES-1.

**Comment Response:**

The EPA is finalizing Tier 4 SEM procedures for determining when a landfill must install a GCCS and a well operated and well designed GCCS was determined to be the BSER. However, the EPA believes that the Tier 4 SEM option will encourage landfill owners or operators to implement methane reduction practices, such as the use of oxidative landfill covers, organic waste diversion, and interim gas control measures. The EPA expects that alternative methane reduction operational practices employed by landfill owners or operators who are interested in Tier 4 will reduce near-term emissions of LFG from the surface of the landfill. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble. See also the response to DCN EPA-HQ-OAR-2003-0215-0121, excerpt 14 in [comment code EG5] for how EPA may work with states.

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

The Division currently reviews the test protocols and results for the Subpart WWW Tier 2 test (i.e. calculated NMOC emissions are greater than 50 Mg/year). In contrast, there is no practical way for the Division to review and verify the proposed Tier 4 SEM demonstration and the Division is, therefore, concerned about using a SEM demonstration to delay the installation of a control system. The proposed Tier 4 test could be valuable if EPA, in addition to the other implementation procedures EPA listed in the proposal for development, develops procedures for observing and verifying the SEM demonstration.

**Comment Response:**

At this time, the EPA has no plans to develop procedures for observing and verifying the SEM demonstration. However, the rules contain robust procedures that the landfill must follow. In addition, the landfill must notify the regulatory authority 30 days before the Tier 4 demonstration. At a minimum, the regulatory authority could observe the SEM demonstration

and inspect the associated records and reports to determine whether the landfill was complying with the rules.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director  
**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1  
**Comment Excerpt Number:** 2

**Comment Excerpt:**

WDNR has no experience with the Tier 4 demonstration tactic. If this tactic is adopted, guidance is needed for agency staff to resolve the additional considerations that go into the decision that the operator has to comply with NSPS permitting.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0082.1, excerpt number 9, under comment code 10k.

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**Commenter Name:** William C. Allison V, Director, Air pollution Control Division  
**Commenter Affiliation:** Colorado Department of Public Health and Environment  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0163  
**Comment Excerpt Number:** 7  
**Sort Order:** 400

**Comment Excerpt:**

The Division requests that EPA provide guidance on how to conduct Tier 4 site-specific methane generation rate determination for landfills that have a voluntary GCCS.

**Comment Response:**

The EPA is allowing the non-regulatory GCCS to be in operation during the Tier 4 SEM demonstration, but only if the non-regulatory GCCS has operated for at least 75 percent of the hours during the 12 months leading up to the Tier 4 SEM demonstration (6,570 hours). See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Anonymous public comment  
**Commenter Affiliation:** Private Citizen  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0193  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

Additional clarification is necessary for the Tier 4 testing proposed under Section 60.35f, particularly as it pertains to landfills that have a GCCS. For example, can a landfill only operate the GCCS during the time of the Tier 4 test, then shut the system off until prior to the next test? Or if the testing is to be conducted when the GCCS is offline, can a landfill owner extract gas for a period of time leading up to the test and then shut off the GCCS immediately before the test? If testing is to be completed while the GCCS is online, must it run continuously prior to and after the test? If it must be run continuously prior to and after the test, how is "continuously" defined, and what record keeping is required to demonstrate this?

These may seem like extreme examples, but because landfills are unique in that the waste mass can store gas in void spaces before sufficient pressure builds to cause emissions to occur, whether or not a GCCS is operating before or during a test can affect whether the Tier 4 test is representative of emission conditions during normal operating conditions of the landfill. EPA should provide additional clarification as to how this is to be implemented.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0163, excerpt number 7, under comment code 10k.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch  
**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0156  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

Tier 4 surface monitoring of methane should not be allowed in lieu of traditional non-methane organic compound (NMOC) determination methods (such as Tier 1, Tier 2, or Tier 3) in landfills that have an existing voluntary gas collection and control system (GCCS).

When a landfill uses an active voluntary GCCS, the surface methane readings are greatly reduced because landfill gas is captured by the voluntary GCCS instead of migrating through the landfill cover. As such, it's possible that GCCS design, monitoring, recordkeeping, and reporting requirements could be avoided indefinitely through the use of a voluntary GCCS that may not provide the same level of control as required by this rule.

For these reasons, Georgia EPD recommends that the proposed rule only allow the use of Tier 4 surface monitoring for landfills that do not already have an active voluntary GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0163, excerpt number 7, under comment code 10k.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal  
**Commenter Affiliation:** Golder Associates Inc.



**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 7

**Comment Excerpt:**

The AMM method should be allowed as an alternative measurement and monitoring technique for landfills that exceed the surface monitoring concentrations in proposed 40 CFR part 60, subpart XXX (page 41824 of the Proposed Rule). Due to the potential for a single measured methane concentration value to be associated with a wide range of potential emission rates alternative thresholds should be allowed.

**Comment Response:**

The EPA thanks the commenter for their perspective. Emerging technologies, like AMM method are having major advances but require more information and will not be required at this time.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 7

**Comment Excerpt:**

If ground construction and demolition (C&D) waste or any other high sulfur material (fly/bottom ash) is used as cover soil then a facility should not be eligible for Tier 4 testing. The reasoning behind this is that these materials have a high potential for hydrogen sulfide (HzS) production. The SEM procedure detects for methane not HzS. The higher the level of H2S present in the gas, the sooner odors will affect neighboring communities. This may not be quantified adequately by the 500 ppm SEM exceedance limit.

**Comment Response:**

The landfills rules rely on an organic vapor analyzer to detect methane as an indicator of landfill gas emissions. The landfills rules do not regulate hydrogen sulfide emissions. The EPA does not agree that a landfill should not be eligible for Tier 4 testing based on cover soil. The EPA has determined that 500 ppm is an appropriate level for Tier 4 testing.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 36

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**Comment Excerpt:**

The draft rule appears to include two instances when a Tier 4 could be used, including determining that an initial GCCS must be installed at a landfill which just exceeded the NMOC threshold, or to determine when a GCCS can be taken off-line in a closed, non-producing area of the landfill. TxSWANA suggests that Tier 4 would also be a reasonable procedure to determine when a GCCS must be installed in an area of a landfill that meets the 2- or 5-year waste age criteria. If these areas could meet SEM criteria in the absence of a GCCS, a GCCS should not be required simply because the waste meets an arbitrary waste age. Such an allowance would be very helpful for dry climate landfills where many areas with 5-year old waste are still not generating significant quantities of gas to warrant collection. Therefore, we request Tier 4 be used for this purpose. We would further request that Tier 4 be used to determine when portions of the GCCS may be turned off or removed due to declining gas flows.

**Comment Response:**

The EPA is retaining Tier 4 for determining the timing of installing a GCCS. However, the EPA is not finalizing a provision to use surface emissions monitoring for GCCS removal. See Section VI.C of the Final NSPS Preamble. See Section VI.C.2 of the Final Emission Guidelines Preamble. Regarding using Tier 4 for timing of expansions of the GCCS, the EPA has not finalized Tier 4 for this purpose. If a landfill is still accepting waste, its emissions are growing over time, and once the landfill has exceeded the NMOC threshold or Tier 4 surface-emission based threshold for installing controls, it will follow the prescribed GCCS expansion schedule (2 years for closed areas or 5 years for active areas). Tier 4 is an alternative emission threshold methodology used for determining the need and timing of controls at a landfill level, not something that is applied at an individual area of the landfill.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 40

**Comment Excerpt:**

The draft rule appears to include two instances when a Tier 4 could be used, including to determine an initial GCCS must be installed at a landfill which just exceeded the NMOC threshold, and to determine when a GCCS can be taken off-line in a closed non-producing area of the landfill. It would also seem like Tier 4 would be a reasonable procedure to determine when a GCCS must be installed in an area of the landfill that meets the 2- or 5-year waste age criteria. If these areas could meet SEM criteria in the absence of a GCCS, a GCCS is not yet required simply because the waste meets an arbitrary waste age. Such an allowance would be very helpful for dry climate landfills where many areas with 5-year old waste are still not generating significant enough quantities of gas to warrant collection. Therefore, we request the allowance to use Tier 4 for this purpose.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 36, under comment code 10k.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 46

**Comment Excerpt:**

The current proposal does not state that the Tier 4 or similar SEM method could be used to delay the requirement to expand the GCCS at an already regulated landfill for areas that meet the two- or five-year waste age criteria. We request that EPA consider applying the Tier 4 criteria to these areas where GCCS expansion is not warranted because the areas are capable of meeting the SEM threshold without a GCCS. This would delay GCCS installation until such time as the actual surface emissions warrant a GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 36, under comment code 10k.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 14

**Comment Excerpt:**

Use of Tier 4 SEM to determine appropriate timing of installation or expansion of gccs beyond the 2- and 5-year waste age criteria.

We were surprised that the current proposal does not provide for use of Tier 4 as an optional method to determine appropriate timing to install or expand the GCCS at an already regulated landfill for areas that meet the two- or five-year waste age criteria. This situation appears to be very similar to the threshold determination of when to install a GCCS. In fact, regulated landfills are already required to conduct quarterly SEM and expand the GCCS if they cannot remediate exceedances through corrective action. Given the site-specific nature of landfill operation, it seems arbitrary to require expansion at 2- and 5-years, when Tier 4 SEM is a demonstrably effective tool for determining whether an expansion is needed.

We request EPA to consider allowing use of Tier 4 SEM as an alternative to the automatic expansion of GCCS prompted by the 2- and 5-year waste age criteria. We believe that EPA could follow an approach similar to that for GCCS installation determinations. We recommend that sites be allowed to commence quarterly Tier 4 monitoring in year four, and with four quarters of clean data then decrease to semi-annual monitoring. If any exceedances cannot be corrected in a 10-day period, then the site would need to expand into this area within one year of the first exceedance. Given the broad reliance on SEM in other parts of the NSPS and EG proposals, and EPA's current proposal to allow greater use of Tier 4, it seems appropriate to provide Tier 4 as an option in this situation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 36, under comment code 10k.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 39

**Comment Excerpt:**

EPA's proposed emission guidelines do not allow landfills to use the Tier 4 or similar SEM method to demonstrate when the GCCS should be expanded to meet the two- or five-year waste age criteria for an existing GCCS. However, EPA offers no reasonable justification for disallowing the Tier 4 procedure for that purpose. If a landfill can meet the Tier 4 criteria for an area, that demonstration should be sufficient to confirm that landfill gas generation is not yet sufficient to support a GCCS, notwithstanding the age of the waste. Particularly for areas in dry climates, the Tier 4 procedure would be an appropriate means of ensuring sufficient landfill gas generation prior to installation of a GCCS. Thus, Republic recommends that EPA allow Tier 4 to serve as the basis for demonstrating whether expansion of a GCCS is warranted.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 36, under comment code 10k.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 40

**Comment Excerpt:**

It appears that the EPA is proposing to require all SEM data to be recorded during Tier 4 monitoring. SEM devices take readings every few seconds, resulting in thousands of readings per event. This data is of limited or no value; the only relevant data is the data that demonstrates an exceedance. Landfills do not collect and keep all SEM data from regular SEM events, and EPA has provided no justification why it should be required under Tier 4. Rather, landfills utilizing Tier 4 should be required to record and collect only the data related to all exceedances.

**Comment Response:**

The EPA is finalizing the requirement to retain all surface data readings, including calibration data and traverse path and sampling location data based on GPS coordinates up to five decimal places. This approach will improve transparency of Tier 4 results, and make them readily available to any inspector coming to the landfill. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 45

**Comment Excerpt:**

EPA appears to be requiring that during Tier 4 monitoring, all data must be recorded. It is unclear why EPA would need all of this data recorded and kept as records when it is only relevant if an exceedance occurs. We do not currently, nor is it proposed, to collect and keep all SEM data from regular SEM events, and EPA has provided no justification why it should be required under Tier 4. SEM devices take readings every few seconds, resulting in thousands of readings per event. This is a significant amount of data, and without a reason to record and keep all of this data, we request that this requirement be removed from the rule. We will certainly record and collect the data related to all exceedances, but to record and collect all of the data collected literally each several seconds is onerous and unnecessary.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment code 10k.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 18

**Comment Excerpt:**

**WM has identified Additional Regulatory Changes to Improve Implementation of Tier 4 SEM.**

WM has developed several recommendations to ensure that the Tier 4 approach is feasible and can be implemented efficiently, based on our review of EPA's proposed approach. As EPA acknowledges, the use of Tier 4 would incentivize best practices such as the use of oxidative landfill covers and interim gas control measures, so its use should be encouraged. **However, we are concerned that EPA's Tier 4 requirements are overly burdensome, potentially to the point of making the Tier4 SEM option impracticable.**

**The Recordkeeping Requirements in 60.39f(g) for Conducting Tier 4 Should Specify that all Readings Above 500 ppm be Recorded with Documentation of Corrective Action Mechanism Implemented and the Results of Re-monitoring.**

The proposed recordkeeping requirement to maintain records for five years for *every methane concentration reading* is extremely burdensome. As noted above, thousands of data points are generated during a SEM event. To require landfill owner/operators to maintain records of every methane reading generated for a five-year period will quickly overwhelm our recordkeeping systems. Furthermore, the Agency has not demonstrated a need for or an intended use of this voluminous data.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment code 10k.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 37

**Comment Excerpt:**

As proposed, all monitoring data regardless of the result must be recorded during Tier 4 monitoring. However, SEM devices take readings every few seconds, resulting in thousands of readings per event that together comprise a significant amount of data that could be difficult to manage. EPA has not provided any explanation for why all of this data should be maintained, when only the readings that indicate an exceedance of 500 ppm would be needed to ensure proper corrective action is taken. Maintaining enormous amounts of compliant measurements will not help landfills minimize emissions, nor will it assist EPA or other regulatory authorities in ensuring compliance with the emission guidelines, so long as the date and time of the surface monitoring event and any exceedances are recorded and reported. Accordingly, Republic recommends that the requirement to maintain all data be removed from the proposed emission guidelines and that EPA only require landfills to document monitored exceedances of the 500 ppm threshold.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment code 10k.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 36

**Sort Order:** 905

**Comment Excerpt:**

Republic recommends that EPA remove the wind speed restrictions and replace them with a requirement that surface monitoring be performed during "typical meteorological conditions," as currently allowed under Subpart WWW. While Republic recognizes that surface monitoring is likely more accurate during periods of lower wind speed, the proposed wind speed restrictions – five miles per hour or lower, with instantaneous wind speeds below 10 miles per hour – will be impractical in areas that typically have higher wind speeds on a regular basis. For areas that rarely have conditions meeting EPA's proposed requirements, scheduling surface monitoring could become extremely difficult. Since monitoring events are usually planned weeks in advance, EPA's prescriptive wind speed requirements will be costly, given the need to mobilize and demobilize sampling technicians on short notice in an attempt to take advantage of favorable wind conditions and reschedule monitoring if unfavorable wind conditions prevail. Climate conditions across the U.S. are simply too variable to support EPA's stringent requirements. For example, even under existing requirements, areas in California, Colorado, North Carolina, Oklahoma, Wisconsin, and Palm Beach have all reported difficulty with continually high wind speeds in the past, and thus could be precluded from using the new Tier 4 approach, unless EPA revises its proposed wind speed requirements.

In addition, the requirement to continuously monitor the wind using an anemometer is not representative of the wind conditions where the surface monitoring is required. As required by the rule, the surface monitoring probe inlet must be placed within 5 to 10 centimeters of the ground, while weather station anemometers are typically located 10 meters above the ground. EPA has not provided any evidence to indicate that wind levels above the limits prescribed in the proposed emission guidelines will have any impact on the accuracy of the surface monitoring results. EPA also appears to have ignored the cost of installing and maintaining a meteorological station (and providing electricity service to it) in evaluating the costs and benefits of its proposal.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment code 10k.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number: 26**

**Comment Excerpt:**

We have concerns about the inclusion of a wind requirement in the Tier 4 demonstration, as it is not currently part of the SEM requirements. Facilities will have to monitor wind speed throughout the Tier 4 monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment [code 10k].

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**Commenter Name:** Kelly Dixon, Director

**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0195

**Comment Excerpt Number:** 5

**Comment Excerpt:**

Tier 4 testing is not allowed during conditions in which the average wind speed is 5 mph with instantaneous wind speeds of 10 mph. Oklahoma's average wind velocities in 2014 ranged from 11 mph to 21 mph across the state. DEQ believes it would be difficult for Oklahoma landfills to comply with the Tier 4 monitoring restrictions making it unavailable as an option to installing a GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment code 10k.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 65

**Comment Excerpt:**

In the absence of real data on these issues and in light of the additional cost, we request that the wind speed requirement be excluded from the rule. Tier 4 SEM should be conducted under the same typical meteorological conditions as other SEM under the rule. If it is included, then we



request that EPA include an explicit allowance for exemption or alternatives from the requirement.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment code 10k.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 46

**Comment Excerpt:**

In the absence of real data on these issues and in light of the additional cost, we request that the wind speed requirement be excluded from the rule. Tier 4 SEM should be conducted under the same typical meteorological conditions as other SEM under the rule.

If the wind speed requirement is included, then we request that EPA include an explicit allowance for exemptions or alternatives from the requirement.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment code 10k.

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**Commenter Name:** Catharine Fitzsimmons, Chief, Air Quality Bureau

**Commenter Affiliation:** Iowa Department of Natural Resources (Iowa DNR)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0162

**Comment Excerpt Number:** 4

**Comment Excerpt:**

*Comment Excerpt:*

The Iowa DNR requests that EPA include in the final emission guidelines a "model rule" or protocol specifying the acceptable alternatives available to landfills in lieu of terminating surface emissions monitoring if wind speeds exceed the limitations specified in EPA's proposed rule.

*Rationale:* The proposed rule states at 60.35(f)(a)(6)(A): "Surface emission monitoring must be terminated when the average wind speed exceeds 5 miles per hour ... The Administrator may approve alternatives to this wind speed surface monitoring termination for landfills consistently having measured winds in excess of these specified limits...."

The Iowa DNR appreciates that EPA has proposed that the Administrator may approve alternatives to terminating surface monitoring due consistently windy conditions. However, in many areas of the U.S., including Iowa, landfills are typically the highest landform, and thus may frequently experience windy conditions. The Iowa DNR expects that affected landfills in Iowa will wish to use the Tier 4/SEM alternative, and will request an alternative standard to wind speed surface monitoring termination.

If EPA does not provide a model rule or protocol for any such alternative standards, the burden on state agencies to develop an approvable state 111(d) plan with their own alternative standards may be substantial. Further, lack of an EPA model for alternative standards may result in inconsistencies among states in regulating affected landfills, and with EPA's regulating of affected landfills under federal plans.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment code 10k.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 20

**Comment Excerpt:**

**We Urge EPA to Delete the Wind Speed Criteria, and Maintain the 40 C.F.R. Part 60 Subpart WWW Surface Monitoring Provisions for the Performance of Tier 4.**

It can be very difficult, and in some cases impossible, to implement SEM in areas where wind restrictions apply. We are very concerned that EPA's proposed wind speed criteria will make the Tier 4 alternative determination impossible to use. As WM noted in comments on the 2014 NSPS proposal and ANPRM, in California, almost 75% of the landfills conducting SEM were forced to request a permanent waiver from the State's allowable wind speed because it is an unworkable standard. A number of states and local solid waste authorities commented on use of a wind speed requirement to describe implementation difficulties in meeting the proposed five miles per hour average or 10 miles per hour instantaneous limit and warned against its adoption.<sup>11</sup>

EPA should not include similar language in promulgating the NSPS and EG rules. Landfill owner/operators will find it very difficult to assemble teams and schedule monitoring events if they must be canceled due to an arbitrary wind speed limit. Furthermore, in many areas of the country, the wind speeds frequently exceed the proposed average and instantaneous limits. In fact, California's allowable 5 mph average wind speed is not technically "windy"; according to the Beaufort wind scale, it is considered a light breeze. We thus ask EPA to retain the current approach for quarterly SEM, and allow Tier 4 monitoring during typical meteorological

conditions. This regulatory language has worked well as a guide for conducting quarterly SEM, and is the appropriate guide for conducting Tier 4 SEM.

Additionally, the proposed rule requires that average wind speed be determined using an onsite anemometer with a continuous recorder for the entire duration of the monitoring event. This presents a number of potential implementation problems in the performance of Tier 4 monitoring. Wind speeds will naturally vary across the many acres encompassed by the landfill and so wind speed measurements at a weather station located at the site office, for example, may not be representative of wind speeds on the landfill hill. We are very concerned that maintaining the proposed wind speed criterion will make use of Tier 4 highly problematic if not impossible in many regions of the country.

[Footnote 11] See Docket ID Numbers EPA-HQ-OAR-2014-0451-0033, EPA-HQ-OAR-2014-0451-0149, EPA-HQ-OAR-2003-0215-0125.

**Comment Response:**

The EPA is retaining the wind speed limitation for Tier 4 because air movement can affect whether the monitor is accurately reading the methane concentration during surface monitoring. The EPA has also refined the wind speed criteria to account for gusts up to 10 mph. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills

**Document Control Number:** EPA-HQ-OAR-2014-0451-0145

**Comment Excerpt Number:** 7

**Comment Excerpt:**

Foth and the BOW Group support the proposal to add a Tier 4 emission threshold determination option that would be based on site specific SEM demonstration. This may be a preferable alternative to modeled NMOC emission rate determinations (Tier 1 through Tier 3), which can overestimate actual NMOC emissions. However, 40 CFR 60.35f(a)(6)(iii)(A) of the Tier 4 proposal is inconsistent with the ongoing compliance SEM requirements, since it requires the following: *Surface emission monitoring must be terminated when the average wind speed exceeds 5 miles per hour or the instantaneous wind speed exceeds 10 miles per hour. The Administrator may approve alternatives to this wind speed surface monitoring termination for landfills consistently having measured winds in excess of these specified limits. Average wind speed must be determined on a 15-minute average using an onsite anemometer with a continuous recorder for the entire duration of the monitoring event.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 20, under comment code 10k.

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**Commenter Name:** Claudia R. Rodgers, Acting Chief Counsel  
**Commenter Affiliation:** Small Business Administration  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0155  
**Comment Excerpt Number:** 6

**Comment Excerpt:**

*EPA should ensure that the Tier 4 alternative is not overly strict and provides the flexibility intended.* Small entities have expressed concern about two provisions of Tier 4. This flexibility is very important if EPA finalizes the 34 Mg/yr emission threshold, since it has the potential to significantly reduce the costs imposed on small entities.

They are concerned that the limitations on wind and atmospheric conditions are too limited. Advocacy understands that for some landfills, such still air is rare. EPA does provide the ability to get a waiver to this limitation. However, small entities have had trouble in the past with such waiver provisions, believing that the regulatory bodies that issue such waivers are not sufficiently responsive to deal with day-to-day operational needs. It was this concern that led the small entities to advocate for elimination of the wellhead operating limits. EPA should reconsider these limits and, if such limits are necessary, significantly raise them to allow for greater weather and climate variability.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 40, under comment code 10k.

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**Commenter Name:** Jeffrey Vandebusch  
**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0145  
**Comment Excerpt Number:** 8

**Comment Excerpt:**

There also appears to be some inconsistencies and discrepancies in the proposed timelines for submitting a GCCS Design Plan and installation deadlines for the GCCS related to the Tier 4 emission threshold determination. 40 CFR 60.32f states that the GCCS must be installed and started up “...*within 30 months after the date Tier 4 surface emissions monitoring shows a surface emission concentration of 500 parts per million methane or greater.*” However, 40 CFR 60.33f(b)(1)(iii) states that the GCCS must be installed and started up “...*within 30 months after: The Tier 4 surface emissions report shows that surface methane emissions are below 500 parts per million methane for four consecutive quarters, as specified in § 60.38f(c)(5)(iii).*” The first requirement indicates that the timeline is based on the **first SEM threshold exceedance**, and the second requirement indicates that the timeline is based on **submittal of the annual report**

(although the second requirement appears incorrectly indicate that the GCCS must be installed when there is no SEM threshold exceedance).

In addition, 40 CFR 60.35f(a)(6)(vi) & (vii) state “...*the owner or operator must submit a gas collection and control system design plan within 1 year of the first measured concentration of methane of 500 parts per million or greater from the surface of the landfill according to §60.38f(d) and install and operate a gas collection and control system according to § 60.33f(b) and (c) within 30 months of the first measured concentration of methane of 500 parts per million or greater from the surface of the landfill.*” However, Section VII of the preamble states “*The landfill owner or operator would be required to submit a design plan within 1 year of reporting the surface emissions value over 500 ppm to the implementing authority in an annual report and would be required to install and start up a GCCS within 30 months of reporting the surface emissions value over 500 ppm.*” The statements in the proposed rule indicate that the timelines are based on the **first SEM threshold exceedance**, and the statement in the preamble indicates that the timelines are based on **submittal of the annual report**. We suggest that these timelines be based on submittal of the annual report to be consistent with the timeline requirements in Tier 1 through Tier 3 emission threshold determinations.

**Comment Response:**

The EPA has revised the final NSPS and Emission Guidelines to make the submittal dates clear.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 10

**Comment Excerpt:**

The EPA also concludes that the Tier 4 requirement will encourage organics diversion. This is very unlikely to occur, for both economic and operational reasons. According to the EPA, landfill tip fees are approximately \$50/ton.<sup>35</sup> On average, the average cost of compliance with the existing gas collection and control regulations is approximately \$1.20 / ton of MSW,<sup>36</sup> a trivial incremental amount which is unlikely to result in any change in the disposition of waste. The EPA itself has concluded that the proposed regulations are unlikely to materially affect how waste is managed in the U.S.:

“However, because of the relatively low incremental costs of the proposal, the EPA does not believe the proposal would lead to substantial changes in supply and demand for landfill services or waste disposal costs, tipping fees, or the amount of waste disposed in landfills. Hence, the overall economic impact of the proposal should be minimal on the affected industries and their consumers.” FR **80**, 166, 52143

Furthermore, landfill operators may not have control over the collection of waste and generally do not have control over the municipal waste management programs offered to residents. As a result, the ability of the Tier 4 option to drive organics diversion is restricted to market pressures. In other words, the cost benefit of delaying the installation of landfill gas control and capture

would have to first, be passed along to the municipality in the form of a lower tip fee, and second, be sufficient and permanent enough to encourage the municipality to implement organics diversion requirements above what they are currently offering. At a cost of \$1.20 / ton for installation and operation of a gas collection system, this seems very unlikely. Given that Tier 4 will likely only delay, and not eliminate the need for, the installation of a gas collection system, the economic incentive, if passed along to communities at all, will be, at best, temporary.

[Footnote 35] See figure ES-8 of EPA (2015)

[Footnote 36] Calculated based on total annual existing compliance cost of \$299M / yr from Table 3 of the Rule preamble and 249.7 tons of MSW managed in landfills equipped with gas collection systems in 2012 that reported to the EPA Mandatory Greenhouse Gas Reporting program, 40 CFR 98.

**Comment Response:**

Tier 4 might encourage organics diversion simply because less organics going into the landfill result in lower emissions generated by the landfill. The Tier 4 procedures recognize landfills with low methane surface emissions. Such landfills can potentially prevent or delay the installation of a GCCS by reducing surface methane emissions by whatever means possible, including organics diversion.

The EPA recognizes that landfill owners or operators do not typically develop or facilitate organics diversion programs and that such programs are more likely within the purview of state or local government. See response to EPA-HQ-OAR-2003-0215-0198, excerpt number 55, in comment code EG11.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 8

**Comment Excerpt:**

When using Tier 4 to exit NSPS/EG applicability:

Quarterly SEM should be performed at steady state conditions. As LFG generation declines some wells may be removed from service. They must not be turned on in order to pass quarterly SEM and subsequently turned back off for the remainder of the quarter.

**Comment Response:**

The EPA is not finalizing criteria for capping, removing, or decommissioning a GCCS that includes an SEM demonstration. See Section VI.C of the Final NSPS Preamble. See Section VI.C.2 of the Final Emission Guidelines Preamble.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 15

**Comment Excerpt:**

EPA should require such enhanced monitoring as part of Tier 4 demonstrations, including tighter walking patterns and integrated surface monitoring. This would help to ensure that landfills allowed to delay GCCS installation do so on the basis of emissions performance and not because monitoring simply failed to detect elevated emissions levels.

**Comment Response:**

The EPA is not including enhanced monitoring provisions as part of Tier 4 demonstrations. However, the EPA is including several provisions to ensure that Tier 4 is effective at identifying methane emissions from the surface of the landfill. For example, the EPA is retaining the wind speed limitation for Tier 4, requiring notification to the delegated authority 30 days before a Tier 4 demonstration, and requiring owners or operators to retain all Tier 4 surface data readings, including calibration data and traverse path and sampling location data based on GPS coordinates up to 5 decimal places. See Section IV.A.2 and VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

## 10.4 Moving Through Tiers

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 67

**Comment Excerpt:**

We recommend that implementation of the "Tier 4" not be a sequential procedure, but rather that it is a method that could be employed at any point following a Tier 1 or Tier 2 test in which the NMOC's have been calculated to be greater than the NMOC threshold and prior to the required installation of the GCCS. In addition, we propose this method also be used in removing the NSPS requirements for all or portions of existing GCCS, used in addition to the 1% standard. If any portion of a landfill area can meet SEM criteria without a GGCS, then the area should not be required to employ a GCCS for NSPS compliance. This approach to using "Tier 4" would enable SEM to gather site-specific information at a landfill or area of a landfill to determine if the actual data supports a GCCS. This method is similar to what is currently used by the California Air Resources Board (CARB) in its MSW Landfill regulation in §95463 (b)(2)(B). Under this rule, if

a landfill exceeds the waste-in-place and heat input thresholds, the landfill may conduct an SEM demonstration prior to being required to install a GCCS.

**Comment Response:**

Tier 4 can be used at any time following a Tier 1 or Tier 2 test that demonstrates that NMOC emissions are greater than or equal to 34 Mg/yr but less than 50 Mg/yr. If a landfill opts to use Tier 4 for its emission threshold determination and there is any measured concentration of methane of 500 ppm or greater, the landfill cannot go back to using Tiers 1, 2, or 3. The EPA is not allowing an SEM demonstration to determine when a GCCS can be capped, removed, or decommissioned. See Section VI.B of the 2016 NSPS Final Preamble for the order of tiers. See Section VI.C.2 of the 2016 Emission Guidelines Final Preamble for the Criteria for Removing or Decommissioning a GCCS.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 16

**Comment Excerpt:**

TXSWANA supports this SEM option, and recommends that this option be used either in place of or in addition to performing a Tier 1 or Tier 2 analysis prior to installing a GCCS for Subpart XXX.

By simply relying on a single Tier 1 or Tier 2 test, many sites have and could in the future be required install a GCCS when the site conditions do not warrant control. Although with Tier 2 testing a site specific NMOC concentration is determined, that concentration is then used in a mathematical methane generation model which is then used to estimate projected NMOC generation. However, experience has shown that the difference between a mathematical model of potential generation and actual emissions can be substantial. By incorporating the use of SEM procedures in determining the need for installing or decommissioning or removing a GCCS, wasteful spending, consumption of resources, and power could greatly be minimized while the environment will remain fully protected.

We recommend that implementation of "Tier 4" not be a sequential procedure, but rather that it is a method that could be employed instead of a Tier 1 or Tier 2 test or at any point following a Tier 1 or Tier 2 test in which the NMOC's have been calculated to be greater than the NMOC threshold and prior to the required installation of the GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 67, under comment code 10l.



**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 64

**Comment Excerpt:**

A Tier 4 method is appropriate because the existing methods of determining when a GCCS system is required are overly conservative or as in the case of the Tier 3 method not even used due to the expense and operational challenges. The existing Tier 1 modeling which every site must use often over predicts the generation of landfill gas and underestimates the amount of methane oxidation that occurs in daily and intermediate cover. A Tier 2 calculation for site specific NMOC concentration emissions is also available; however the site specific concentration is then used in a conservative mathematical methane generation model that only provides a prediction of potential landfill gas generation. We recommend that prior to being required to install a GCCS, a landfill have the option of using the Tier 4 method either in place of or in addition to performing a Tier 2.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 67, under comment code 101.

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**Commenter Name:** Juene Franklin, P.E.  
**Commenter Affiliation:** Franklin Engineers & Consultants, LLC  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0122  
**Comment Excerpt Number:** 2

**Comment Excerpt:**

This section of our comments details the information presented in the proposed NSPS XXX to which we have no strong objection: The use of the Surface Emissions Monitoring as part of the Tiered approach to determining if a GCCS expansion is required, if one change is implemented. The Tier 3 Test, as it currently exists, is extremely rare because of the high cost and the fact that in many areas (Southeast, Midwest, Gulf Coast, etc.) the "k" factor is not reduced via testing. For this reason, we would recommend that the EPA consider allowing Surface Emissions Monitoring (SEM) to serve as the new Tier 3 in the NSPS XXX Requirement and have the testing that calculates the "k" factor be considered the Tier 4 Test.

**Comment Response:**

The EPA has retained the testing that calculates the methane generation rate ("k" factor) as Tier 3. The EPA believes it is appropriate to retain Tier 3 as the third option and surface emissions monitoring as the Tier 4 option. Landfills have flexibility in moving through the tiers. For example, a landfill does not have to complete the Tier 3 test in order to undergo Tier 4.

**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 25

**Comment Excerpt:**

Beyond the options already contained in the draft rule, there are several potential solutions to address declining gas flows and gas quality at closed landfills, or closed landfill units or areas (as well as active areas), which should be clarified in the rule.

EPA, in its various determinations on the topic, has ruled that “late” (beyond 180 days of the Tier 1) Tier 2 analyses could be conducted, but not beyond the final compliance date under the NSPS (30 months from first exceeding the emissions threshold). The proposed rule is silent on this topic, and since Tier 2 is voluntary, we believe that Tier 2s (or Tier 3s and Tier 4s as envisioned in Cf/XXX) should be allowed at any time to defer NSPS criteria, as long as NSPS final compliance dates are met. Therefore, whenever it is discovered that a landfill’s emissions are less than the emissions threshold, the GCCS requirement of the NSPS/EG should not apply regardless of when the Tier 2 (or Tier 3 or 4) is done.

**Comment Response:**

The EPA appreciates the commenter's input. However, Tier 2 is only "voluntary" if the landfill chooses not to install a GCCS after Tier 1 shows NMOC emissions over the threshold that requires installation of a GCCS. Tiers 1, 2, 3, and 4 are intended for landfills that are likely to have steady or increasing emissions, not for landfills with declining emissions. Therefore, we disagree that Tier 2s (or Tier 3s and Tier 4s as envisioned in Cf/XXX) should be allowed at any time to defer NSPS criteria. Instead, the rule contains provisions that are specific for landfills or areas of landfills with declining gas flows. See section VI.C of the final NSPS preamble. See section VI.C of the final Emission Guidelines preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 58

**Comment Excerpt:**

EPA, in its various determinations on the topic, has ruled that "late" (beyond 180 days of the Tier 1) Tier 2 analyses could be conducted, but not beyond the final compliance date under the NSPS (30 months from first exceeding the emissions threshold). The NSPS rule is silent on this topic, and since Tier 2 is voluntary, we believe that Tier 2’s (or Tier 3’s and, even Tier 4’s as envisioned in Cf/XXX) should be allowed to be conducted at any time to defer NSPS criteria, as

long as NSPS final compliance dates are met. Therefore, whenever it is discovered that a landfill's emissions are less than the emissions threshold, the GCCS requirement of the NSPS/EG should not apply regardless of when the Tier 2 (or Tier 3 or 4) is done.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, excerpt number 25, under comment code 101.

## 10.5 Tier 4 - Areas Subject to SEM

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 103

**Comment Excerpt:**

For active sites or areas of the landfill that are not yet required to install a GCCS, WM recommends that following either a Tier 1 or Tier 2 test which indicates a landfill may exceed the NMOC threshold, a landfill owner/operator would have the option to perform surface emissions monitoring of the same area corresponding to the tier test to validate whether surface emissions exceed the 500 ppmv operating standard. The owner/operator would follow the SEM methods currently established in Subpart WWW. If during this monitoring event no exceedance of 500 ppm over background is detected, then the installation of a GCCS will not be required and quarterly SEM testing will be performed thereafter until the landfill or area of the landfill is closed.

**Comment Response:**

The EPA is finalizing Tier 4 SEM procedures for determining when a landfill must install a GCCS. Tier 4 provides operational flexibility and allows owners or operators of landfills that have exceeded the modeled NMOC emission rate threshold to demonstrate that site-specific surface methane emissions are below a specific threshold. However, the EPA is not allowing for corrective action as part of the Tier 4 demonstration. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 EG Final Preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 89

**Comment Excerpt:**

For active sites that are currently not required to install a GCCS under the NSPS rules, we propose that following a Tier 1 or Tier 2 test that indicates the landfill exceeds the NMOC threshold, a landfill owner/operator will have the option to perform an SEM in the same areas and using the same methods currently established in the NSPS subpart WWW. If during this "Tier 4" SEM no exceedance of 500 ppm over background is detected, then the installation of a GCCS will not be required and annual "Tier 4" testing will be performed until the landfill or area of the landfill is closed.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 103, under comment code 10e.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 17

**Comment Excerpt:**

For active sites that are currently not required to install a GCCS under the NSPS/EG rules we propose that following a Tier 1 or Tier 2 test, which indicates that a landfill exceeds the NMOC threshold, a landfill owner/operator will have the option to perform SEM in the same areas and using the same methods currently established in the NSPS subpart WWW. If during this "Tier 4" SEM no exceedances of 500 ppm over background are detected, then the installation of a GCCS will not be required and annual "Tier 4" testing will be performed until the landfill or area of the landfill is closed.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 103, under comment code 10e.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 8

**Comment Excerpt:**

The AMM method can be applied to whole landfill emissions or to subareas. However, we suggest that SEM requirements using the AMM method be applied to the whole landfill, or to distinctly separate subareas. If new rules allow for an allowable emission threshold, then landfill

owners and operators would have the flexibility to meet an overall methane emission rate target rather than be forced to remediate an area due to a concentration exceedance, but which may not be a significant methane emission source.

**Comment Response:**

The EPA has acknowledged emerging measurement technologies in its final rules. While the EPA has not changed its approach to surface emission measurement; it has acknowledged limitations of its current approach. Once additional research is conducted, emerging technologies may be considered. See Section VI.B of the NSPS Preamble and Section VI.B of the Emission Guidelines Preamble for additional discussion on emerging technologies.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal  
**Commenter Affiliation:** Golder Associates Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1  
**Comment Excerpt Number:** 10

**Comment Excerpt:**

Due to the more consistent nature of AMM method measurements compared with a concentration measurement approach, the frequency of SEM demonstration can be reduced. We suggest a SEM frequency using the AMM method of once per year.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 8, under comment code 10e.

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs  
**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0197  
**Comment Excerpt Number:** 16

**Comment Excerpt:**

Quarterly SEM should be conducted during typical operational conditions of the LFG collection and control system. If portions of the site are typically offline due to decreased gas flow, they must remain so during SEM.

**Comment Response:**

The EPA has revised its requirements for Tier 4. Tier 4 has been limited to landfills that operate GCCS at least 75% of the time. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 EG Final Preamble.

## 10.6 Tier 4 - Frequency of SEM

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 6

### **Comment Excerpt:**

While using the Tier 4 exemption, facilities should be required to test quarterly in perpetuity. Reducing to annual testing after four quarters is counter intuitive. If a facility has already crossed the 34 Mg per year threshold and the facility continues to receive solid waste then the expected gas generation will continue to increase. Quarterly testing is necessary to ensure that collection begins when it is needed to control odors and emissions.

### **Comment Response:**

The EPA is finalizing an approach wherein quarterly SEM is required for Tier 4 indefinitely unless the landfill is closed. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 12

### **Comment Excerpt:**

Quarterly SEM should be required throughout the Tier 4 exemption. Monitoring should not be reduced to semi-annually.

### **Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt number 6, under comment code 10f.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 15

### **Comment Excerpt:**

During the Tier 4 step down, monitoring should not be reduced to annually until all operation ceases and passes four quarters of monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt number 6, under comment code 10f.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 32

**Comment Excerpt:**

The allowance for completion of annual SEM, instead of quarterly, should apply to closed areas of active landfills, not limited to landfills that are completely closed.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt number 6, under comment [code 10f]. This provision is limited to closed landfills because the emissions from closed landfills are expected to be declining, thus, the EPA has determined that reducing the surface monitoring frequency to annual is acceptable. The EPA is finalizing the criteria for removing or decommissioning a GCCS, but the final criteria do not include a provision for removing a GCCS based on surface emissions monitoring. Owners or operators may exclude non-productive areas from control based on estimated NMOC emissions. See Section IV.A.4 of the 2016 NSPS Final Preamble for excluding non-productive areas from control. See Section VI.B of the 2016 NSPS Final Preamble for the final Tier 4 provisions.

## 10.7 Tier 4 - Exceedance Threshold

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 14

**Comment Excerpt:**

EPA has proposed an alternative, Tier 4 site-specific emissions threshold for determining applicability. This would allow landfills with modeled emissions above the NMOC thresholds based on emission modeling to delay installation of GCCS if site specific surface emissions fall below 500 parts per million (ppm) methane.<sup>57</sup> EPA has also proposed to allow for Tier 4 monitoring, along with other factors, to inform removal of GCCS.<sup>58</sup> The agency notes that site-

specific emissions monitoring can create incentives for early gas capture, organics diversion, and adoption of other BMPs.

We agree that rigorous, site-specific emissions threshold can create incentives to deploy BMPs and note that the California applicability requirements has a similar, site-specific monitoring requirement.<sup>59</sup> We are concerned, however, that EPA's Tier 4 demonstration, as currently proposed, would simply allow landfills to delay installation of GCCS without driving adoption of additional emission reduction technologies or practices. Accordingly, we recommend EPA strengthen proposed Tier 4 requirements in several ways:

Presumptive 200 ppm threshold. EPA should adopt 200 ppm, as opposed to 500 ppm, as a presumptive threshold. Landfill owners would then be required to install GCCS unless they could demonstrate that the landfill is not generating sufficient gas to support a flare. California has a similar 200 ppm level paired with waste-in-place thresholds and a backup heat-input calculation to, which are designed to assure that LFG capture is required wherever it is feasible to install. EPA expresses concern with 200 ppm on the grounds that it could cause operators of voluntary GCCS to overdraw their collection systems. EPA proposed rationale, however, is inapplicable to the vast majority of Tier 4 demonstrations, which address when emissions controls must be installed in the first instance.

[Footnote 57] 80 Fed. Reg. at 52,102

[Footnote 58] Id.

[Footnote 59] California Code of Regulations, title 17, subchapter 10, article 4, sub article 6, section 95463, Methane Emissions from Municipal Solid Waste Landfills.

**Comment Response:**

The EPA is retaining the 500 ppm surface methane emissions threshold because 500 ppm is consistent with the level the EPA determined to be appropriate to demonstrate that a GCCS is well-designed and well-operated. The EPA considered 200 ppm integrated readings. However as stated in 80 FR 52129, the 500 ppm threshold is consistent with California instantaneous surface methane requirements. Further, the EPA continues to highlight the concerns associated with the potential for owners or operators of voluntary systems overdraw the vacuum which could increase the risk of a fire. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 12

**Comment Excerpt:**

EDF has been informed by landfill experts that a surface concentration of 200 parts per million (ppm) provides further empirical confirmation that a landfill is ready for installation of a full gas capture system, and we would urge the agency to adopt a standard at or below this level.



**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0204, comment excerpt number 14, under comment code [10g].

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 9

**Will be summarized and responded to in the preamble:**

**Sort Order:** 12

**Response Status:** Final

**Comment Excerpt:**

The newly proposed Tier 4 threshold for the installation of a gas collection system could actually increase GHG emissions and should either be removed or made significantly more stringent by incorporating a 200 ppm threshold inclusive of a 25 ppm integrated limit or incorporating available area source measurement techniques.

The Tier 4 threshold provides landfill operators yet another option to delay the installation of gas collection systems. The EPA concluded that a well-designed gas collection system is the best system of emission reductions for landfills.<sup>34</sup> The Tier 4 option allows landfill operators to delay installation of gas collection on the basis of desperate surface methane concentration measurements, which have no clear connection with mass emissions over the entire area of the landfill surface. Even more egregious, the EPA has proposed to keep the 500 ppm threshold in lieu of a more stringent application of a 200 ppm threshold coupled with a 25 ppm integrated threshold.

The EPA justifies the approach by suggesting that landfill operators will be incentivized to implement best management practices, including oxidative cover materials and interim gas control measures. While we agree that landfill operators will employ these strategies to ensure that their surface emission concentrations are below 500 ppm, it will be done at the expense of active LFG collection and control, the more effective option.

[Footnote 34] EPA, *Federal Register*, **80**: 166, 52110

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0204, comment excerpt number 14, under comment code 10g.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 11

**Comment Excerpt:**

The concentration measurement approach and the emission rate measurement approach are incompatible. However, to determine an "equivalent" allowable methane flux as a regulatory criterion, the SCREEN3 model was applied to determine an equivalence of a 25 ppm integrated methane concentration over a 50,000 ft<sup>2</sup> area. For the SCREEN3 model, we computed an equivalent methane emission rate that would result in a 25 ppm integrated concentration of methane across the area at a height of 3 inches above the ground.

**Comment Response:**

The EPA thanks the commenter for their perspective. Emerging technologies are having major advances but require more information and will not be required at this time.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 23

**Comment Excerpt:**

The results from the SCREEN3 modelling for an integrated methane concentration of 25 ppm measured 3 inches above ground surface during an anemometer wind speed of 5 mph for a 50,000 ft<sup>2</sup> (4,645 m<sup>2</sup>) square area are provided below.

Summary of SCREEN3 Output		
Stability Class	Emission Flux (g/s .. m <sup>2</sup> )	Emission Rate (g/s)
1(A)	0.00110	5.1
4(D)	0.00047	2.2

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, comment excerpt number 11, under comment code 10g.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 24

**Comment Excerpt:**

It should be noted that this analysis provides a lower calculated emission rate than a true integrated concentration because the maximums at each distance are output by SCREEN3, rather than average concentrations integrated across the entire area.

Calculated Methane Emission Rates for a 50,000 ft <sup>2</sup> Source Area Based on SCREEN3		
Stability Class	Emission Flux (g/s-m <sup>2</sup> ) Emission Rate (g/s)	Emission Rate (g/s)
A	0.00023 to 0.00083	1.1 to 3.8
D	0.00010 to 0.00035	0.46 to 1.6

From Table 3, it is evident that there can be a very large emission flux and emission rate range associated with a single integrated concentration value for methane.

Based on the above table, the EPA could, as a starting point, give consideration to a regulatory threshold methane emission flux rate of 0.00042 g/s-m<sup>2</sup>. This is the median value between the highest and lowest modelled methane emission flux rates. This value would include the effect of organic content of waste and biological oxidation facilities such as biocovers and biofilters on methane emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, comment excerpt number 11, under comment code 10g.

**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 21

**Comment Excerpt:**

**We do not Support a Methane Threshold Less than 500 ppmv for Tier 4.**

The EPA requests comment on whether a level between 200 and 500 ppm is appropriate for the Tier 4 provisions, and whether setting the level below a specific point in this range poses fire or other safety concerns for operating a GCCS.

As EPA states in Docket ID Number EPA-HQ-OAR-2014-0451-0084, California ARB initially proposed a 200 ppm SEM threshold for both GCCS installation and for GCCS operation in its regulation. However, ARB finalized 500 ppm for GCCS operation because a lower threshold could cause an operator to overdraw the vacuum on the GCCS (to avoid a surface exceedance), which in turn could draw in too much oxygen and possibly cause fires. The EPA recognized these concerns with setting the threshold too low, which may in turn cause operators of voluntary GCCS to overdraw the vacuum on the GCCS, and therefore has proposed a level of 500 ppm

considering both environmental protection and safety. It appears EPA has already sufficiently answered its own question as to the appropriate level for Tier 4 demonstration. We agree with EPA's analysis to retain the 500ppm limit, as proposed.

**Comment Response:**

The EPA is retaining the 500 ppm surface methane emissions threshold because 500 ppm is consistent with the level the EPA determined to be appropriate to demonstrate that a GCCS is well-designed and well-operated. The EPA considered 200 ppm integrated readings. However as stated in 80 FR 52129, the 500 ppm threshold is consistent with California instantaneous surface methane requirements. Further, the EPA continues to highlight the concerns associated with the potential for owners or operators of voluntary systems overdraw the vacuum which could increase the risk of a fire. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 47

**Comment Excerpt:**

The EPA requested comments on whether a value between 200 ppm and 500 ppm should be considered. We do not believe that reducing the 500 ppm limit is necessary. Given that methane is generally 50% of the makeup of landfill gas, 500 ppm represents only 0.1% of the levels found in landfill gas. If landfill gas is present, 500 ppm is sufficient to capture it.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt number 21, under comment code 10g.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 14

**Comment Excerpt:**

The DEP agrees with EPA that a level of 200 ppm may cause operators of voluntary GCCS to overdraw vacuum on the GCCS (to avoid a surface exceedance) which in turn could draw in too much oxygen, possibly causing a fire in the landfill. The DEP believes that the level should be

500 ppm in keeping with the same level and procedures established in 40 CFR Part 60, Subpart WWW.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt number 21, under comment code 10g.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 40

**Comment Excerpt:**

EPA has requested comment on whether the new Tier 4 trigger of 500 ppm for GCCS installation is appropriate. As identified in the California ARB, we are concerned that setting the threshold any lower may cause the GCCS to overdraw the vacuum, which may contribute to safety concerns or cause a fire. Accordingly, Republic supports the proposed threshold and opposes any threshold lower than 500 ppm.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt number 21, under comment code 10g.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 24

**Comment Excerpt:**

*In the proposed rules, USEPA requested comments on lowering the exceedance threshold for SEM to a level between 200 and 500 ppm.*

We do not support lowering the methane threshold for SEM or Tier 4 monitoring. As discussed in the background for the proposed rules, California ARM initially proposed a 200 ppm SEM threshold for both GCCS installation and for GCCS operation, but finalized the regulation at 500 ppm because a lower threshold would have cause an operator to overdraw the vacuum on the GCCS to avoid a potential exceedance, which in turn could draw in too much oxygen and possibly cause a fire. We support their decision and feel that a change in the methane threshold for SEM is not justified at this time. Landfills will always emit some level of fugitive emissions due to the separation of the perforated collection pipe from the surface of the landfill which is necessary to prevent air intrusion. A 500 ppm surface leak is a very small emission point,

however, it is large enough to warrant correction by mobilizing equipment, etc. Smaller leaks may not even present themselves after a rain event.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt number 21, under comment code 10g.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 37

**Comment Excerpt:**

In order for Tier 4 to be utilized, we recommend a few changes to the proposed methodology. As EPA acknowledges, the use of Tier 4 would incentivize best practices such as the use of oxidative landfill covers, interim gas control measures, and/or organic waste diversion, so its use should be encouraged. However, the proposed criteria for implementing Tier 4 SEM are too restrictive and may make this option impracticable. Therefore, we recommend the following modifications:

Background Concentration – The current proposed Tier 4 has a 500 ppm threshold but does not specify that this concentration is above the background concentration. As such, we request that, in describing the 500 ppm threshold, EPA reference the background concentration.

**Comment Response:**

The exceedance threshold for Tier 4 is 500 ppm methane above background not an absolute value of 500 ppm methane. The regulatory section for Test methods and procedures, see 60.35f(a)(6)(ii) provide the instructions for how to calculate the background concentration.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 41

**Comment Excerpt:**

In order for Tier 4 to be utilized, we recommend a few changes to the proposed methodology. As EPA acknowledges, the use of Tier 4 would incentivize best practices such as the use of oxidative landfill covers, interim gas control measures, and/or organic waste diversion, so its use

should be encouraged. The criteria for implementing Tier 4 SEM are too strict. Given that, Tier 4 may experience very limited use. Therefore, we recommend the following modifications:

Background concentration – The current proposed Tier 4 has a 500 ppm threshold but does not specify that this concentration is above the background concentration. As such, to be consistent with other SEM requirements, we request that when describing the 500 ppm threshold that EPA reference the background concentration.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194, comment excerpt number 37, under comment code 10g.

## **10.8 Tier 4 - Exceedance Number**

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 104

**Comment Excerpt:**

If an exceedance of 500 ppm over background is detected during a "Tier 4" SEM event, WM recommends that the landfill owner/operator follow the same procedures and timelines for remediation and re-monitoring as outlined in subpart WWW. Should a site owner/operator be unable to remediate an exceedance, the site will be required to prepare a GCCS design plan within one year of the initial "Tier 4" SEM exceedance, and within 30-months of the initial exceedance a GCCS would be installed within the monitored area.

**Comment Response:**

The EPA is requiring a GCCS to be installed and operated within 30 months of the most recently calculated NMOC emission rate of 34 Mg/yr or greater according to Tier 2, once there is any measured concentration of methane of 500 ppm or greater from the surface of the landfill. The EPA is not allowing for corrective action as part of the Tier 4 demonstration to ensure that landfills employ operational practices that minimize emissions. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 79

**Comment Excerpt:**

If an exceedance of 500 ppm over background is detected during a "Tier 4" SEM event, Republic recommends that the landfill owner/operator follow the same procedures for remediation and remonitoring as outlined in subpart WWW. Should a site owner/operator be unable to remediate an exceedance, the site will be required to prepare a GCCS design plan

within one year of the initial "Tier 4" SEM exceedance, and within 30-months of the initial exceedance a GCCS would be installed within the monitored area.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 104, under comment code 10h.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 90

**Comment Excerpt:**

If, an exceedance of 500 ppm over background is detected during a "Tier 4" SEM event, we propose the following: The landfill will follow the same timelines and re-monitoring procedures as currently outlined in the Subpart WWW. However, in place of expanding the wellfield, should a site be unable to timely remediate an exceedance, the site will be required to prepare a GCCS design plan within one year of the initial "Tier 4" SEM exceedance and within 30-months of the initial exceedance a GCCS will be installed in the areas that were unable to timely remediate the surface emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 104, under comment code 10h.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 18

**Comment Excerpt:**

If an exceedance of 500 ppm over background is detected during a "Tier 4" SEM event the following process is proposed. The landfill will follow the same timelines and re-monitoring procedures as currently outlined in the NSPS WWW. However, in place of expanding the well field, should a site be unable to timely remediate an exceedance, the site will be required to prepare a GCCS design plan within one year of the initial "Tier 4" SEM exceedance and within 30-months of the initial exceedance, a GCCS will be installed in the areas that were unable to timely remediate the surface emissions.

**Comment Response:**



See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 104, under comment code 10h.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

Concentration measurements can have a large range of variability, in relation to equivalent emission rates (see Section 6.1 [discusses incompatibility between concentration and emission rate measurement approaches]), compared with AMM method measurements. Thus, consideration should be given to a maximum of two exceedences as measured by the AMM method over a period of one year before requiring GCCS installation.

**Comment Response:**

The EPA is finalizing the Tier 4 surface emissions demonstration in both the final NSPS and Emission Guidelines. The EPA is requiring installation of a GCCS upon any measured concentration of methane of 500 ppm or greater from the surface of the landfill—without any corrective action, to ensure that landfills employ operational practices that minimize emissions. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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## 10.9 Tier 4 SEM Notification

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 38

**Comment Excerpt:**

EPA has requested comment on whether landfill owners or operators should provide notification to regulators prior to conducting a quarterly Tier 4 SEM. This notification affords regulators the opportunity to observe the monitoring event and will provide greater transparency and trust. In general, Republic agrees that the notification requirement is reasonable. However, we recommend that EPA confirm that landfills should not be required to re-schedule monitoring events based on the availability of regulatory authorities because it could delay required monitoring and interfere with efforts to meet compliance deadlines. Such coordination would also be exacerbated by EPA's proposed wind speed requirements, for the reasons noted above. So long as sufficient notice is provided, EPA should confirm that landfills may proceed with a scheduled monitoring event regardless of the availability of agency personnel.

**Comment Response:**

The EPA is finalizing a requirement to notify delegated authorities 30 days prior to the Tier 4 test so that officials can be present to observe the SEM. The final rules do not require that regulatory authorities are present during the Tier 4 test. Instead this notification serves as an opportunity for the regulatory authority to arrange to be present. The landfill owner or operator is not required to reschedule monitoring events based on the availability of the regulatory authorities provided the 30 day notification process has been completed. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 48

**Comment Excerpt:**

The EPA requested comments on whether landfill owners or operators should provide notification to regulators prior to conducting the quarterly Tier 4 SEM. This notification affords regulators the opportunity to observe the testing and provides greater transparency and trust. As such, this is a reasonable requirement and is acceptable to us, although we note that while conducting SEM after the GCCS is installed under the rule, landfills are not required to notify regulators prior to conducting monitoring. In addition, with the existing wind requirements, coordination with regulators becomes even more challenging.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 38, under comment code 10n.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 41

**Comment Excerpt:**

The EPA requested comments on whether landfill owners or operators should provide notification to regulators prior to conducting the quarterly Tier 4 SEM. This notification affords regulators the opportunity to observe the testing and provides greater transparency and trust. As such, this is a reasonable requirement as long as it is clear that it is a notification requirement only, and not an approval. It should also be noted that with the existing wind requirements, coordination with regulators becomes even more challenging.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 38, under comment code 10n.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 23

**Comment Excerpt:**

EPA has requested comments on whether landfill owners or operators should provide notification to regulators prior to conducting the quarterly Tier 4 SEM. This notification affords regulators the opportunity to observe the testing and provides greater transparency and trust. As such, this is a reasonable requirement and is acceptable to the landfill industry.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 38, under comment code 10n.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs  
**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0197  
**Comment Excerpt Number:** 10

**Comment Excerpt:**

The rule should enable regulatory agencies to require advanced notification of SEM monitoring (e.g., seven days or more), in case the agency wishes to observe or audit the monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 38, under comment code 10n.

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**Commenter Name:** Sean Alteri, Director  
**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0146  
**Comment Excerpt Number:** 8

**Comment Excerpt:**

KDAQ currently requires notification before surface emissions monitoring events at Kentucky landfills. Due to the implications of Tier 4 testing, KDAQ requests that the U.S. EPA require Administrator notification prior to conducting Tier 4 surface emissions monitoring at a landfill.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 38, under comment code 10n.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 25

**Comment Excerpt:**

*In the proposed rules, USEPA requested comments on whether landfill owners should provide notification to USEPA when conducting Tier 4 SEM.*

We do not support a required notification, similar to performance test notification, when a facility elects to complete a Tier 4 SEM. Since the Tier 4 is an elective demonstration, there is no need for agency notification and it would be another administrative burden on the facility and the agency with no added benefit.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 38, under comment code 10n.

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**10.10 Tier 4 SEM Corrective Action**

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 43

**Comment Excerpt:**

Corrective action – We recommend that the Tier 4 SEM be modified to allow some level of corrective action. When conducting SEM over a large area collecting thousands of data points, a single exceedance does not mean that sufficient quantities of landfill gas is present to necessitate installation of a GCCS. The exceedance could represent a small crack that recently formed in the cover due to rain, vehicle traffic across the cover, or settlement, and could very easily be corrected once discovered. However, this would not be allowed under the rule as written. A small leak at a single point could be easily correctable with simple cover repair, which, in many cases, can be completed within minutes of detecting the exceedance.

EPA selected a 500 ppm threshold for Tier 4 because it has been demonstrated that a well-designed and well operated GCCS should be able to operate the landfill within this threshold. In

other words, when conducted properly, SEM is a good indicator of how well a landfill with a GCCS is operating overall. The current and proposed rules provide operational flexibility with established timelines for corrective action, recognizing that even a well-designed and well-operated GCCS will experience exceedances occasionally. In doing so, EPA has acknowledged that as long as such exceedances are corrected successfully, the GCCS is operating well and improvements are not needed. If landfills without a GCCS were subject to the same criteria, the 500 ppm would demonstrate that any methane emissions would be as low as those allowed at a landfill with a well-operated and well-designed GCCS in place.

By eliminating the corrective action opportunity, Tier 4 may become the tier of last resort rather than implemented early. Rather than prohibiting corrective action, we recommend providing an opportunity to correct any exceedance in a timely manner, similar to the existing SEM allowances in the current rule and the existing California LMR rule, which allows a specified corrective action period that, if successful, allows the site to maintain exemptions granted after four quarters without exceedances. The rule should specify that all readings above 500 ppm be recorded with documentation of corrective action mechanisms implemented and the results of re-monitoring. Tier 4 SEM should be conducted quarterly until such time as a GCCS is installed, another tier is utilized, or the estimated emissions drop below the threshold.

Similar to the SEM for landfills with active GCCSs, if an exceedance is detected, the landfill should undertake corrective action and the location should be re-monitored within 10 days. If re-monitoring shows an exceedance, additional corrective action should be taken and the location should again be re-monitored within 10 days. If re-monitoring shows a third exceedance, the landfill should prepare a GCCS design plan within one year of the initial exceedance and install a GCCS within 30-months of the initial exceedance.

In light of this fact, we request that EPA consider one 10-day corrective action/re-monitoring cycle as part of the Tier 4 criteria. This seems like a much more reasonable approach, which would allow minor exceedances that can be remediated easily and quickly to not cause an immediate failure of the Tier 4 criteria. We are concerned that without this allowance, Tier 4 would have limited value to landfills and would not be successful in preventing the unnecessary operation of GCCS at landfills or in landfill areas that simply do not have enough gas generation to warrant collection.

**Comment Response:**

Under the final Tier 4 provisions, the EPA is requiring installation of a GCCS upon any measured concentration of methane of 500 ppm or greater from the surface of the landfill—without any corrective action, to ensure that landfills employ operational practices that minimize emissions. See Section VI.B of the 2016 NSPS Final Preamble. See Section VI.B of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 39

**Comment Excerpt:**

Corrective action – We recommend that the Tier 4 SEM be modified to allow some level of corrective action. When conducting SEM over a large area collecting thousands of data points, a single exceedance does not mean that sufficient quantities of landfill gas are present to necessitate installation of a GCCS. The exceedance could represent a small crack that recently formed in the cover which could very easily be corrected once discovered.

The EPA selected a 500 ppm threshold for Tier 4 because it has been demonstrated that a well-designed and well operated GCCS should be able to operate the landfill within this threshold. In other words, SEM is the ultimate indicator of how well a landfill with a GCCS is operating overall. The current and proposed rules provide operational flexibility with established timelines for corrective action, recognizing that even a well-designed and well-operated GCCS will experience exceedances occasionally. In doing so, the EPA has acknowledged that as long as such exceedances are corrected successfully, and the GCCS is operating well, improvements are not needed. If landfills without a GCCS were subject to the same criteria, the 500 ppm would demonstrate that any methane emissions would be as low as those allowed at a landfill with a well-operated and well-designed GCCS in place.

By eliminating the corrective action opportunity, Tier 4 may become the tier of last resort rather than implemented early. Rather than prohibiting corrective action, we recommend providing an opportunity to correct any exceedance in a timely manner, similar to the existing SEM allowances in the current rule, which allow a specified corrective action period that, if successful, allows the site to maintain exemptions granted after four quarters without exceedances. The rule should specify that all readings above 500 ppm be recorded with documentation of corrective action mechanisms implemented and the results of re-monitoring. Tier 4 SEM should be conducted quarterly until such time as a GCCS is installed, another tier is utilized, or the estimated emissions drop below the threshold.

We therefore request that EPA consider including provisions to allow a one 10-day corrective action/remonitoring cycle before certain SEM exemptions or alternatives are lost. This is a much more reasonable approach that would allow minor exceedances that can be remediated easily and quickly, to not cause an immediate failure of the Tier 4 criteria. Without this allowance, Tier 4 would have limited value to landfills and would not be successful in preventing the unnecessary operation of GCCS at landfills or in landfill areas that simply do not have enough gas generation to warrant collection.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0215-0196, excerpt number 43, under comment code 10o.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 13

### **Comment Excerpt:**

We agree with EPA's requirements that the landfills demonstrate that surface emissions are below 500 ppm over four consecutive quarters of measurement, and the shift to semi-annual Tier 4 SEM following four quarters without an exceedance. As described later in these comments, we are concerned that a requirement to install a GCCS on the basis of one identified exceedance of 500 ppm is unnecessarily punitive, and we have some suggestions that could make the proposed approach more workable.

WM Recommends that Tier 4 SEM Approach be Modified to Allow for a Single, Ten-Day Corrective Action Period for each Exceedance of the 500 ppm Threshold Detected.

Thousands of data points are collected when conducting SEM over a large area, and a single exceedance does not automatically indicate that sufficient landfill gas is present to necessitate installation of a GCCS. In fact, detections for small leaks after installation of a GCCS are routinely correctable with simple cover repair, which, in many cases, can be completed within hours or days of detecting the exceedance.

The EPA selected a 500 ppm threshold for Tier 4 because it has been demonstrated that a landfill with a well-designed and well operated GCCS should be able to meet this threshold. In other words, when conducted properly, quarterly SEM is a good indicator of how well a landfill with a GCCS is operating overall. The current and proposed rules provide operational flexibility with established timelines for corrective action, recognizing that even a well-designed and well-operated GCCS will experience exceedances occasionally. In doing so, the EPA has acknowledged that as long as such exceedances are corrected successfully and in a timely manner, the GCCS is operating well and improvements are not needed. Allowing landfills without a GCCS a single, ten-day corrective action period when a Tier 4 exceedance is detected would ensure that landfills are not required to install GCCS on the basis of a single, easily remediated event.

Without the corrective action opportunity, Tier 4 will be far less effective as a good predictor of the appropriate timing for GCCS installation. **A single, 10-day corrective action period will allow for simple corrections of cover deficiencies and will avoid forced installation of GCCS before actual LFG generation would support its proper operation.** Furthermore, with no ability to take simple corrective action, Tier 4 may become the tool of last resort rather than a flexible tool supported by EPA and industry, environmental groups, and state regulatory agencies. Rather than prohibiting corrective action, we recommend providing an opportunity to correct any exceedance in a timely manner, similar to the existing SEM allowances in the current rule, which allows a specified corrective action period that, if successful, allows the site to maintain exemptions granted after four quarters without exceedances.

We are concerned that few landfills will use Tier 4 if EPA finalizes the provision and fails to provide even a single corrective action opportunity. As currently proposed, if a landfill finds a single 500 ppm exceedance during a Tier 4 test, EPA is requiring development of a design plan and installation/operation of a GCCS. The Tier 4 test provides a useful tool to better characterize the actual emissions from a site. Use of Tier 4 should be encouraged rather than discouraged as it will enhance decision-making.

### **Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0215-0196, excerpt number 43, under comment code 10o.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 35

**Comment Excerpt:**

Republic recommends that EPA consider allowing landfills to perform corrective measures within 10 calendar days of detecting an exceedance above 500 ppm as part of a Tier 4 demonstration. A ten-day window would allow landfills that have identified an exceedance through surface monitoring to determine whether remedial work could correct the emissions exceedance without a GCCS or whether a GCCS is warranted. For example, the exceedance could be the result of a small crack recently formed in the cover due to rain, vehicle traffic, or settlement of the waste that could very easily be corrected without the need for a GCCS. Particularly given that 500 pm only represents 0.05% methane, an amount insufficient to support operation of a GCCS, landfills that identify isolated exceedances should be allowed the opportunity to conduct further investigation to determine whether a GCCS is warranted. This corrective action alternative would not allow landfills to perpetually avoid a GCCS because landfills with emissions that warrant a GCCS would not be able to continually correct all exceedances. However, the absence of such correction action alternatives could present a significant disincentive to EPA's proposed Tier 4 option.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0215-0196, excerpt number 43, under comment code 10o.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 5

**Comment Excerpt:**

As written, Tier 4 would require LFG collection system installation following one reading over 500 ppm at the surface of the landfill. Delaware suggests that this be revised to allow one repair within 10 days of a reading over 500 ppm. The reasoning behind this suggestion is that an exceedance due to failure of the cover system, as can happen if a large piece of solid waste (e.g. a mattress) is present too close to the surface and is not necessarily indicative of sufficient presence of LFG. Cover system failures are easily repaired and should not trigger collection and control system installation.

**Comment Response:**



See response to DCN EPA-HQ-OAR-2014-0215-0196, excerpt number 43, under comment code 10o.

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs  
**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0197  
**Comment Excerpt Number:** 13

**Comment Excerpt:**

Tier 4 as written will require installation of a collection system triggered by one reading of greater than 500 parts per million on a landfill. SEM exceedances can be the result of large pieces of waste present too close to the cover soil (e.g., tires or mattresses). These occurrences do not reflect the need for gas collection, but rather they are an indication of insufficient cover, which is easily repaired. The facility should be allowed to repair the location of an exceedance one time, within 10 days of the discovery. If the exceedance cannot be corrected, then the installation of a collection system should be triggered.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0215-0196, excerpt number 43, under comment code 10o.

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**Commenter Name:** Richard L. Goodyear, Bureau Chief, Air Quality Bureau, Environment Department,  
**Commenter Affiliation:** State of New Mexico  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0190  
**Comment Excerpt Number:** 3

**Comment Excerpt:**

As written, the Tier 4 provision would require installation of GCCS when surface emission monitoring records just one reading of emissions greater than 500 parts per million. NMED suggests including a one-time repair to correct an exceedance caused by insufficient soil cover over large pieces of waste (e.g., mattresses). In the case that a repair cannot correct the exceedance, then installation of GCCS should be required.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0215-0196, excerpt number 43, under comment code 10o.

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**Commenter Name:** Claudia R. Rodgers, Acting Chief Counsel  
**Commenter Affiliation:** Small Business Administration  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0155  
**Comment Excerpt Number:** 7

**Comment Excerpt:**

*EPA should ensure that the Tier 4 alternative is not overly strict and provides the flexibility intended.* Small entities have expressed concern about two provisions of Tier 4. This flexibility is very important if EPA finalizes the 34 Mg/yr emission threshold, since it has the potential to significantly reduce the costs imposed on small entities.

Small entities are concerned that Tier 4 appears to allow for no corrective action before the GCCS requirement is triggered. This is draconian, and risks requiring expensive planning and installation when a small or less expensive fix would be sufficient to meet the purposes of the regulation. Advocacy recommends providing a short period of time for corrective action and re-testing before the GCCS requirement is triggered.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0215-0196, excerpt number 43, under comment code 10o.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 27

**Comment Excerpt:**

We also have concerns about the limitations of the Tier 4 monitoring, specifically that once a facility shows an SEM value over 500 ppm then they are on the clock to install a GCCS without allowing any time for corrective actions or any opportunity to step back to any other Tier 1, 2, or 3 method. We believe these limitations will cause facilities to avoid using Tier 4 and it will be seldom used.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0215-0196, excerpt number 43, under comment code 10o.

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**10.11 Other-Emission Threshold Determination**

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**Commenter Name:** Comment submitted by Michael J. Barden

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Current technology mandated in Tier III of subpart WWW for site-specific gas generation measurements is fundamentally flawed on both a conceptual and practical level and should be

revised. Additionally, alternative approaches are, in fact, available that allow measurement of LFG generation.

The New Source Performance Standard for Municipal Solid Waste Landfills provides for site-specific gas generation estimates in determining total NMOC emissions for compliance purposes (Tier III procedure, 40 CFR 60.754(a)(4)). The Tier III procedure mandates Method 2E of appendix A for determining site-specific methane generation rates.

Method 2E involves measuring the background landfill gas pressure, then pumping a gas extraction well at a measured flow rate, monitoring the gas quality in the probes to ensure that significant surface leakage is not occurring as a result of the pumping, and measuring the steady-state pressure drawdown at monitoring probes completed at various distances from the extraction well (Method 2E Section 8.7). The pressure drawdown at a monitoring probe is computed as the difference between background landfill gas pressure and the pressure attained during pumping. A radius of influence (ROI) is determined, defined as the distance from the extraction well that the drawdown becomes zero within measurement error (Section 8.7.5). The measurement error specified in Method 2E is 0.02 mm Hg. All the gas flowing to the well is assumed to be generated within the cylindrical refuse volume defined by the ROI and the depth of the landfill refuse, and that the landfill gas (LFG) extraction rate is assumed to be equal to the rate of gas generation within that volume. The total gas generation rate for the landfill is determined by dividing the gas extraction rate by the fraction of the total refuse volume represented by the cylindrical volume (Section 8.9).

Several fundamental flaws in Method 2E make it impossible to determine the landfill gas generation rate using this methodology:

1. The ROI concept that the LFG generation rate can be empirically determined by extraction well testing violates basic principles of gas flow to wells (Walter, 2003). Based on well-established principles of fluid dynamics, the pressure effects of subsurface sources and sinks are additive and independent of each other. The landfill gas generation rate and, therefore, the background landfill gas pressure are considered to be constant during the test. Thus, any pressure drawdown associated with gas extraction is independent of the landfill gas generation rate, as is the ROI. As a result, drawdown, computed as the difference between background landfill pressure and that attained during pumping, will be the same regardless of whether the background landfill pressure is high due to a high LFG generation rate, low due to a small LFG generation rate, or zero in the extreme case of no LFG being produced. The ROI and the LFG generation rate estimated by Method 2E will be the same for each of these cases. Therefore, the 2E Method will only coincidentally produce an estimate that accurately represents the actual LFG generation rate. These principles of gas flow are provided in more quantitative detail in a peer-reviewed published paper by Walter (2003) that concludes that the Tier III methodology for estimating LFG generation rates is fundamentally flawed. Walter's conclusions are verified by Pierce et al. (2004) who reported on the basis of numerical finite-difference modeling that the Method 2E extraction well "method could not measure a landfill's methane yield except by chance."

2. Independent of the theoretical validity of Tier III, Method 2E measurements, in practice, the ROI (and the predicted LFG generation rate) is affected by the cover and landfill refuse gas permeabilities, neither of which are directly associated with LFG generation. A given gas well extraction rate will result in a larger ROI if the vertical gas permeability of the cover is small or

the vertical anisotropy (ratio of horizontal to vertical gas permeability) is large. Thus a landfill equipped with a low permeability cover will exhibit a smaller Tier III Method 2E LFG generation rate than the same landfill equipped with a high permeability cover.

3. The ROI is also affected by the pressure measurement sensitivity, which again is independent of the actual LFG generation rate. The computed ROI will increase with the sensitivity of the pressure measurements because the calculation of smaller and smaller measurable (non-zero) drawdowns will be possible. Therefore, the more sensitive the pressure measurements, the larger will be the computed ROI, and the smaller the calculated total gas generation rate. (Walter, 2003)

Given the conceptual and practical problems inherent in Method 2E, it is recommended that EPA reconsider choosing Method 2E as the obligatory method to be used in measuring gas generation rate(s). It is recommended that the EPA consider revising or replacing Method 2E to provide more accurate and scientifically justifiable methods of measuring gas generation.

[Footnotes]

Walter, G.R. 2003. Fatal Flaws in Measuring Landfill Gas Generation Rates by Empirical Well Testing. *J. Air & Waste Management* 53, p 461.

Pierce, J, L. LaFountain, R. Huitric. 2004. LFG Generation and Modeling Manual of Practice, (Solid Waste Association of North America (SWANA))

**Comment Response:**

The EPA thanks the commenter for their feedback on the uncertainties associated with EPA Method 2E. Revisions to Method 2E are outside the scope of this final rule. The EPA has not mandated the use of Tier 3 in the final rules; therefore it disagrees with the commenter that it is an obligatory method. Tiers 1, 2, and 4 are available to evaluate the timing of installation and operation of a GCCS.

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**Commenter Name:** Comment submitted by Michael J. Barden

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

The rule should also be modified to allow approved States to permit the use of alternate gas generation rate estimation methods to be used as long as they are demonstrated to the State's satisfaction to be equally or more protective of human health and the environment. This rule modification would facilitate alternative gas generation measurement methodologies in the context of permit development without implementing federal review independent of the permitting process.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter - DCN-EPA-HQ-OAR-2014-0451-0194 (page 5). This response is for both of these comments. In the final

Emission Guidelines, the EPA is retaining the authority to approve alternative methods to determine the NMOC concentration or a site-specific methane generation rate constant (k). However, the owner or operator may include in the collection and control system design plan any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions of §§ 60.34f through 60.39f proposed by the owner or operator.

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**Commenter Name:** Comment submitted by Michael J. Barden  
**Commenter Affiliation:** Hydro Geo Chem, Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1  
**Comment Excerpt Number:** 4

**Comment Excerpt:**

A suggested possible alternative to Method 2E is the baro-pneumatic method (Bentley et al, 2002, 2003, 2005, Smith et al., 2006; SWANA, 2007; Jung et al, 2011). This site-specific, field measurement methodology provides scientifically defensible estimates of a landfill's gas generation rates that are sufficiently accurate to quantify available LFG and thereby determine, with conventional measurement of the LFG collected, the efficiency of a landfill GCCS. A brief description of the baro-pneumatic method is attached to this Comments submission as Attachment A [see original submission for Attachment].

The baro-pneumatic method is a field-measurement approach to determine the landfill's gas generation rates and its pneumatic properties (gas-filled porosities and vertical and horizontal gas permeabilities). The technology is based on the observation that diurnal (twice daily) barometric pressure waves impinge on the landfill's surface and propagate downward into the landfill at velocities and pressure amplitudes that can be monitored in gas piezometers and interpreted to yield estimates of vertical gas permeabilities (Weeks, 1978) and landfill gas generation rates (Bentley et al, 2002, 2003, 2005; Smith et al., 2006; SWANA, 2007; Jung et al, 2011). The baropneumatic method is based on the assumption that LFG generation rates are essentially constant over the three- to four-day monitoring period, an assumption easily verified by observing the match between simulated and measured pressure responses over the entire time of the field test. Any changes in LFG generation rate would be reflected in the model match.

Coupled with data from short-term gas extraction well tests, including horizontal gas permeabilities and gas-filled porosities, these baro-pneumatic parameters can serve as the basis for designing a landfill GCCS and optimizing its performance. This baro-pneumatic design approach is equally effective for the design of a LFG collection system, a LFG migration control system, a LFG emissions or odor control system, or conversion of a landfill to an aerobic or anaerobic bioreactor.

[Footnotes]

Bentley, H. W., G. R. Walter., S. J. Smith., J. Tang, and C.T. Williamson. 2002. "Method and system for estimating gas production by a landfill or other subsurface source", (US) Patent No. US 6,611,760 B2. June 19, 2002.

Bentley, H.W., S. Smith, J. Tang, and G.R. Walter. 2003. A Method for Estimating the Rate of Landfill Gas Generation by Measurement and Analysis of Barometric Pressure Waves. Proceedings of the 18th International Conference on Solid Waste Technology and Management, Philadelphia, Pennsylvania, March 23-26, 2003.

Bentley, H.W., S. J. Smith, and T. Schrauf. 2005. Baro-pneumatic Estimation of Landfill Gas Generation Rates at Four Operating Landfills. *Proceedings, SWANA's 28th Annual Landfill Gas Symposium*, San Diego. March 7-10, 2005.

Smith, S.J., Bentley, H.W., and K. Reaves. 2006. Systematic design of methane migration control systems Proceedings, 29th Annual SWANA Landfill Gas Symposium, St. Petersburg FL, 18 pp. March 27-30, 2006.

SWANA. 2007. Landfill Gas System Collection Efficiencies, Applied Research Foundation Landfill Gas Project Group, February, 2007.

Jung, Y, P. Imhoff, S. Finsterle. 2011. Estimation of Landfill Gas Generation Rate and Gas Permeability Field of Refuse Using Inverse Modeling, *Transp Porous Med* 90:41–58.

Weeks, E.P. 1978. Field determination of vertical permeability to air in the unsaturated zone. U.S. Geological Survey Professional Paper 1051.

**Comment Response:**

The EPA thanks the commenter for their perspective. Emerging technologies, like baro-pneumatic method are having major advances but require more information and will not be required at this time.

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**Commenter Name:** Comment submitted by Michael J. Barden

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1

**Comment Excerpt Number:** 5

**Comment Excerpt:**

The method can be applied to an operating or closed, lined or unlined landfill, equipped or not equipped with a GCCS.

Interpretation of the field data requires the construction and calibration of a numerical gas-flow and transport model of the landfill. We use the integrated finite-difference model code TRACRN (Travis and Birdsell, 1991) and versions of this code that have modules capable of simulating microbial degradation, thermodynamics, or geochemistry and operate in an inverse (self-calibrating) mode. The landfill model is constructed from known or estimated structural properties such as refuse, cover, and liner dimensions and the pneumatic properties of the landfill, including its vertical and horizontal gas permeabilities and gas-filled porosities. Calibration of the model is conducted by adjusting its pneumatic properties to obtain a best match to atmospheric and sub-surface pressures monitored over a 3 to 4 day period. The model can simulate the impacts of design modifications on the GCCS's performance, allowing LFG

collection efficiency and methane content to be maximized. Thus, the baro-pneumatic method is suggested as meeting EPA's request for a new technology and practice that could improve collection and control of landfill gas emissions.

The accuracy of baro-pneumatic estimates of LFG generation rates is difficult to quantify because there appears to be no reliable standard measurement process to compare to.

1. Jung et al. (2011) addressed this problem by generating synthetic observation data from forward simulations for gas extraction tests and a baro-pneumatic test, and using these data to test the inversion procedure. The accuracy of the baro-pneumatic methodology to quantify methane generation rates and to estimate the gas permeability field was examined using inverse modeling. The inverse model was able to reproduce the spatial permeability distribution using the transient pressure changes in response to the withdrawal of LFG during the pumping test. The LFG generation rate was also successfully estimated using the data from the baro-pneumatic test, with errors of less than two percent. This peer-reviewed paper concluded that the baro-pneumatic methodology is robust and produces accurate estimates of gas permeability fields and gas generation rates. Key to the success and applicability of the baro-pneumatic method is its reliance on pressure transducer measurements that are accurate to four significant figures and capable of measuring pressure differences as small as 0.00025 pounds per square inch (0.02 mbar).

2. A second test of the baro-pneumatic method's accuracy is how well its predictions agree with project outcomes. In Bentley et al, (2005) the method provided excellent results in estimating LFG collection efficiency for the one landfill studied – the North Shelby Landfill in Millington, Tennessee – that was equipped with an LFG collection system. The landfill's LFG collection efficiency was obtained by dividing the measured gas collection rate by the LFG generation rate obtained from the baro-pneumatic method.

The North Shelby Landfill's total LFG generation rate and LFG collection rate, reported in standard cubic feet per minute (scfm), and the percentage LFG collection efficiency are presented in Table 1. The first-order decay model for the North Shelby Landfill, taken from Pelt et al (1998), was calibrated by entering the LFG generation rates found in areas with their known waste disposal times. SOLVER, an Excel-based non-linear mathematical solution model was then employed to find the best fit for a site specific value of  $L_0$ , the waste's methane potential ( $\text{m}^3/\text{metric ton}$ ), and its rate constant  $k$  ( $\text{year}^{-1}$ ). The landfill was found to have a methane potential  $L_0$  of  $10^3 \text{ m}^3/\text{metric ton}$  and a rate constant  $k$  of 0.078 per year. By way of comparison, the use of the AP-42 default parameters,  $L_0 = 100 \text{ m}^3/\text{metric ton}$  and  $k = 0.04/\text{yr}$ , resulted in a LFG generation rate of 2,853 scfm. Thus the default LFG rate was 16 percent less than the amount actually collected, resulting in an estimated LFG collection of 119%. The baro-pneumatic estimated LFG collection efficiency using the site specific 1st order decay equation was a more reasonable 81.7%.

<b>TABLE 1</b> <b>Estimated Landfill Gas Collection Efficiency</b> <b>at the North Shelby Landfill in Year 2005</b>		
Cover/LFG Recovery System	Estimate of LFG Generation Rate	Measured Collection Efficiency
Final Clay Cover	Baro-pneumatic 4,160 scfm	3,400 scfm
System on Line 01/2005	AP-42 2,853 scfm	3,400 scfm

Another example of the accuracy (and sensitivity) of the baro-pneumatic method is provided by a landfill GCCS in Arizona. The 12-hectare landfill was equipped with a GCCS and flare, but upon system startup, the flare only operated for a week, then went out and could not be relit. Diagnosis of the problem revealed that LFG generation was insufficient to light the flare and that the landfill was generating no more than 50 m<sup>3</sup>/hr. The GCCS design had been based on a field measurement of LFG gas using EPA's Tier III Method 2E which had predicted an LFG rate of 600 m<sup>3</sup>/hr, and on an estimate of LFG generation by a LandGEM model using default AP-42 parameters, which had predicted an LFG rate of about 450 m<sup>3</sup>/hr. A 1-day limited baro-pneumatic investigation yielded an estimated LFG generation rate of 40 m<sup>3</sup>/hr, consistent with the diagnostic results and less than 10% of the other LFG estimates. The measurement sensitivity of the baro-pneumatic estimate was better than 5.6×10<sup>-6</sup> m<sup>3</sup> LFG/m<sup>2</sup>-min. This example, which resulted in a useless \$2.2M GCCS, illustrates the value in knowing how much LFG is being generated before starting construction.

3. The strongest indication of accuracy of baro-pneumatic estimates of LFG generation rates is provided by results of the use of these estimates in HGC's landfill gas projects. Table 2 (see original submittal for Table) summarizes these 39 projects, 33 of which included conducting a baro-pneumatic investigation; 31 that estimated LFG generation rates; 19 that used the baro-pneumatic results to design an efficient GCCS; and 16 that used the method to design an LFG migration control system. With one exception, all of Table 2's 16 methane migration control projects and 19 GCCS design projects that depended on baro-pneumatic estimates met or exceeded project goals. The exception was a Georgia landfill GCCS whose gas extraction wells were flooded by a torrential rainfall event after the gas migration control system had been baro-pneumatically designed and installed. We submit that this extraordinary level of success is ample confirmation of the accuracy of baro-pneumatic estimates of LFG generation rates and the utility of the method for LFG engineering purposes, including GCCS engineering design.



[Footnotes]

Bentley, H.W., S. J. Smith, and T. Schrauf. 2005. Baro-pneumatic Estimation of Landfill Gas Generation Rates at Four Operating Landfills. *Proceedings, SWANA's 28th Annual Landfill Gas Symposium*, San Diego. March 7-10, 2005.

Pelt, R, R.L. Bass, R.E. Hinton, C. White, A. Blackard, C. Burklin, A. Reisdorph, and S. A. Thorneloe. 1998. User's Manual Landfill Gas Emissions Model, Version 2.0, Prepared for Control Technology Center, USEPA and USEPA Office of Research and development.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0096.1, excerpt number 4, under comment code 10z.

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**Commenter Name:** Comment submitted by Michael J. Barden

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

It is recommended that the EPA consider accepting the baro-pneumatic method as an alternative method of measuring gas generation. An additional advantage of such a rule change is that it would encourage the use of a baropneumatic investigation to provide a value-added calibrated gas flow and transport model suitable to design an efficient GCCS and simulate its performance.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0096.1, excerpt number 4, under comment code 10z.

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**Commenter Name:** Hydro Geo Chem, Inc.

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0194

**Comment Excerpt Number:** 1

**Comment Excerpt:**

HGC has developed a landfill gas (LFG) monitoring capability that provides accurate estimates of LFG (and methane) generation rates, as well as the landfill's gas permeabilities. The method, termed the baro-pneumatic method (BPM), has been successfully applied to more than 40 landfills, both in the United States and internationally, to provide estimates of LFG generation rates, to assess LFG collection system feasibility, and to improve design and efficiency of LFG collection and control systems (GCCS).

The BPM is a field-measurement approach to determine the landfill's gas generation rates and its pneumatic properties (vertical and horizontal gas permeabilities and gas-filled porosities). These parameters can serve as the basis for designing an efficient GCCS and optimizing its performance. This approach is a significant improvement in LFG engineering and is equally effective for the design of a LFG collection system, a LFG migration control system, a LFG emission or odor control system, or conversion of a landfill to an aerobic or anaerobic bioreactor.

### **Field Measurements**

The BPM measures diurnal (2 per day) barometric pressure peaks at the landfill surface and the pressure response to these changes in monitoring probes implanted within the landfill. For unlined landfills some probes may be completed into soils surrounding and underlying the landfill to track LFG migration. The probes are typically two or three nested, 1-inch diameter gas piezometers equipped with downhole vented pressure transducers, each piezometer containing a battery powered time-synchronized data acquisition system (DAS). An absolute pressure transducer collects and records atmospheric pressure data at the landfill surface. Figure 1 is a schematic of a BPM landfill installation.

Gas-extraction test wells are also installed in the landfill at a typical placement of 1 well per 2 hectares. These wells are typically 10 cm in diameter, screened in the lower 2/3 of the landfill refuse, and located within 20 meters of at least one of the monitoring probe nests. Three-step drawdown extraction tests performed on these wells take about 4 hours and are performed to measure gas porosity, horizontal gas permeability, well efficiency, and maximum pumping rate, all important to the design of an efficient GCCS. To save on costs, some sites have been able to use previously installed collector wells.

Barometric and down-hole pressures are measured at 10 minute intervals for 3 to 4 days, completing the BPM data collection. If needed, the probes can be capped, left in place, and periodically revisited and reequipped with transducers to identify changes in LFG generation rates. Revisiting all the probes and collecting updated monitoring data takes 3-4 man-days and is inexpensive.

### **Test Interpretation**

Interpretation of the field data requires the construction and calibration of a numerical gas-flow and transport model of the landfill. HGC uses the integrated finite-difference model code TRACRN (Travis and Birdsell, 1991), and versions of this code that are capable of simulating microbial degradation, thermodynamics, and geochemistry and operating in an inverse (selfcalibrating) mode. The landfill model is constructed from known or estimated structural properties such as refuse, cover, and liner dimensions and landfill pneumatic properties. Calibration of the model is conducted by varying pneumatic properties in the model to obtain a match to atmospheric and sub-surface pressures monitored over a 3-4 day period. Such a calibrated model not only provides accurate estimates of LFG generation rates, but is also the ideal tool to design an efficient GCCS. The model can simulate the impacts of design modifications on the GCCS's performance, allowing LFG collection efficiency and methane content to be maximized. The observed LFG pressure gradients and the gas permeabilities obtained from the calibration process are incorporated into Darcy's Law (Eq1) to determine LFG generation rates:

$$\text{LFGgen/A} = \text{kg(P/z)} \text{ (Eq1)}$$

where:

LFGgen is the landfill gas generation rate

kg is the gas permeability,

A is the cross-sectional area between the measuring points,

P/z is the pressure gradient,

P is the pressure difference between the atmosphere and LFG monitoring point, and

z is the depth of the monitoring point's screen below landfill surface.

More details of the BPM methodology can be found in Bentley et al, (2002, 2003, 2005), Smith and others (2006), and SWANA (2007).

### **Implementing the Baro-pneumatic Method**

Figure 1 illustrates the layout of the baro-pneumatic monitoring system. The pressures in the probes and in the atmosphere at a fixed location at the landfill surface are continuously measured for 3 to 4 days. Atmosphere pressures vary in a sinusoidal fashion, resulting in 2 atmospheric pressure peaks impinging on the landfill per day (see Figure 2). Gas interactions with the landfill refuse, landfill cover, and underlying soils reduce the pressure response peaks relative to the atmospheric pressure peaks and delay their time of arrival at depth in the landfill (see Figure 2). These pressure responses are analyzed using an integrated finite-difference numerical gas-flow and transport model of the landfill. The numerical model is site specific, i.e., constructed from available information about landfill structure, dimensions, and waste disposal history. The initial estimates of gas-filled porosity and horizontal gas permeability are obtained by conducting a series of short-term gas extraction well tests while monitoring pressure responses in the monitoring probes installed in the landfill. For landfills equipped with a GCCS, shutdown of collector wells while monitoring pressures in at least one monitoring probe provides the necessary pressure drawdown and recovery with time. The pressure vs time data from the LFG extraction and shutdown tests are analyzed for horizontal gas permeability and gas-filled porosity using ASAP, HGC's inverse pneumatic-test well interpretation model based on a solution developed by Moench (1985). Figure 3 shows a multistep ASAP pneumatic well test analysis. Three steps, i.e., 3 gas extraction rates, were employed to evaluate changes in collector-well efficiency with extraction rate. The analytical solution requires pressure data from a nonpumping observation probe. For the numerical model, the measured atmospheric pressure record is employed as its upper pressure boundary and the gas permeabilities in the landfill's cover, refuse, and underlying soils and its gas-filled porosity are adjusted until the delay and attenuation of the model's pressure responses provide a best match to the measured landfill pressure responses, at which point the model is considered to be calibrated.

The LFG generation rates at probes implanted in the landfill refuse are calculated using the calibrated model's gas permeabilities and the measured differences between atmospheric pressure and the pressures in the probes. A landfill's monitoring probe pressures are normally higher than atmospheric pressures but can be lower in cases where a downward pressure gradient is observed owing to LFG migration to soils underlying the landfill. Figure 4 shows the model match achieved for a monitoring probe set 30 meters (100 feet) deep in a Tucson, Arizona, Landfill. The model match is shown both with and without inclusion of LFG generation. The increase in pressure (P) required to bring the modeled pressure (green line in Figure 4) to match the measured pressure (blue-dotted line in Figure 4) is given by a rearrangement of Darcy's law (Eq2):

$P = \text{LFGgen } z / \text{Akg}$  (Eq2)

A numerical gas flow model of the landfill is then constructed and calibrated by varying gas permeabilities and gas-filled porosities until the model's simulated pressures match the measured atmospheric and subsurface pressures. The LFG pressure gradients and gas permeabilities obtained from the calibration process are incorporated into Darcy's Law (Eq1) to determine LFG generation rates, surface emissions, air entrainment, methane migration, gas permeability of the landfill's intermediate cover, and gas flow rate out of the landfill to both the atmosphere and underlying soils.

[FOOTNOTES]

Bentley, H. W., G. R. Walter., S. J. Smith., J. Tang, and C.T. Williamson. 2002. "Method and system for estimating gas production by a landfill or other subsurface source", (US) Patent No. US 6,611,760 B2. June 19, 2002.

Bentley, H.W., S. Smith, J. Tang, and G.R. Walter. 2003. A Method for Estimating the Rate of Landfill Gas Generation by Measurement and Analysis of Barometric Pressure Waves. Proceedings of the 18th International Conference on Solid Waste Technology and Management, Philadelphia, Pennsylvania, March 23-26, 2003

Bentley, H.W., S. J. Smith, and T. Schrauf. 2005. Baro-pneumatic Estimation of Landfill Gas Generation Rates at Four Operating Landfills. Proceedings, SWANA's 28th Annual Landfill Gas Symposium, San Diego. March 7-10, 2005.

Smith, S.J., Bentley, H.W., and K. Reaves. 2006. Systematic design of methane migration control systems Proceedings, 29th Annual SWANA Landfill Gas Symposium, St.Petersburg FL, 18 pp. March 27-30, 2006.

SWANA. 2007. Landfill Gas System Collection Efficiencies, Applied Research Foundation Landfill Gas Project Group. February 2007.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0096.1, excerpt number 4, under comment code 10z.

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**Commenter Name:** Comment submitted by Michael J. Barden

**Commenter Affiliation:** Hydro Geo Chem, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0096.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

The baro-pneumatic method can also provide inexpensive and effective monitoring of the operating (or closed) landfill GCCS. The major costs of an initial baro-pneumatic investigation include installation of the gas extraction test wells and monitoring probes, construction and calibration of the numerical model, and use of the model to optimize GCCS design. Thus leaving the monitoring probes protected and in place to be periodically equipped with battery-operated

pressure transducers/DAS in order to monitor refuse pressures, and automating the calibration process by using an inverse (self-calibrating) code such as TRAMPI (a modification of TRACRN) would allow for inexpensive future recalibration of the numerical model to monitor changes in LFG generation and GCCS performance without the need to install further probes, supply power, or construct and calibrate a new model. Done quarterly, this procedure would be a potential alternative to the quarterly surface emission monitoring specified in 40 CFR part 60, subpart WWW.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter - DCN-EPA-HQ-OAR-2014-0451-0194 (page 11). This response is for both of these comments. The EPA is retaining quarterly surface emission monitoring as a requirement to monitor that the GCCS is well-operated in the final rules for all landfills subject to control requirements. The EPA has not finalized an alternative monitoring approach based on the baro-pneumatic method.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 6

**Will be summarized and responded to in the preamble:**

**Sort Order:** 50

**Response Status:** Final

**Comment Excerpt:**

The AMM method should be allowed as an alternative emission threshold determination technique (page 41823 of the Proposed Rule).

**Comment Response:**

The EPA thanks the commenter for their perspective. Emerging technologies, like AMM method are having major advances but require more information and will not be required at this time. See section VI.B of the final NSPS Preamble and section VI.B of the final Emission Guidelines Preamble.

## 11.0 LFG TREATMENT

### 11.1 Treatment-Other Uses

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

WDNR commented to EPA in November 2013 on its potential landfill rule changes that *"any definition of 'treatment systems' in the revised NSPS should allow for landfill gas treatment to include gas-to-energy technology and use as a transportation fuel."* WDNR reiterates that comment here. At least two landfills in Wisconsin send gas by pipeline to boiler operators who use it to substitute for a portion of their natural gas needs. Public transportation fleets in Wisconsin also use landfill gas as fuel. Subjecting landfill gas that is used as boiler or transportation fuel to treatment requirements, as is the case with EPA's proposed rule language, could increase costs for such treatment requirements with little benefit, and serve as a potential disincentive to these renewable energy projects.

Instead, EPA should either accept the use of landfill gas in gas-to-energy technologies and use as transportation fuel as "treatment systems" in the rule, or at the very least exempt these two beneficial uses from its proposed prescriptive treatment requirements.

**Comment Response:**

Consistent with both the July 17, 2014 proposed NSPS and the August 27, 2015 proposed Emission Guidelines, the EPA is clarifying that the use of treated landfill gas is not limited to use as a fuel for a stationary combustion device, but also allows other beneficial uses such as vehicle fuel, production of high-Btu gas for pipeline injection, and use as a raw material in a chemical manufacturing process. The EPA recognizes that the landfill industry continues to develop new landfill gas beneficial use projects and the EPA continues to support the recovery and use of landfill gas as an energy source. The EPA is also promulgating a definition for treatment system as a system that filters, de-waters, and compresses LFG. Such a definition allows the level of treatment to be tailored to the type and design of the specific combustion or other equipment for other beneficial uses, including gas-to-energy technology and use as a transportation fuel. The uses described by commenter EPA-HQ-OAR-2003-0215-0088.1 would be subject to the treatment standards in the final rule. Owners and operators are required to develop a site-specific treatment system monitoring plan that includes monitoring parameters addressing all three elements of treatment (filtration, de-watering, and compression) to ensure the system is operating properly for the intended end use of the treated LFG. See section VI.E of the preamble for the final NSPS for additional discussion.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 24

**Comment Excerpt:**

Republic supports LFG beneficial use projects and EPA's proposal to clarify that treated LFG may be used in a wide variety of beneficial activities and is not limited to use only as a fuel for stationary combustion devices. We also recommend EPA clarify in the proposed rule that a treatment system is not a control device.

**Comment Response:**

The EPA clarifies in the final rule that the use of treated LFG is not limited to use as a fuel for a stationary combustion device but also allows other beneficial uses such as vehicle fuel, production of high-Btu gas for pipeline injection, and use as a raw material in a chemical manufacturing process. We are clarifying the intent of the treatment option to allow other beneficial uses such as vehicle fuel, production of high-Btu gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Newer uses of landfill gas are being implemented and result in the production of useful energy or products, thus reducing the use of fossil fuels or other raw materials and the associated emissions. For the uses mentioned, the gas is treated at least as well as the specified treatment requirements. Site-specific approval of alternative monitoring parameters would be required for uses other than combustion because treatment systems for these end uses are relatively few in number and have unique designs. Owners or operators would be required to apply for approval of monitoring parameters for uses other than combustion. See section VI.E. of the preamble for the NSPS for additional discussion.

Regarding treatment systems not being an emission source or control device, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under [comment code 1z].

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 6

**Comment Excerpt:**

We support the language that clarifies that the use of treated landfill gas is not limited to fuel for stationary combustion devices but also includes vehicle fuels and high BTU pipeline injection.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 24, under comment code 11a.

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**Commenter Name:** Comment submitted by Barry R. Stephens,  
**Commenter Affiliation:** Tennessee Department of Environment and Conservation- Air Pollution Control (TDEC-APC)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0112.1  
**Comment Excerpt Number:** 5

**Comment Excerpt:**

EPA proposes to clarify that the use of treated landfill gas is not limited to use as a fuel for a stationary combustion device and to allow other beneficial uses such as vehicle fuel, production of high-Btu gas for pipeline injection, or use as a raw material in a chemical manufacturing process.

*Tennessee supports the use of treated landfill gas and agrees that a broader definition is appropriate.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 24, under comment code 11a.

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**Commenter Name:** Comment submitted by Michael Rice, Past President  
**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1  
**Comment Excerpt Number:** 21

**Comment Excerpt:**

TXSWANA members are actively involved in developing new and innovative LFG beneficial use projects. Consistent with this approach, TXSWANA supports EPA's clarification that treated LFG may be used in a wide variety of beneficial activities and is not limited to use only as a fuel for stationary combustion devices. We appreciate the EPA's recognition that there are many other types of beneficial use projects and EPA's willingness to support the continued development of these uses.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 24, under comment code 11a.

## **11.2 Treatment-General/Other-Numeric vs. Non-Numeric**

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 30

**Comment Excerpt:**

The [July 17, 2014] Proposed LFG Treatment Standards are Very Problematic from a Regulatory, Policy and Feasibility Standpoint. In the proposed Subpart XXX, § 60.761, EPA would impose new, prescriptive conditions on landfill gas treatment by defining treatment system requirements in a manner that disregards the ultimate use of the gas.

WM agrees that filtration, dewatering and compression are appropriate treatment methods, and we have instituted these methods at our landfills where we implement the LFG treatment option. However, WM disagrees with the imposition of absolute filtration and dew point suppression



values, as well as with the continuous monitoring requirements. On multiple occasions since 2005, WM has discussed these concerns with EPA, offered solutions and we reiterate our concerns again herein (*See* Docket ID Numbers EPA-HQ-OAR-2003-0215-0003, EPA-HQ-OAR-2003-0215-0017, EPA-HQ-OAR-2003-0215-0047 and EPA-HQ-OAR-2003-0215-0057). These requirements reflect an increased compliance burden and one-size-fits all approach to landfill gas treatment, which is inappropriate from a policy, regulatory and technical standpoint. Furthermore, EPA is imposing these costly requirements with no demonstration of attendant emissions reductions.

**Comment Response:**

On July 17, 2014, the EPA proposed a definition of treatment system that contained specific numerical values for filtration and dewatering. On August 27, 2015, the EPA proposed a definition of treatment system as a system that filters, de-waters, and compresses landfill gas. Many commenters have expressed concern about the numeric definition of LFG treatment and the “one-size-fits-all” approach to the end use of the gas. The EPA is finalizing the more flexible definition for treatment system as a system that filters, de-waters, and compresses LFG. Such a definition allows the level of treatment to be tailored to the type and design of the specific combustion or other equipment for beneficial use. The EPA recognizes that the landfill industry continues to develop new LFG beneficial use projects and the EPA continues to support the recovery and use of LFG as an energy source. Thus, the EPA is finalizing a simplified definition of treatment as filtering, dewatering, and compressing landfill gas. Owners and operators are required to develop a site-specific treatment system monitoring plan that includes monitoring parameters addressing all three elements of treatment (filtration, de-watering, and compression) to ensure the system is operating properly for the intended end use of the treated LFG. The EPA is finalizing this definition to provide compliance flexibility and to promote the beneficial use of LFG. See section VI.E. of the preamble for the NSPS for additional discussion.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 180

**Comment Excerpt:**

WM recommends that EPA maintain the current NSPS definition of LFG treatment system as "a system that filters, de-waters and compresses landfill gas," (established by numerous EPA determinations published on the ADI and as proposed by EPA in May 2002) and consider an alternative mechanism for regulatory agency review of such systems.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Michael Rice, Past President  
**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North

America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 24

**Comment Excerpt:**

Given the wide variety of project, equipment, and end users, the filtration specifications should be left to the demands of the project and the equipment. For the EPA to require a specific filtration requirement on treatment equipment there would need to be direct correlation that the treatment equipment is a source of emissions. However, the treatment process is not a source of emissions and therefore should not be regulated as a point of emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under [comment code 11c].

Regarding treatment systems not being an emission source or control device, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 26

**Comment Excerpt:**

TXSWANA requests that EPA remove these [July 17, 2014] proposed treatment requirements as they are very costly, do not result in any increase reductions in emissions, and will deter the development of beneficial use projects. Not only will there not be any emissions reductions with these prescribed requirements, TXSWANA is concerned that the proposed requirements will be detrimental to the environment as it will require additional fossil fuel usage to power these systems.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 25

**Will be summarized and responded to in the preamble:**

**Sort Order:** 104

**Response Status:** Final

**Comment Excerpt:**

Republic is not in favor of new [July 17, 2014] prescriptive numeric operating values and monitoring requirements that place significant burdens on projects by requiring many to retrofit or prematurely replace equipment and comply with unnecessary monitoring and recordkeeping requirements. As an initial matter, Republic questions the need for these requirements – after all, treatment systems merely optimize the characteristics of the gas to match the specifications required by the end-use activity for which it is intended. Because treatment systems are not an emissions source, additional requirements will not result in any emission reductions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under [comment code 11c].

Regarding treatment systems not being an emission source or control device, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 29

**Comment Excerpt:**

EPA needs to consider the loss of valuable renewable energy projects that displace fossil fuel powered electrical generation, provide a reliable source of base load energy, and assist in meeting EPA's and states' greenhouse gas reduction goals before proposing requirements that will impact such projects. Therefore, Republic requests that EPA avoid imposing unnecessary requirements for treatment systems.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 23

**Comment Excerpt:**

The U.S. landfill sector has successfully pioneered the use of landfill gas to produce renewable electricity and facility and transportation fuels. There are over 600 renewable energy projects at U.S. landfills in part through the cooperative efforts of landfill owner/operators and EPA's Landfill Methane Outreach program. However, EPA is proposing new [July 17, 2014] LFG treatment requirements that are superfluous to the operation of these beneficial projects, result in zero emissions reductions, and significantly increase project costs. We are very concerned that the proposed provisions will discourage the development of new renewable energy projects, and may force existing projects to shut down.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

EPA is proposing new [July 17, 2014] LFG treatment requirements that could be detrimental to the operation of these beneficial projects by creating additional burdens that may force many beneficial projects to shut down. This will mean more landfills will be forced to flare landfill gas instead of producing a renewable fuel, which is contrary to EPA's stated intent. The proposed treatment requirements would result in zero emissions reductions, and significantly increase project costs and administrative burden. We are very concerned that the proposed provisions will jeopardize both new and existing renewable energy projects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

Montauk believes that the numerical definitions proposed by the Agency [on July 17, 2014] to clarify what constitutes LFG treatment are too rigid to be applied across the entire LFG industry. High-BTU beneficial use projects must meet stringent specifications in order to deliver methane into a natural gas pipeline and will typically meet the treatment standard definition. However, electric power generation projects using engines or turbines do not need the same level of treatment in order to provide long-term protection of the combustion equipment.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager

**Commenter Affiliation:** Burns & McDonnell

**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1

**Comment Excerpt Number:** 10

**Will be summarized and responded to in the preamble:**

**Sort Order:** 109

**Response Status:** Final

**Comment Excerpt:**

For landfills that have invested in renewable energy projects, the [July 17, 2014] proposed rule specifies specific numeric values for LFG treatment including for filtration systems and temperature. Continuous monitoring systems would also be required to monitor pressure drop for filtration and assure a dew point drop to 45 degrees Fahrenheit or lower. Alternatives to these would require state approval.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 5, under comment code 11e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 35

**Comment Excerpt:**

WM is concerned that the Agency's [July 17, 2014] prescriptive definition of treatment system is not representative of the vast majority of LFGTE projects in place, and will hamper innovation in developing new types of projects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 37

**Comment Excerpt:**

The [July 14, 2014] proposed treatment system requirements may be infeasible or counterproductive for some types of beneficial use projects, particularly the newer projects that are converting LFG to transportation fuel. While WM appreciated EPA's proposed clarification that the use of LFG is not limited to use as a fuel for a stationary combustion device, the prescriptive LFG treatment requirements for filtration and de-watering negates the intended flexibility and could prohibit or deter innovative new projects. For example, WM has entered a joint venture with several technology firms to build a commercial-scale project at one of our landfills to convert LFG to diesel fuel. The fuel now qualifies as advanced biofuel under EPA's Renewable Fuels Standard (RFS2) program and the Agency is reviewing the WM project to determine whether it may also meet the cellulosic biofuel criterion of greater than 60% reductions in GHG emissions. Despite the significant environmental benefits, the proposed treatment requirements would preclude the project because a chiller-based dewatering system is not compatible with the project design specifications.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 9

**Comment Excerpt:**

DEQ supports the alternative approach to defining treated landfill gas, as described in [the July 17, 2014] Section IX Request for Comments on Specific Provisions, that would establish treatment criteria based on the proposed beneficial reuse, rather than establishing prescriptive numeric criteria.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch  
**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1  
**Comment Excerpt Number:** 2

**Comment Excerpt:**

Under section IX.A. of the [July 17, 2014] preamble, EPA requests comments on an alternative approach for defining treatment system and treated landfill gas. Foth and the BOW Group support an alternative definition of treatment system that allows the level of treatment to be tailored to the type and design of the specific combustion equipment, rather than meeting numerical limitations as proposed in the rule. Owners and operators of combustion equipment are already motivated to treat landfill gas to manufacturer specifications to protect equipment and maintain warranties. Numerical limitations as proposed in the rule could limit beneficial use of landfill gas by owners and operators, defeating the purpose of the numerical limitations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Curt Publow  
**Commenter Affiliation:** Decatur Hills Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1  
**Comment Excerpt Number:** 26

**Comment Excerpt:**

Based upon the feedback of many stakeholders, the [July 17, 2014] "one size fits all" approach does not appear to be advantageous. The new rule should, therefore, simply refer to the goals of "filter, compress, and de-water" to the extent necessary for proper operation of the end equipment. Whether it is third-party, engines, pipeline, etc. each end user has their individual permitting and testing requirements that must be met to be successful.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number: 32**

**Comment Excerpt:**

Manufacturers of combustion equipment utilized by WM all include a particulate limit in their fuel specifications. Natural gas pipelines generally require that gas entering the pipeline be "commercially free" of dust and other solid matter, but do not specify a maximum particle size. Project owners filter particulates early in the treatment process (using fiber filters in most cases), while removing fine particulates and aerosols later in the process using a coalescing filter.

The problem with USEPA's [July 17, 2014] proposed requirement of an "absolute filtration rating of 10 microns or less" is that the term "absolute filtration rating" is not defined in the rule, and there seems to be no universally-agreed upon definition of this term in the industry. Some vendors define "absolute" filtration as greater than 98.6% removal. Others state that only membrane filters, with their uniform pore sizes and shapes, can truly have an "absolute" rating. While the proposed filtration language in the proposal mirrors that used in some manufacturer specifications included in the 2005 memo, this definition is dated and does not account for the variability in the needs of the end user. Rather than promulgating a "one-size-fits-all" treatment system definition, EPA should instead require that owners and operators filter the landfill gas in accordance with the specific requirements provided by the equipment manufacturer or end user.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 38

**Comment Excerpt:**

Small entities are already at a disadvantage for beneficial uses of LFG (e.g., generating electricity from LFG) because of the relatively low volumes of LFG generated by smaller facilities. Under one-size-fits-all treatment standards, small entities that currently put LFG to beneficial use could be required to replace existing equipment to work with LFG treated to EPA's numerical standards. Such replacement would have no emissions benefits. To the contrary, the major capital cost of additional LFG treatment could discourage small entities from investing in beneficial uses for LFG, imposing another barrier to cost-recovery for small entities. EPA should be cognizant of the "useful life"<sup>38</sup> of existing facilities before it imposes one-size-fits-all standards.

Advocacy appreciates EPA's concern that "case-by-case determinations that are likely to be complex, time consuming, and yield inconsistent results." However, the solution to such uncertainty in the permitting process should be a streamlining of the permitting process, not the



imposition of unnecessary costs. EPA does not suggest in its analysis that there is an emission benefit to treatment of LFG to specific standards, so there should be no reason to impose a limitation on the design of a system for beneficial use.

[Footnote 38] 42 U.S.C. § 7411(d)(1)(B).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c.

The EPA is finalizing treatment standards that maximize flexibility for affected landfills, regardless of size. Because the treatment standards do not include numerical values, the remaining useful life of an affected source should not be an issue.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 33

**Comment Excerpt:**

The Waukesha gaseous fuel specification (5-7884-7, April 2013) states that liquid water is not allowed in any part of the engine fuel system due to concerns over fouling, corrosion, or other problems. It also notes that additional heating of the gas can be used to eliminate the problem of liquid water in the fuel system. When an air-cooled heat exchanger is used to cool the gas after compression, the use of a reheater to raise the gas temperature prior to introduction into the engine is a widely-used industry practice. This reduces the potential for liquid water in engine.

Jenbacher's updated fuel gas quality document for landfill gas (TA 1000-0300, September 2011) lists several moisture specifications, but all of these limits are geared toward compatibility with additional equipment, such as an activated carbon filter or other proprietary technology (CLAIR exhaust treatment system or Type 6 precombustion chamber).

The moisture limits in these specifications exist as guidelines to keep liquid water out of the fuel system, not to ensure that the fuel is devoid of moisture. Chillers or other enhanced dewatering equipment may be needed at certain sites to address site-specific issues. No economic or environmental benefit has been shown by further drying of the fuel. EPA has not, however, demonstrated any tangible environmental benefit from requiring this equipment at all affected landfill sites.

For the majority of WM beneficial use projects, the manufacturers' specifications for LFG composition and quality do not require a reduction of dew point to 45 degrees Fahrenheit or lower, or the use of a chiller-based system, which would be needed to obtain the proposed 45 degree requirement. Use of chiller-based systems is not typical for most types of beneficial use projects. WM owns and operates the largest number of LFGTE projects in the U.S. and fewer than 10 of our electricity-generating projects use chiller-based systems for de-watering. The vast majority of WM LFGTE projects use air-to-air coolers to obtain the desired gas quality for

optimal engine performance. Chillers or other enhanced de-watering may be necessary at some sites, but are typically installed in cases of unique fuel demands or in response to site specific conditions.

**Comment Response:**

The definition of treatment proposed July 17, 2014 is no longer applicable. Instead of defining treatment systems based on specific numeric values for filtration and de-watering, the EPA is finalizing a definition for treatment system as a system that filters, de-waters, and compresses LFG. The EPA is finalizing this definition to provide compliance flexibility and to promote the beneficial use of LFG. Such a definition allows the level of treatment to be tailored to the type and design of the specific combustion or other equipment for beneficial use. Owners and operators would choose a level of treatment that is appropriate for the end use of LFG. Owners and operators are required to develop a site-specific treatment system monitoring plan that includes monitoring parameters addressing all three elements of treatment (filtration, de-watering, and compression) to ensure the system is operating properly for the intended end use of the treated LFG. See section VI.E. of the preamble for the NSPS for additional discussion.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 35

**Comment Excerpt:**

Achieving the 45°F requirement will require the installation of chiller systems. Although some equipment now used in beneficial use projects require the use of a chiller; the majority of projects and equipment do not. Most notably, neither Caterpillar nor Cummins Power Generation LFG engines require the use of a chiller.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 33, under comment code 11c.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 31

**Comment Excerpt:**

Many units that combust LFG do not require the use of chillers. This includes many engines and boilers. DSWA has a beneficial use project at one of our facilities that utilized engines manufactured by Cummins Power Generation. These engines do not require the use of a chiller prior to combusting the gas for energy generation. Cummins Gas Engine Fuel Component Limits lists the relative humidity limit of 80% on the engines used for LFG projects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 33, under comment code 11c.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 23

**Comment Excerpt:**

It is our understanding that in order to meet the 45°F requirement, a site would need to install chiller systems. Most LFG beneficial use projects in Texas do not currently have chillers as they are not recommended by the equipment manufacturers. TXSWANA understands that there are some beneficial use projects which do use a chiller but those are a small minority of projects, and the need for the chiller is driven by the needs of the project and end user.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 33, under comment code 11c.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 16

**Comment Excerpt:**

The concern with the proposed rule is the requirement to lower the water dew point of the landfill gas to 45 degrees Fahrenheit or lower with a de-watering process. Based upon the background provided by USEPA, there seems to be little justification for establishing the 45 degree threshold and why it must be met for the purposes of emission control. It seems like it would be more appropriate to base the treatment requirements on the specifications of the equipment that will ultimately combust the gas.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 33, under comment code 11c.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 64

**Comment Excerpt:**

The proposed [August 27, 2015] LFG treatment system definition supports and promotes beneficial use projects.

At more than 80 of its MSW landfills, WM meets its regulatory obligations under the Landfill NSPS/EG by routing collected landfill gas to a treatment system that processes the gas for subsequent sale or use, consistent with 40 CFR § 60.752(b)(2)(iii)(C). Treatment of landfill gas has many environmental benefits; most importantly, it serves as a way to use collected landfill gas for energy production, thus reducing the need for nonrenewable energy sources. Through its various landfill gas-to-energy projects, WM supplies enough energy to power roughly 500,000 homes, replacing the need for 2.5 million tons of coal each year.

WM agrees that the definition of a treatment system "*means a system that filters, de-waters, and compresses landfill gas for sale or beneficial use*" (80 Fed. Reg. 52162). This broad definition allows the level of treatment to be tailored to the end use requirements. We support EPA's decision to rely on a definition that appropriately covers the broad array of beneficial use projects at both existing and new landfills as we have recommended in our previous comments (*See* Docket ID Numbers EPA-HQ-OAR-2014-0451-0037, EPA-HQ-OAR-2003-0215-0100, EPA-HQ-OAR-2003-0215-0003, EPA-HQ-OAR-2003-0215-0017, EPA-HQ-OAR-2003-0215-0047 and EPA-HQ-OAR-2003-0215-0057) and supported by several state agencies (see Docket ID Numbers EPA-HQ-OAR-2003-0215-0085, EPA-HQ-OAR-2003-0215-0089, EPA-HQ-OAR-2003-0215-0112).

This broad definition of treatment system for both Cf and XXX will underpin the success of current and future beneficial use projects. The beneficial use projects that produce renewable energy will be critical to the success of state Clean Power Plans. State Clean Power Plans may rely on renewable energy as part of Building Block three and 29 states currently recognize landfill gas as renewable in Renewable Portfolio Standards (RPS).

**Comment Response:**

The EPA appreciates the commenter's support of the 2015 proposed definition for treatment system. This definition allows the level of treatment to be tailored to the type and design of the specific end use of the treated LFG. The site-specific treatment system monitoring plan requirement that includes monitoring parameters addressing filtration, de-watering, and compression will ensure proper operation of the treatment system. The EPA is finalizing this

definition to provide compliance flexibility and to promote the beneficial use of LFG. See section VI.E. of the preamble for the NSPS for additional discussion.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 12

**Comment Excerpt:**

KDAQ supports the [August 27, 2015] simplified definition of "treated landfill gas" with provisions for a site-specific treatment system monitoring plan. Allowing the intended use of the landfill gas to determine the gas quality required is the most practical and productive approach. Monitoring and maintaining this gas quality will ensure control device longevity and efficiency in reduction of final emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 64, under comment code 11c.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 51

**Comment Excerpt:**

Republic supports EPA's [August 27, 2015] proposal to define "treated landfill gas" and "treatment system" to cover any landfill gas treated by any system that filters, dewater, and compresses landfill gas to levels determined by the landfill owner/operator, based on the expected beneficial end use of the landfill gas. Republic agrees that the flexibility offered by these definitions will encourage the use of LFG in a wider variety of beneficial activities and to a far greater extent than if EPA imposed prescriptive numeric values enforced via continuous monitoring. As such, we do not support retaining the alternative definition of LFG treatment based on specific numerical values as previously proposed in the ANPRM and NSPS Subpart XXX. Prescriptive numeric operating values and monitoring requirements would only place significant burdens on projects by requiring many to retrofit or prematurely replace equipment without providing any emission reduction benefits.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 64, under comment code 11c.

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**Commenter Name:** Comment submitted by Kimberly Smelker  
**Commenter Affiliation:** Granger III and Associates, LLC  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0114.1  
**Comment Excerpt Number:** 43

**Comment Excerpt:**

EPA should maintain the treatment standards as written in Subpart WWW.

**Comment Response:**

Subpart WWW allows landfill owners or operators the option of achieving compliance by routing the collected gas to a treatment system “that processes the collected gas for subsequent sale or use.” Landfill gas treatment and landfill gas treatment system are not defined in 40 CFR part 60, subpart WWW. The lack of definition led to confusion as to what constituted treatment. In the absence of a clear definition, a range of activities has been construed as constituting treatment. This absence of a clear treatment definition may have hindered implementation of this option, reduced rule flexibility, and reduced full use of this option. This led to proposed definitions of treatment system on May 23, 2002, September 8, 2006, July 17, 2014, and August 27, 2015. The promulgated 2016 definition for treatment in the final subparts Cf and XXX allows the level of treatment to be tailored to the type and design of the specific end use of the treated LFG. Specifically, final subparts Cf and XXX define treatment system as a system that filters, de-waters, and compresses LFG. This definition is more specific than subpart WWW, but retains the flexibility to comply with these subparts through beneficial use projects.

See also the response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under comment code 11c and section VI.E. of the preamble for the NSPS for additional discussion.

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**Commenter Name:** Comment submitted by Dave Heitz  
**Commenter Affiliation:** Geosyntec Consultants  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0102.1  
**Comment Excerpt Number:** 3

**Comment Excerpt:**

EPA should maintain the treatment standards as written in Subpart WWW.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0114.1, excerpt number 43, under [comment code 11c].

See also the response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 30, under [comment code 11c].

### 11.3 Treatment-Numeric-Continuous monitoring

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 5

**Comment Excerpt:**

DEQ is concerned with the amount of monitoring data that will be generated. There is potential for significant cost to the owner/operator to collect the data and cost to the delegated authority to review the data. DEQ is concerned that the cost of filtration and monitoring systems, along with the burden of collecting and managing data, may create a disincentive for starting renewable energy projects. DEQ questions if this is an effect use of resources especially considering that it would be spent monitoring a treatment process rather than an emission source.

**Comment Response:**

The numeric definition of treatment, including its monitoring requirements, proposed on July 17, 2014 is no longer applicable. Owners or operators will now be required to develop a site-specific treatment system monitoring plan that will include monitoring parameters addressing all three elements of treatment (filtration, de-watering, and compression) to ensure the treatment system is operating properly for the intended end use of the treated LFG. They will also keep records that demonstrate that such parameters effectively monitor filtration, de-watering, and compression system performance necessary for the end use of the treated LFG.

The plan must include monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for the intended end use of the treated LFG. Documentation of the monitoring methods and ranges, along with justification for their use, would need to be included in the site-specific monitoring plan.

See section VI.E. of the NSPS preamble for additional discussion.

Regarding treatment systems not being an emission source or control device, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

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**Commenter Name:** Comment submitted by Sheila Holman, Director, Division of Air Quality

**Commenter Affiliation:** North Carolina Department of Environment and Natural Resources (NCDENR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0089.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

DAQ's compliance staff would have to spend additional time for reviewing the recordkeeping and reports since 24-hour block averages of pressure and temperature/dew point would be a large number of data to review for each landfill.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 5, under comment code 11e.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 27

**Comment Excerpt:**

Additional continuous monitoring requirements will require the installation of expensive process and monitoring equipment and result in large volumes of data that will require significant resources to manage and report.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 5, under comment code 11e.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent

**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota

**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1

**Comment Excerpt Number:** 12

**Comment Excerpt:**

For landfills that have invested in renewable energy projects, the proposed rule specifies specific numeric values for LFG treatment including for filtration systems and temperature. Continuous monitoring systems would also be required to monitor pressure drop for filtration and assure a dew point drop to 45 degrees Fahrenheit or lower. Alternatives to these would require state approval. With continuous monitoring, the amount of data generated will be voluminous for something that is not an emission source but rather a treatment process.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 5, under comment code 11e.

Regarding treatment systems not being an emission source or control device, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.



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**Commenter Name:** Comment submitted by Michael Rice, Past President  
**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1  
**Comment Excerpt Number:** 25

**Comment Excerpt:**

EPA's proposed continuous monitoring requirements will require the installation of expensive process and monitoring equipment and result in large volumes of data that will require significant resources to manage and report. There is no direct benefit to the environment for generating the voluminous amount of data using very costly equipment. Instead, the real benefit to the environment would be to provide a means that will allow the development of more LFG beneficial use projects by reducing any unnecessary monitoring requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 5, under comment code 11e.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager  
**Commenter Affiliation:** Burns & McDonnell  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1  
**Comment Excerpt Number:** 11  
**Will be summarized and responded to in the preamble:**  
**Sort Order:** 105  
**Response Status:** Final

**Comment Excerpt:**

With continuous monitoring [for treatment parameters], the amount of data generated will be voluminous for something that is not an emission source but rather a treatment process.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 5, under comment code 11e.

Regarding treatment systems not being an emission source or control device, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)  
**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 39

**Comment Excerpt:**

We request the removal of the continuous monitoring requirement. Compliance should be demonstrated through operations and maintenance records that can be submitted with the semi-annual report.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 5, under comment code 11e.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 5

**Comment Excerpt:**

We feel that the proposed monitoring, recordkeeping and reporting requirements would provide no additional benefit to the operation of the treatment systems but instead increase paperwork. Having to continuously monitor and report all 24-hour periods of operation during which the average operating parameter values are outside of the approved ranges would result in an increased number of unnecessary deviations and violations across the industry. Compliance can be demonstrated through operations and maintenance records which can be submitted with the NSPS reports.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 5, under comment code 11e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 41

**Comment Excerpt:**

The Continuous Monitoring Required Under the Proposed Rule is Inappropriate Because It Does Not Provide an Indicator of Emissions and Will Not Lead to Emissions Reductions. While EPA has exercised broad authority under Section 111 in establishing operating parameters and

associated monitoring requirements for affected facilities, the equipment to which these requirements apply are, in all cases, sources of emissions. For example, "continuous monitoring system" is defined under Part 60 as "the total equipment, required under the emission monitoring sections in applicable subparts, used to sample and condition (if applicable), to analyze and to provide a permanent record of emissions or process parameters." 40 CFR § 60.2. Operating parameters established by EPA function as indicators of emissions, where direct measurement is infeasible or impractical. For instance, the Landfill NSPS requires continuous temperature monitoring and recording for enclosed combustors because temperature serves as a direct indicator, established during a performance test, for NMOC destruction. See 40 CFR § 60.7S6(b)(1). By contrast, the measurement of dew point reduction and/or temperature of landfill gas in a treatment system are neither a surrogate for, nor bear any direct relationship to, emissions associated with landfill gas or its eventual combustion. Control over the processes employed at landfill gas treatment systems then will not help to "minimize emissions" - the central aim of Part 60 - because those processes themselves are not responsible for producing emissions. This same concern also applies to the Agency's proposal to require site-specific approval of alternative monitoring parameters when a landfill owner/operator chooses to comply with the NSPS by routing the collected gas to a treatment system that processes the gas for use other than as fuel for a stationary combustion device.

**Comment Response:**

Regarding continuous monitoring, see response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 5, under comment code 11e.

Regarding treatment systems not being an emission source or control device, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

## **11.4 Treatment-Numeric-Cost to Comply**

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 34

**Comment Excerpt:**

WM reviewed the docketed cost analysis provided by EPA, but there was insufficient detail to understand how the Agency analyzed the costs for the newly proposed treatment requirements. To develop our own evaluation, we gathered information on the costs of installing the chillers needed to meet the proposed treatment requirement for reducing dew point to 45 degrees F. Based upon our experience installing chillers at several WM projects, we would expect the chillers themselves to cost \$500,000 each. The continuous emissions monitors, instrumentation and controls would cost an additional \$150,000 per chiller. Our experience is that operations and maintenance (O&M) of chillers is at least \$60,000 per year and additional electricity costs average \$60,000 per year for our typical project size. Thus, to upgrade all existing, beneficial LFGTE projects to meet the prescriptive treatment requirement, we would expect capital expenditures of \$39 million. Over the course of 15 years (timeframe of EPA's cost analysis), our

O&M plus electricity costs would run about \$108 million. With these proposed treatment requirements, the Agency can expect to see many existing LFGTE projects shut down and few new projects come on-line. What is particularly vexing is that these unwarranted costs will be invested in systems that provide no emissions reductions, and are not recommended or required by the combustion device manufacturers.

**Comment Response:**

Many commenters expressed concern that the cost to comply with the treatment system requirements based on specific numerical values for filtration and de-watering would be detrimental to existing and potential beneficial use projects, including potentially shutting down existing beneficial use projects and preventing future ones. The EPA recognizes that the landfill industry continues to develop new LFG beneficial use projects and the EPA continues to support the recovery and use of LFG as an energy source. Thus, the EPA is proposing a simplified definition of treatment system as a system that filters, de-waters, and compresses landfill gas that allows the level of treatment to be tailored to the type and design of the specific end use of the treated LFG. In the final rule, the EPA is finalizing the less prescriptive definition of filter, de-water, and compress to provide compliance flexibility and to promote the beneficial use of landfill gas. The EPA agrees with commenters that this flexibility will minimize cost, retain existing beneficial use projects, and promote future beneficial use projects. Owners and operators are required to develop a site-specific treatment system monitoring plan that would include monitoring parameters addressing filtration, de-watering, and compression to ensure proper operation of the treatment system. See section VI.E. of the NSPS preamble for additional discussion.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 28

**Comment Excerpt:**

For each renewable energy project that does not already have equipment to meet the specifications in the proposed rule, the prescriptive treatment requirements will require plants to install chillers that cost approximately \$500,000, with additional costs of \$100,000 to \$150,000 for instrumentation, continuous monitoring, and controls. Chiller maintenance and monitoring costs are projected to be at least \$60,000 per year per project. These additional burdens may force many beneficial use projects to shut down, especially those with marginal economic viability. EPA needs to perform a cost analysis to determine the potential impacts before imposing such prescriptive requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f.

**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager  
**Commenter Affiliation:** Burns & McDonnell  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1  
**Comment Excerpt Number:** 12

**Comment Excerpt:**

For each renewable energy project, the prescriptive treatment requirements will require installation of \$500,000 chillers with additional costs of \$100,000 to \$150,000 for instrumentation, continuous monitoring and controls. Chiller maintenance and monitoring will add another \$60,000 per year. Finally, operations costs are anticipated to run between \$30,000 and \$60,000 annually. One company estimated their total costs at more than \$35 million. Loss of these valuable projects will increase fossil fuel-fired electricity emissions, reduce generation of reliable, base-load renewable energy, and will endanger states' ability to meet their RPS goals and comply with the EPA Clean Power Plan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent  
**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1  
**Comment Excerpt Number:** 13

**Comment Excerpt:**

For each renewable energy project, the prescriptive treatment requirements will require installation of ~\$500,000 chillers with additional costs of ~\$100,000 to \$150,000 for instrumentation, continuous monitoring and controls. Chiller maintenance and monitoring will add another ~\$60,000 per year. Finally, operations costs are anticipated to run between ~\$30,000 and \$60,000 annually. Loss of these valuable projects will increase fossil fuel-fired electricity emissions, reduce generation of reliable, base-load renewable energy, and will endanger states' ability to meet their RPS goals and comply with the EPA Clean Power Plan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)  
**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 36

**Comment Excerpt:**

For each renewable energy project, the proposed prescriptive treatment requirements will require installation of chillers costing up to \$500,000, with additional costs of \$100,000 to \$150,000 for instrumentation, continuous monitoring and controls. Chiller maintenance and monitoring will add another \$60,000 per year. Finally, operations costs are anticipated to run between \$30,000 and \$60,000 annually. Waste Management estimates their total costs at more than \$35 million to meet the prescriptive requirements.

As EPA is aware, renewable energy projects are typically constructed when the projects become economically viable. Congress' failure to renew the tax credits and preferences associated with LFG has made some projects less viable. With the added costs of these new requirements, both planned and existing projects are likely to be jeopardized. Loss of these valuable projects will increase fossil fuel-fired electricity emissions, reduce generation of reliable, base-load domestic renewable energy, and endanger the ability of states to meet their RPS goals and comply with EPA's Clean Power Plan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f.

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**Commenter Name:** Juene Franklin, P.E.

**Commenter Affiliation:** Franklin Engineers & Consultants, LLC

**Document Control Number:** EPA-HQ-OAR-2003-0215-0122

**Comment Excerpt Number:** 3

**Comment Excerpt:**

We are very concerned about the change in the temperature reduction from 20°F to 45°F. In order to make certain that such a temperature drop is achieved will require the installation of a chiller unit with every Treatment System. It would also require a large number of existing Treatment Systems to undergo retrofits, as well. The capital costs (potentially as much as \$500,000), not to mention the potential O&M, record-keeping, and monitoring costs, would be substantial. This type of compliance parameter could be a major hurdle to existing and future LFG Beneficial-Use projects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f.

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**Commenter Name:** Matt Lamb, Scientist, Smith Gardner, Inc.

**Commenter Affiliation:** Smith Gardner, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0190

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The existing language in the NSPS and EG do not define treatment. It is only through case-by-case determinations that treatment was defined as including these three criteria, and further determinations to assign numerical values. S+G encourages continued flexibility in allowing facilities to establish site-specific values for treatment, as well as flexibility in allowing each site to craft an appropriate monitoring program. Many sites do not have sophisticated automated monitoring of treatment systems, due to size, age, or economic limitations. S+G recommends that EPA allow for manual, periodic [e.g., weekly] monitoring of treatment criteria, which may include some or all of the following:

- Differential pressure across a de-mister or filter;
- Inlet and outlet blower pressures;
- Inlet and outlet treatment system LFG temperatures.

Continuous digital monitoring of treatment systems may add cost and compliance liability due to the following:

**Meter expense:** For example, pressure transmitters may range from \$1,500 to \$3,000, compared to \$50 to \$150 for magnehelic pressure gages.

**Meter service and calibration expense:** Calibration of pressure transmitters by certified technicians may range from \$750 to \$1,500, or more if the transmitters are shipped back to the manufacturer for calibration. Service expenses are comparable. For comparison, a magnehelic gages can be replaced as needed for one-tenth of this cost.

**Automated monitoring expense:** Automated monitoring of a treatment system requires a SCADA system capable of monitoring and recording multiple inputs for temperature and pressure at several points throughout the system. These systems may range from \$50,000 to \$100,000, depending on the number of monitored inputs, communications protocols between the PLC and data acquisition equipment, and the level of control required. These costs are not incurred with traditional analog gages that are monitored by site employees on an approved routine schedule [e.g. weekly].

**Automated monitoring service and maintenance expense:** Treatment and monitoring systems are typically installed at remote or extreme landfill environments which experience broad seasonal temperature shifts, precipitation, and lightning strikes. This requires frequent maintenance by technicians at \$800 or more per day. Many times the repair/replacement may take several days to diagnose, and if replacement is required, several weeks to receive and install components. For many sites, treatment systems can be monitored as reliably, or more reliably using site employees, analog pressure and temperature gages on a routine basis.

**Compliance concerns related to automated monitoring:** Many NSPS and NESHAP standards require continuous [once per 15 minute intervall monitoring and recording. Compliance can be challenging for a regulated manufacturing process or facility. Due to the environmental conditions mentioned previously, continuous monitoring is even more challenging for landfill facilities. Data loss is also a concern, which may require redundant data acquisition, adding to cost. Many facilities may be able to use non-automated analog gages, and record results manually on an approved schedule more reliably than if automated continuous monitoring was required.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f.

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**Commenter Name:** Comment submitted by Mark C. Messics, Senior Business Development Manager

**Commenter Affiliation:** PPL Renewable Energy, LLC

**Document Control Number:** EPA-HQ-OAR-2003-0215-0110.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

The [July 17, 2014] Proposed Rule specifies new treatment criteria (and the monitoring thereof) that will increase the financial burden of compliance for many Landfill Gas-to-Energy (LFGTE) plants. In the present-day climate of expired tax credits, low energy prices (driven down by abundant shale gas) and other new regulations (GHG rules, NAAQS, etc.), LFGTE plants are already operating on thin margins. Adding a new regulatory cost burden will prevent new plants from being developed and cause the premature shutdown of existing plants that are already borderline economic. Specifically, the added costs of chilling the water dew point to 45 degrees Fahrenheit and the temperature monitoring of such, along with the pressure monitoring of the filtration system will increase the cost of operations and compliance. For the typical landfill gas-fired engine-generators that we operate, we are not convinced that there will be significant improvements to our emissions to warrant the added costs.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 4

**Comment Excerpt:**



Subpart XXX contains prescriptive requirements for landfill gas treatment for renewable energy projects, including lowering dew point temperature to at least 45°F, installing equipment to continuously monitor pressure drop, temperature, and/or dew point. The required equipment will be costly to install and maintain and increase the cost of beneficial use projects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 11

**Comment Excerpt:**

Regulations creating prescriptive controls and monitoring are unnecessary and add additional cost and monitoring burden. Additional monitoring affects not only the owner/operator, but also creates an additional cost to the delegated authority to review the data and assess compliance.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f regarding changes to the treatment definition.

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**Commenter Name:** Comment submitted by Sheila Holman, Director, Division of Air Quality

**Commenter Affiliation:** North Carolina Department of Environment and Natural Resources (NCDENR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0089.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Landfill owners/operators would install equipment to continuously monitor pressure drop across a filter, temperature for a chiller based de-watering system, and dew point for a non-chiller-based dewatering system. Landfill owners/operators would record hourly and 24-hour block averages computed from the continuous monitoring data. Landfill owners/operators may use other site specific monitoring parameters if they demonstrate that such parameters would effectively monitor filtration or de-watering system performance.

DAQ believes these proposed requirements would be a financial burden for landfill owners since they have to install at least two monitoring devices on each gas treatment system, and would require additional labor for monitoring, recordkeeping and reporting.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f regarding changes to the treatment definition.

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**Commenter Name:** Comment submitted by Barry R. Stephens,  
**Commenter Affiliation:** Tennessee Department of Environment and Conservation- Air Pollution Control (TDEC-APC)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0112.1  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

*Tennessee takes no position on the relative merits of the numeric treatment proposal, but affected facilities have expressed concerns that the treatment requirements would require installation of chillers and impose substantial capital and operating costs on renewable energy projects. Increasing the costs associated with these projects is likely to reduce the beneficial reuse of landfill gas.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f regarding changes to the treatment definition.

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**Commenter Name:** Comment submitted by Charlie Sedlock, Director  
**Commenter Affiliation:** Hamm, Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0084.1  
**Comment Excerpt Number:** 5

**Comment Excerpt:**

As far as the treatment requirements are concerned, we understand that the temperature requirement can add significant costs. The environmental benefits associated with the added expense are not demonstrated and we think this puts beneficial use projects at risk which would, in fact, be detrimental to the environment. Consequently, we recommend removing the temperature standard from the treatment requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f regarding changes to the treatment definition.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems  
**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 30

**Comment Excerpt:**

The temperature requirement in the proposed rule will essentially mandate the use of chillers at most facilities. This will require a substantial capital investment as well as ongoing electric and operating costs.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f regarding changes to the treatment definition.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 25

**Comment Excerpt:**

Requiring such a low temperature will require the use of chillers or other very costly specialized equipment. Imposing such large capital costs, as well as the associated operation and maintenance costs, will be financially devastating to many potential landfill-gas-to-energy projects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34, under comment code 11f regarding changes to the treatment definition.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 65

**Will be summarized and responded to in the preamble:**

**Sort Order:** 115

**Response Status:** Final

**Comment Excerpt:**

Although EPA states it is retaining as alternative a definition of LFG treatment based on specific numeric values for filtration and dewatering, the Regulatory Impact Analysis (Docket ID Number EPA-HQ-OAR-2014-0451-0086) does not include cost estimates for meeting these specific numeric values, which as we presented in our previous comments (see Docket ID

Numbers EPA-HQ-OAR-2014-0451-0037, EPA-HQ-OAR-2003-0215-0100), are significant and would potentially force beneficial use projects to shut down operations. Absent cost information in the Regulatory Impact Analysis, we do not believe EPA can consider numeric values for the final NSPS or EG rules or expect State agencies to include numeric limits in proposed State Plans.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 34 under comment code 11f.

## **11.5 Treatment- Non-Numeric-General**

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 42

**Comment Excerpt:**

EPA Should Define Treatment System as a "System that Filters, Dewateres and Compresses LFG." [In the July 17, 2014 proposed rule,] EPA requested comment on an alternative definition for treatment system. The alternative approach would define "Treatment system," "as a system that filters, de-waters, and compresses LFG ." WM reviewed the detailed discussion of the alternative approach to treatment, and we strongly recommend the Agency employ this approach for both new and existing landfills that treat LFG for beneficial use.

As EPA notes in its discussion of the alternative approach, the extent of filtration, de-watering and compression needed to ensure good combustion or proper operation of the end-use system may be site-specific and project-specific. The more flexible, alternative definition allows the level of LFG treatment to be tailored to the type and design of the equipment in which the LFG is combusted or used. Instead of meeting a numerical standard set in the NSPS, project owners should rely on manufacturer or end user specifications outlined in a project-specific "Preventive Maintenance Plan."

By tying treatment requirements to either end-user or manufacturer specifications that are documented in a Preventive Maintenance Plan or PMP, EPA and the delegated states will have verifiable records of proper operation. PMPs are used in a variety of environmental programs that are premised on proper operation of equipment, such as pollution control devices. The PMP provides a system for documenting management and maintenance practices that protect equipment; maintain warranties; document contractual obligations to third-party users of the treated LFG; and afford regulatory staff an ongoing mechanism for oversight. Typically, states require that a copy of the PMP and all maintenance records be available on site for inspection and/or have identified elements that must be periodically reported to the state agency. A number of states have issued guidance that outlines required elements of an acceptable PMP.

As the Agency noted in the preamble discussion of the alternative approach to treatment, the owner/operator of a LFG beneficial use project has a significant interest in ensuring that project

devices receive only properly treated LFG that meets the manufacturer's specifications for the device. This will ensure efficient operation of the project, reduce long-term maintenance costs, or provide assurance to end-users of the LFG that it meets their specifications for quality and composition. A "one-size-fits-all" approach to setting LFG treatment standards cannot accommodate the variety of end uses or combustion/conversion technologies available. A preventative maintenance plan can incorporate the specificity needed to ensure that LFG is properly treated for its end use, and can provide a record keeping and reporting mechanism to ensure regulators of the same.

**Comment Response:**

Many commenters have expressed concern about the numeric definition of LFG treatment and the "one-size-fits-all" approach to the end use of the gas. The EPA is finalizing a definition of treatment system as one that allows the level of filtration, de-watering, and compression to be tailored to the type and design of the specific equipment in which the LFG is used. In the final rule, the EPA is finalizing the less prescriptive definition of treatment as filter, de-water, and compress to provide compliance flexibility and to promote the beneficial use of landfill gas. The EPA agrees with commenters that this flexibility will minimize cost, retain existing beneficial use projects, and promote future beneficial use projects. Owners or operators will need to identify monitoring parameters, be able to demonstrate that such parameters effectively monitor filtration, de-watering, or compression system performance necessary for the end use of the treated LFG and keep records to demonstrate that the parameters are being met. Owners or operators will also need to develop a site-specific treatment system monitoring plan that will accommodate site-specific and end-use specific treatment requirements for different energy recovery technologies. See section VI.E. of the NSPS preamble for additional discussion.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 38

**Comment Excerpt:**

For nearly all types of WM's beneficial use projects, the manufacturer fuel specification or end user's fuel specification can be met without installation of a separate chiller unit.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance  
**Commenter Affiliation:** Montauk Energy  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number: 4**

**Comment Excerpt:**

Montauk strongly supports the modification of the treatment standard definition as proposed by SWANA [DCN EPA-HQ-OAR-2003-0215-0108.1].

*Treatment system means a system that compresses the LFG, has an absolute filtration rating of 10 microns or less and achieves a degree of de-watering consistent with specifications for good combustion supplied by the manufacturer or supplier of the combustion equipment.*

Montauk would support the alternative treatment provisions suggested by the Agency. Instead of meeting numerical specifications for treated LFG, owners/operators would specify the level of treatment based on the type and design of the specific combustion equipment that uses the treated LFG.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 37

**Comment Excerpt:**

Advocacy recommends that EPA consider adopting the policy recommendation to allow LFG treatment to meet the specifications required by equipment in use or LFG purchasers rather than impose one-size-fits-all numerical standards.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 10

**Comment Excerpt:**

In 2006, EPA received many comments about the difficulties of complying with a relative temperature reduction of 20° Fahrenheit (F). By proposing [on July 17, 2014] an absolute 45°F temperature instead, the burden is actually increased, further reducing the ability to comply. We recommend eliminating the temperature requirement, as well as any other similarly prescriptive criteria and the continuous monitoring requirement for the treatment of LFG. We believe the most effective approach is to follow equipment manufacturer guidelines on pretreatment.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division  
**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1  
**Comment Excerpt Number:** 10

**Comment Excerpt:**

Requirements for LFG filtration, de-watering, and compression will vary based on the type of beneficial use proposed and the site specific characteristic of the LFG. To protect their large capital investment in energy recovery equipment, and ensure the best potential value of the LFG as a commodity (e.g sale and injection into a pipeline), landfill owners and operators are motivated to efficiently treat LFG to whatever specifications are necessary to prolong the useful life of their equipment and produce a high quality commodity.

Flexibility is also warranted in the rule to accommodate emerging technologies that require different treatment standards not currently accounted for in the rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 30

**Comment Excerpt:**

Republic asks EPA to adopt the [July 14, 2014] proposed alternative approach for defining treatment system and treated landfill gas. 79 Fed.Reg. at 41821. The PMP approach would allow individual facilities to tailor the monitoring requirements for their treatment system based on the specific type of equipment involved. An equipment-specific approach is more appropriate than relying on EPA's proposed one-size-fits-all approach that may not be appropriate for all

treatment systems; particularly given that EPA has now clarified that treated landfill gas may be employed for a wide variety of uses.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 32

**Comment Excerpt:**

DSWA suggests that the rule language requiring treatment of LFG include only, "dewatering, compression and filtration to meet end use equipment manufacturer specifications". By maintaining a non-specific definition, the requirement will be flexible to apply to varying end use processes and site-specific facility conditions. Compliance with treatment can be tracked via a preventative maintenance plan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 22

**Comment Excerpt:**

The [July 17, 2014] proposed rule sets out specific numeric values for LFG treatment including 10 microns for filtration systems and 45°F for temperature. The proposed rule also requires continuous monitoring systems that collect data on 15-minute intervals to monitor pressure drop for filtration and the cooling temperature. TXSWANA opposes these proposed changes and requests that the current definition of treatment not be modified. Given the wide range of beneficial use projects and various equipment used in these project, TXSWANA would request that EPA not mandate a "one-size-fits-all" treatment system definition. EPA should instead require that owners and operators to compress, filter, and dehydrate the landfill gas in accordance with the specific requirements provided by the equipment manufacturer or end user.

**Comment Response:**



See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 7

**Comment Excerpt:**

We don't believe it is necessary to set treatment standards for those gasses that are going to be treated. We think you should just simply refer to the manufacture's standards for those devices. This would have no impact on emission rates, it would simply – those standards are there to protect the equipment, and rather than being prescriptive about that in the standard, we feel that it is inappropriate.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Juene Franklin, P.E.  
**Commenter Affiliation:** Franklin Engineers & Consultants, LLC  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0122  
**Comment Excerpt Number:** 4

**Comment Excerpt:**

We would recommend that the EPA consider allowing more flexibility in the definition of "Treatment." Since all projects will not require enough dewatering to warrant refrigeration, we would like to propose that EPA consider allowing the definition of Treatment to vary depending on it end-use and/or the equipment manufacturer. End-uses can vary greatly depending on location, treatment costs, utility costs, incentives, etc. Examples of some potential end uses are as follows:

- i. High-BTU for pipeline injection
- ii. Conversion of LFG into CNG (Bio-CNG) Fuel
- iii. Medium-BTU for use in Boilers, Heaters
- iv. Medium-BTU for use in Power Generation Projects

We would strongly recommend that the EPA consider allowing some flexibility in the definition of Treatment, so that it can vary by application. Once the end-use application and the manufacturer standards are established, work practice standards can be serve as the compliance mechanism for the EPA.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 42

**Comment Excerpt:**

We support EPA's [August 27, 2015] proposed definition of "treatment system." Gas treatment is dictated by the intended use of the treated gas. There are many types of beneficial uses that require varying degrees of landfill gas treatment. The broad definition contained in the proposed rule will serve to support the success of current and future beneficial use projects.

**Comment Response:**

The EPA appreciates the commenter's support and agrees that this new definition will allow flexibility for all types of beneficial uses. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 52

**Comment Excerpt:**

We support EPA's proposed definition of treatment system. As we stated in our previous comments (Docket ID Number EPA-HQ-OAR-2014-0451-0062 and EPA-HQ-OAR-2003-0215-0108), and EPA recognizes in this rulemaking, gas treatment is dictated by the intended use of the treated gas. There are many types of beneficial use that require varying degrees of landfill gas treatment. The broad definition will underpin the success of current and future beneficial use projects.

**Comment Response:**

The EPA appreciates the commenter's support and agrees that this new definition will allow flexibility for all types of beneficial uses. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 68

**Comment Excerpt:**

The owner/operator of a LFG beneficial use project has a significant interest in ensuring that project devices receive only properly treated LFG that meets the end user's specifications for the device. This will ensure efficient operation of the project, reduce long-term maintenance costs, or provide assurance to end-users of the LFG that it meets their specifications for quality and composition. A "one-size-fits-all" approach to setting LFG treatment standards cannot accommodate the variety of end uses or combustion/conversion technologies available. The treatment system monitoring plan can incorporate the specificity needed to ensure that LFG is properly treated for its end use, and can provide a recordkeeping and reporting mechanism to ensure regulators of the same.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills

**Document Control Number:** EPA-HQ-OAR-2014-0451-0145

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Foth and the BOW Group do support the [August 27, 2015] proposal to define landfill gas treatment as a system that filters, de-waters, and compresses landfill gas (LFG) for sale or beneficial use without numerical limitations. This definition allows the level of treatment to be tailored to the type and design of the specific combustion equipment, rather than meeting numerical limitations as discussed in the previous proposal. Owners and operators of combustion equipment are already motivated to treat landfill gas to manufacturer specifications to protect equipment and maintain warranties. We do not support numerical standards for gas treatment as outlined in the July 2014 Advanced Notice of Proposed Rulemaking (ANPRM), which could limit beneficial use of landfill gas by owners and operators, defeating the purpose of the numerical limitations.

**Comment Response:**

The EPA appreciates the commenter's support and agrees that this new definition will allow flexibility for all types of beneficial uses. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Richard M. DiGia, President & CEO

**Commenter Affiliation:** Aria Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0166

**Comment Excerpt Number:** 1

**Comment Excerpt:**

We fully support the [August 27, 2015] proposed simplified definition of treatment as being the filtering, de-watering, and compression of landfill gas, and agree that LFG treatment should be project specific requiring a monitoring plan. The numerical limits previously proposed for filtration and de-watering would have created a disincentive for existing as well as future beneficial use projects as the cost to comply would have been cost prohibitive and we commend the EPA for their consideration.

**Comment Response:**

The EPA appreciates the commenter's support and agrees that this new definition will allow flexibility for all types of beneficial uses. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under comment code 11g.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 31

**Comment Excerpt:**

EPA has not Demonstrated that Emission Reductions will Result from New Treatment Requirements, nor, Assessed the Costs and Complexities Posed by Mandating Prescriptive Requirements. The landfill sector has been implementing beneficial, landfill gas-to-energy projects longer than the Landfill NSPS has been in existence. After more than two decades of successful operation of LFGTE projects, we are very perplexed by EPA's proposal to impose prescriptive LFG treatment requirements that are not required for proper operation of our engines or turbines (per manufacturers' operating specifications). WM reviewed the docket for the proposed NSPS to examine the Agency's evaluation of typical LFGTE project equipment and LFG treatment specifications. However, we were unable to find any analyses other than a 2005 memorandum, nearly a decade old, evaluating Jenbacher and Waukesha engines, and Solar turbines. Both Waukesha and Jenbacher are now owned by GE Power & Water, and the fuel specifications for both engine lines have been updated since USEPA's 2005 memo. Not only are the 2005 specifications outdated, but use of these engines is not widespread in the landfill sector.

Caterpillar (CAT) is the nation's largest supplier of landfill gas engines. Although there is no official entity tracking percentage of industry net sales of landfill gas engines in North America, sources indicate that Caterpillar owns about 85% of the current market share. Furthermore, the single analysis that we found posted in the docket did not evaluate or demonstrate that emission reductions would occur because of the newly proposed treatment requirements. USEPA's 2005 memo cannot be considered a complete analysis of manufacturer recommendations when CAT is not included. We have attached letters from the manufacturers of the engines and turbines that WM uses in its LFGTE projects. The letters clarify the specifications for proper operation of the combustion devices. (See Attachment 17 [of DCN EPA-HQ-OAR-2003-0215-0100.1]).

**Comment Response:**

The definition for treatment proposed on July 17, 2014 is no longer applicable. The EPA is finalizing a definition that will allow the level of filtration, de-watering, and compression to be tailored to the type and design of the specific equipment in which the LFG is used. Owners or operators will need to identify monitoring parameters, be able to demonstrate that such parameters effectively monitor filtration, de-watering or compression system performance necessary for the end use of the treated LFG and keep records to demonstrate that the parameters are being met. Owners or operators will also need to develop a site-specific treatment system monitoring plan that accommodates site-specific and end-use specific treatment requirements for different energy recovery technologies. See section VI.E. of the NSPS preamble for additional discussion.

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 17

**Comment Excerpt:**

Beneficial use of LFG is a useful addition to the green power available throughout the United States. However, NACAA does not support any reduction in monitoring as an incentive to create beneficial-use projects. The monitoring required by the rule is necessary to ensure that the LFG collection and control system is operated properly. This should not be sacrificed to create incentives for other projects.

**Comment Response:**

For LFG treatment, the final rule increases monitoring for LFG that is treated for sale or beneficial use. The EPA is finalizing a definition that allows the level of filtration, de-watering, and compression to be tailored to the type and design of the specific equipment in which the LFG is used. Owners or operators will need to identify monitoring parameters, be able to demonstrate that such parameters effectively monitor filtration, de-watering, or compression system performance necessary for the end use of the treated LFG, and keep records to demonstrate that the parameters are being met. Owners or operators will also need to develop a site-specific treatment system monitoring plan that will accommodate site-specific and end-use

specific treatment requirements for different energy recovery technologies. See section VI.E. of the NSPS preamble for additional discussion.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch  
**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0156  
**Comment Excerpt Number:** 8

**Comment Excerpt:**

On page 52162 §60.41f of the [August 27, 2014] proposal, EPA states that:

"Treatment system means a system that filters, de-waters, and compresses landfill gas for sale or beneficial use."

Treatment systems vary based on their intended end use. Some treatment systems might even do more than just filter, de-water, and compress the landfill gas. In Georgia, some landfill gas systems then further process the gas for pipeline usage or remove siloxanes. Please clarify in the definition if further processing of the filtered, de-watered, and compressed gas is also part of a "Treatment System"

**Comment Response:**

The EPA recognizes that landfill gas can be beneficially used in various applications and that those applications will continue to grow and evolve. Therefore, EPA is promulgating a definition of treatment system that provides compliance flexibility to accommodate the various beneficial uses. For each of these uses, the landfill gas must be treated to a level that is appropriate for the sale or beneficial use of the gas, but treatment system monitoring plan must address, at a minimum, filtering, de-watering, and compression to ensure the treatment system is operating properly for the intended use of the gas. EPA recognizes that, depending on the sale or beneficial use, treatment parameters may extend beyond filtering, de-watering, and compression. If these parameters ensure that the landfill gas can be sold or beneficially used, then these parameters should be included in the site-specific monitoring plan. See section VI.E. of the NSPS preamble for additional discussion.

## **11.6 Treatment-Applicability**

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 43

**Comment Excerpt:**

EPA requested comment on providing the flexible, alternative approach to only new landfills that beneficially use LFG. We think this would be highly counterproductive, as it would punish early

actors who pioneered beneficial use projects, and might endanger their continued operation due to the inordinate costs of installing unnecessary treatment equipment. While, new projects would be better able to plan for installation of the required equipment, the cost of doing so would likely deter project installation. The economic viability of some projects has already been compromised. The current prices of natural gas have lowered the rates that project owners receive for electricity and facility fuel, and consequently, it is far more difficult to obtain the necessary rate of return to warrant installation of new projects or continued operation of existing projects. If the Agency finalizes the prescriptive definition of treatment system in the proposed NSPS and applies it to either existing or new landfills, the result will be destabilization in the renewable energy from LFG sector.

**Comment Response:**

The final rule provides the “alternative approach” of defining treatment system as a system that filters, de-waters, and compresses LFG from the July 17, 2014 proposed NSPS to all landfills, regardless of whether they are new or existing. See also the response to EPA-HQ-OAR-2003-0215-100.0, excerpt number 30, under [comment code 11c]. See section VI.E. of the NSPS preamble for additional discussion on the definition of treatment system.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 38

**Comment Excerpt:**

We request that the *treatment* definition be modified to read:

*Treatment system means a system that compresses and filters the LFG, and achieves a degree of de-watering consistent with specifications for good combustion supplied by the manufacturer or supplier of the combustion equipment.*

In addition, this definition should be limited to new projects. We request that existing beneficial use projects at landfills currently subject to Subpart WWW be grandfathered to avoid expensive and unnecessary system retrofits when/if the landfill becomes subject to Subpart XXX.

**Comment Response:**

EPA has finalized a definition of treatment system as a system that filters, de-waters, and compresses LFG. Such a definition allows landfills to treat the landfill gas through filtering, compression, and de-watering that is consistent with specifications for good combustion supplied by the manufacturer or supplier of the combustion equipment. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under [comment code 11g] for the final definition of treatment system. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 42, under [comment code 11g] for the final definition of treatment system.

Regarding applicability, the treatment path of compliance is not limited to new projects, but is available to all landfills subject to 40 CFR part 60, subparts Cf and XXX. Landfills that are currently subject to 40 CFR part 60, subpart Cc or WWW would continue to be subject to the treatment system requirements in 40 CFR part 60, subparts Cc or WWW until the landfills become subject to subparts Cf or XXX and the treatment system requirements in those subparts. The final requirements provide compliance flexibility and promote beneficial use of landfill gas to both existing and new landfill gas projects.

For existing landfills, the treatment system requirements will appear in a revised state plan or federal plan implementing subpart Cf. For new landfills (those that commenced construction, reconstruction, or modification after July 17, 2014), the treatment system requirements appear in subpart XXX.

## 11.7 Treatment-Compliance Timing

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 36

### Comment Excerpt:

We are concerned that the requirements will harm existing projects, as the proposed rule offers no transitional compliance period for existing sites with LFGTE projects that trigger subpart XXX applicability upon expansion or modification. Once these sites commence construction and become subject to Subpart XXX, there is no acknowledgement of the need for, or provision in the proposal for sufficient time for a LFGTE project owner to plan for, acquire and install new systems to meet the de-watering and filtering requirements. Without a transition period to come into compliance with the prescriptive treatment definition, projects would need to shut down and utilize backup flares.

### Comment Response:

The final NSPS and emission guidelines define treatment system as a system that filters, de-waters, and compresses LFG. Thus, landfills will not be required to meet specific numeric requirements for treatment. However, landfills treating LFG must prepare a site-specific monitoring plan that includes monitoring parameters addressing all three elements of treatment (filtration, de-watering, and compression) to ensure the system is operating properly for the intended end use of the treated LFG. The site-specific treatment monitoring plan would be reviewed by the Administrator (EPA Administrator, or his/her authorized representative, or the Administrator of a state air pollution control agency) as part of the design plan and the Administrator would either approve it, disapprove it, or request additional information.

Landfills that are currently subject to 40 CFR part 60, subpart Cc or WWW would continue to be subject to the treatment system requirements in subparts Cc or WWW until the landfills become subject to subparts Cf or XXX and the treatment system requirements in those subparts. For existing landfills, the requirements for treatment will appear in a revised state plan or federal plan implementing subpart Cf. For new landfills (those that commenced construction,



reconstruction, or modification after July 17, 2014), the more detailed requirements for treatment will appear in subpart XXX. The timing to comply with the treatment requirements will follow the compliance schedule in the respective subpart Cf or XXX.

The transitional compliance period for landfills that are treating landfill gas before the effective date of 40 CFR part 60, subpart XXX is as follows:

- For landfills that are treating LFG to comply with subpart WWW or subpart Cc (through a state or federal plan) before the effective date of subpart XXX, they must have the treatment plan in place within 1 year of becoming subject to subpart XXX. They already had a gas collection and control system in place and were already complying with the treatment option under subpart WWW or subpart Cc and therefore should be able to develop a treatment monitoring plan relatively quickly.
- For landfills that are treating LFG for sale or beneficial use before the effective date of subpart XXX, and they become subject to the collection and control requirements under subpart XXX, they must have the treatment plan in place before they begin operating the GCCS under subpart XXX. For landfills not previously required to collect and control their landfill gas emissions under subpart WWW or subpart Cc, there is already an initial lag time built into when a GCCS must begin operating, during which time a treatment monitoring plan can be developed.

[Need EPA input on the above transitional compliance period for landfills currently treating LFG.]

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 69

**Comment Excerpt:**

EPA should provide sufficient time to complete the monitoring plan.

We are concerned that the proposed rule offers no transitional compliance period for existing sites with LFGTE projects that trigger Subpart XXX applicability upon expansion or modification. Once these sites commence construction and become subject to Subpart XXX, there is no acknowledgement of the need for, or provision in the proposal for sufficient time to complete treatment system monitoring plans. Although EPA correctly acknowledges that the plans will likely document operational and maintenance practices a landfill is already following (80 Fed Reg., Page 52132), the sites will still need sufficient time to prepare the plans in order to comply with the proposed requirement.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 36, under comment code 11i.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager  
**Commenter Affiliation:** Burns & McDonnell  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1  
**Comment Excerpt Number:** 9

**Comment Excerpt:**

The proposal provides no compliance timeframe for implementing new requirements such as treatment system installation when a landfill moves from WWW to XXX.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 36, under comment code 11i.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent  
**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1  
**Comment Excerpt Number:** 11

**Comment Excerpt:**

The proposal provides no compliance timeframe for implementing new requirements such as treatment system installation when a landfill moves from WWW to XXX.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 36, under comment code 11i.

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## **11.8 Treatment-Non-numeric-Site Specific Monitoring Plan**

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO  
**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0196  
**Comment Excerpt Number:** 53

**Comment Excerpt:**

We support EPA's proposed requirement to prepare a treatment system monitoring plan in place of the previously proposed numeric values and continuous monitoring and recordkeeping

requirements (80 FR 52157). This flexibility will minimize costs and retain existing and promote future beneficial use projects. The beneficial use projects that produce renewable energy will be critical to the success of state Clean Power Plans. State Clean Power Plans may rely on renewable energy as part of Building Block three and 29 states currently recognize landfill gas as renewable in Renewable Portfolio Standards (RPS).

However, we do not agree that agency approval of the monitoring plan is warranted or justified. As we stated in our previous comments (Docket ID Number EPA-HQ-OAR-2014-0451-0062 and EPA-HQ-OAR-2003-0215-0108), treatment systems are closed loop systems that process LFG for subsequent beneficial use; an LFG treatment system is not a control device and emission limits do not apply. The treated landfill gas would still be required to be routed to a control device that may fall under another subpart of the CAA.

Proposed agency approval of the treatment system monitoring plan is inconsistent with recent agency action. For example, EPA finalized revisions to the NESHAP rules for Brick and Structural Clay Manufacturing and Clay Ceramics Manufacturing September 24, 2015. Both rules require sources to "prepare, implement and revise as necessary" an operation, maintenance and monitoring (OM&M) plan. The OM&M plans "*must be available for inspection by the delegated authority upon request*" (emphasis added, see § 63.8420 (c) and § 63.8425 (a); § 63.8570 (c) and § 63.8575 (a)). Both NESHAPs (40 CFR 63 Subparts JJJJJ and KKKKK) do not require agency approval of the OM&M Plan, yet these sources are subject to specific emission limits and continuous emissions monitoring. The LFG treatment systems are not subject to emission limits or continuous emissions monitoring, yet EPA proposes to require agency approval which is more stringent than what EPA has promulgated for sources with HAP emission limits and continuous emissions monitoring requirements.

As another example, the Part 98 GHG Reporting Rules require a facility to prepare, follow and maintain a GHG Monitoring Plan for agency inspection if requested; the rule does not require agency approval. Part 63 Subpart AAAA requires an SSM Plan be prepared and maintained for agency inspection if requested.

The requirement to submit the treatment system monitoring plan for agency approval – as part of the GCCS Design Plan - is unwarranted and creates new burdens for the agencies, especially since the treatment systems are not control devices, are enclosed systems with no emissions and do not have prescribed emission limits. Based on the past poor record of agency approvals under the NSPS/EG, adding an additional document that requires regulatory approval would not appear to be a viable strategy. The requirement to prepare a plan and maintain a copy for agency inspection is sufficient.

#### **Comment Response:**

The EPA appreciates the commenter's support and agrees that the new definition of treatment, including the treatment system monitoring plan, will minimize costs and retain existing and promote future beneficial use projects.

[Need EPA input on agency review of treatment monitoring plan.]

Regarding treatment systems not being an emission source, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 66

**Comment Excerpt:**

WM supports EPA's proposed requirement to prepare a treatment system monitoring plan; however, Agency approval of the plan is not warranted or justified.

We support EPA's proposed requirement to prepare a treatment system monitoring plan in place of the previously proposed numeric values and continuous monitoring and recordkeeping requirements (EPA-HQ-OAR-2014-0451-0076). This flexibility will minimize cost and retain existing and promote future beneficial use projects.

However, we do not agree that agency approval of the treatment system monitoring plan is warranted or justified. Further, proposed Agency approval of the treatment system monitoring plan is inconsistent with recent agency action. As we stated in our September 15, 2014 comments (See docket ID Numbers EPA-HQ-OAR-2014-0451-0037, EPA-HQ-OAR-2003-0215-0100), treatment systems are closed loop systems that process LFG for subsequent beneficial use; a LFG treatment system is not a control device and emission limits do not apply. For example, EPA finalized revisions to the NESHAP for Brick and Structural Clay Products Manufacturing; and NESHAP for Clay Ceramics Manufacturing on September 24, 2015. Both rules require sources to "prepare, implement and revise as necessary" an Operation, Maintenance and Monitoring (OM&M) Plan. The OM&M Plan "*must be available for inspection by the delegated authority upon request*" (emphasis added). See § 63.8420 (c) and § 63.8425 (a); § 63.8570 (c) and § 63.8575 (a)). Both NESHAPs (40 CFR 63 Subparts JJJJJ and KKKKK) do not require agency approval of the OM&M Plan, yet the equipment covered by the OM&M Plans are subject to specific emission limits and continuous emissions monitoring. In contrast, the landfill gas treatment systems are not subject to emission limits or continuous emissions monitoring, yet EPA proposes to require agency approval which is more stringent than what EPA has required for sources with HAP emission limits and continuous emissions monitoring requirements.

As another example, the 40 C.F.R. Part 98 GHG Mandatory Reporting Rules require each reporting facility to prepare, follow and maintain a GHG Monitoring Plan for agency inspection if requested; the rule does not require agency approval. In addition, the NESHAPs Part 63 Subpart A General Provisions require a Start-up Shutdown and Malfunction (SSM) Plan be prepared and maintained for agency inspection, if requested. This requirement applies to all NESHAPs source categories, as applicable.

**Comment Response:**

Regarding agency approval of the treatment system monitoring plan, see DCN EPA-HQ-OAR-2003-0215-0196, Excerpt Number 53 under comment code 11j.

Regarding treatment systems not being an emission source, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 67

**Comment Excerpt:**

The requirement to submit the treatment system monitoring plan for agency approval – as part of the GCCS Design Plan - creates new and unwarranted burden for the agencies, especially since the treatment systems are site-specific and tailored to the end user specifications. Less than 40 percent of WM landfills have affirmative state agency approval of their GCCS Design Plans, so to require approval of monitoring plans as a component of the Design Plan would exacerbate the agency approval issue, as we have repeatedly raised to EPA (See Docket ID Numbers EPA-HQ-OAR-2014-0451-0037, EPA-HQ-OAR-2003-0215-0100, EPA-HQ-OAR-2003-0215-0003, EPA-HQ-OAR-2003-0215-0017, EPA-HQ-OAR-2003-0215-0057). Several state agencies specifically commented on increased administrative burden for approving Design Plans (see Docket ID Numbers EPA-HQ-OAR-2003-0085 and EPA-HQ-OAR-2003-0112). Of the 176 responses in a recent survey,<sup>20</sup> 84.1 percent said treatment system monitoring plans should be retained on site for agency inspection. Only 15.9 percent responded the agency should approve the plans. The respondents included regulators, municipalities, private waste companies and environmental consultants. Of the 26 state and local regulatory agency responders, 58 percent agreed with maintaining the plans on site.

Given that the treatment system monitoring plans will be highly tailored to the end use specifications, the regulatory agency would be burdened with review and may not have the expertise to review and approve the plan. Without sufficient expertise to evaluate treatment systems in the context of end user requirements, agency approval may create disagreement with respect to treatment system performance objectives. These agencies are better equipped to review the monitoring plans on site and confirm conformance with the plan as part of a routine field inspection, which is consistent with other federal rule requirements and recent survey responses, as previously discussed. The requirement to prepare a treatment system monitoring plan and maintain a copy on site for agency inspection is sufficient.

[Footnote 20] National Waste and Recycling Association, "*EPA Ruling on New Source Performance Standards for Landfills*" Webcast, results from on-line polling question: "Should EPA require agency approval of treatment system monitoring plans or to maintain plans on-site for agency inspection?", October 14, 2015.

**Comment Response:**

Regarding agency approval of the treatment system monitoring plan, see DCN EPA-HQ-OAR-2003-0215-0196, Excerpt Number 53 under comment code 11j.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0176  
**Comment Excerpt Number:** 52

**Comment Excerpt:**

Republic supports EPA's decision to allow landfills to develop and implement a site-specific treatment monitoring plan based on the specifications and recommendations of the treatment equipment manufacturer. Such plans will allow individual facilities to tailor the monitoring requirements for their treatment system to the specific type of equipment involved. An equipment-specific approach is highly preferable to a "one-size-fits-all" approach that would likely be inappropriate for some treatment systems. The flexibility of EPA's proposed site-specific plans, on the other hand, will minimize costs imposed on existing projects while simultaneously promoting the development of new beneficial use projects as well.

However, Republic does not agree that landfills should be required to submit the treatment system monitoring plan for agency approval as a part of the GCCS Design Plan because it would place a burden on regulatory authorities and landfills that is unwarranted, especially since treatment systems are not control devices, are enclosed systems with no emissions, and do not have a prescribed emission limit. Based on the significant delays often associated with approval of GCCS design plans, EPA should avoid adding additional components to the plan that could result in even more unnecessary delays. Instead, Republic urges EPA to recognize that a requirement to prepare a plan and maintain a copy for inspection will be sufficient to ensure proper operation of landfill gas treatment systems. For additional comments on streamlining approval of GCCS design plans, please refer to our comments above.

**Comment Response:**

The EPA appreciates the commenter's support and agrees that the new definition of treatment, including the treatment system monitoring plan, will provide flexibility for existing and future beneficial use projects.

Regarding agency approval of the treatment system monitoring plan, see DCN EPA-HQ-OAR-2003-0215-0196, Excerpt Number 53 under comment code 11j.

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**Commenter Name:** Mark C. Messics, Senior Business Development Manager  
**Commenter Affiliation:** Talen Renewable Energy, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0160  
**Comment Excerpt Number:** 2

**Comment Excerpt:**

We support EPA's proposed requirement to prepare a treatment system monitoring plan in place of the previously proposed numeric values and continuous monitoring and recordkeeping

requirements. However, we do not agree that agency approval of the monitoring plan is warranted. LFG treatment systems are closed loop systems that process LFG for subsequent beneficial use. They are not control devices, as they have no emissions (and, thus, no prescribed emission limits).

The requirement to submit the treatment system monitoring plan for agency approval - as part of the GCCS Design Plan - is unwarranted and creates new burden for the agencies. This is especially true of our situations, as we do not own the landfills or the gas collection systems, so we do not prepare the GCCS design plans. We do, however, own and operate the "Treatment Systems" under our own permits, which are separate and distinct from our host landfills' permits. *The requirement to prepare a treatment system monitoring plan and maintain a copy on site for agency inspection should be sufficient.*

**Comment Response:**

Regarding agency approval of the treatment system monitoring plan, see DCN EPA-HQ-OAR-2003-0215-0196, Excerpt Number 53 under comment code 11j.

Regarding treatment systems not being an emission source or control device, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

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**Commenter Name:** Richard M. DiGia, President & CEO

**Commenter Affiliation:** Aria Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0166

**Comment Excerpt Number:** 2

**Comment Excerpt:**

We fully agree with the preparation of a site-specific system monitoring plan to support the proper operation of the treatment system and end use of the treated gas. However we disagree that the Administrator must review and approve the plan. We feel that state agencies with delegated authority may not have the expertise or the resources to review and ultimately approve these highly site specific treatment monitoring plans for treating gas to specifications set by the beneficial use project end user of the treated gas. Treatment systems are closed loop systems that process landfill gas for subsequent beneficial use; a LFG treatment system is not a control device and emission limits do not apply. Instead the rule should require the source to prepare, implement and revise as necessary an operation, maintenance and monitoring plan. This plan and the associated records should be maintained onsite at the source and available for inspection/review by the Administrator or delegated authority.

**Comment Response:**

Regarding agency approval of the treatment system monitoring plan, see DCN EPA-HQ-OAR-2003-0215-0196, Excerpt Number 53 under comment code 11j.

Regarding treatment systems not being an emission source or control device, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 43

**Comment Excerpt:**

We support EPA's proposed requirement to prepare a treatment system monitoring plan in place of the previously proposed numeric values and continuous monitoring and recordkeeping requirements (80 FR 52157). This flexibility will minimize costs and retain existing beneficial use projects and promote future projects.

**Comment Response:**

The EPA appreciates the commenter's support and agrees that the new definition of treatment, including the treatment system monitoring plan, will provide flexibility for existing and future beneficial use projects.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch

**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0156

**Comment Excerpt Number:** 7

**Comment Excerpt:**

On page 52157 [40 CFR 60.38f(d)(4)] of the proposal, EPA states that landfills that meet emission control requirements though a treatment system "must prepare a site-specific treatment system monitoring plan". To make the use of this site-specific treatment system plan enforceable, Georgia EPD recommends adding the following monitoring requirements [Page 52155]:

**Maintain and operate all monitoring systems associated with the treatment system in accordance with the site-specific treatment system monitoring plan required in §60.38f(d)(4).**

Georgia EPD also recommends changing the paragraph on Page 52155 §60.37f(g) of the proposal as follows:

(g) Each owner or operator seeking to demonstrate compliance with the control system requirements §60.33f(c) using a landfill gas treatment system must calibrate, maintain, and operate according to the manufacturer's specifications a device that records flow to or bypass of the treatment system **and parameters defined in the site-specific treatment system monitoring plan.** [Page 52155 §60.37f(g)]

**Comment Response:**



The EPA revised the final rule at 40 CFR 60.37f(g) to require owners and operators to maintain and operate monitoring systems associated with the treatment system in accordance with the site-specific treatment system monitoring plan, according to the commenter's suggestion. The EPA agrees that owners and operators must not only prepare the site-specific treatment system monitoring plan, but also must comply with it. However, the EPA did not revise the final rule at 40 CFR 60.37f(g) according to the commenter's suggestion. The owner or operator must record the flow to or bypass of the treatment system. Thus, if the flow of landfill gas to the treatment system is bypassed, then the corresponding parameters are bypassed as well. Therefore, the EPA believes that the commenter's second suggested revision is not necessary. See section VI.E. of the NSPS preamble for additional discussion.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch  
**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0156  
**Comment Excerpt Number:** 9

**Comment Excerpt:**

On page 52158 [40 CFR 60.39f(b)(5)(ii)] of the proposal, EPA states that the site-specific treatment system monitoring plan must include:

"(A) Records of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for the intended end use of the treated landfill gas."

If the definition of Treatment System is to include further processing in addition to filtering, de-watering, and compressing, we suggest expanding the possible parameter monitoring requirements as follows:

**(A) Monitoring records of parameters that ensure the treatment system is operating properly for the intended end use of the treated landfill gas. At a minimum, records should include records of filtration, de-watering, and compression, if used in the treatment system.**

**Comment Response:**

The EPA revised the 40 CFR 60.39f(b)(5)(ii)(A) in response to this comment recognizing that the parameters that can ensure the system is operating properly for the intended end use can vary based on the type of project.

See also section VI.E. of the NSPS preamble for additional discussion.

See response to DCN EPA-HQ-OAR-2014-0451-0156, excerpt number 8, under comment code 11g for additional responses to expanded parameters for treatment systems.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch  
**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0156

**Comment Excerpt Number: 10**

**Comment Excerpt:**

On page 52158 [40 CFR 60.39f(b)(5)(ii)(D) and (E)] of the proposal, EPA states that the site-specific treatment system monitoring plan must:

"(D) Identify who is responsible (by job title) for data collection

(E) Processes and methods used to collect the necessary data"

Georgia EPD does not believe the information in §60.39f(b)(5)(ii)(D) and (E) is needed. As such, Georgia EPD recommends removing §60.39f(b)(5)(ii)(D) and (E).

**Comment Response:**

The EPA considered other monitoring plans when developing the landfills site-specific treatment monitoring plan. Specifically, the EPA reviewed the greenhouse gas monitoring plan in the greenhouse gas reporting rule at 40 CFR 98.3. The EPA is retaining the criteria in order to help ensure the treatment system monitoring plan is followed.

## **11.9 Treatment as 1 of 3 Ways to Comply**

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**Commenter Name:** Comment submitted by Catharine Fitzsimmons, Chief, Air Quality Bureau

**Commenter Affiliation:** Iowa Department of Natural Resources (DNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0078.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

EPA should revise the last two sentences in the requirements for gas treatment systems proposed in 60.762(b)(2)(iii)(C) (page 41833), as follows (changes are shown in underline and strikethrough text):

...Venting of treated landfill gas to the ambient air or combustion of treated landfill gas in a flare is not allowed under this option. ~~(If flares are used, they must meet §60.72(b)(2)(iii)(A) or (B)).~~

As currently proposed, these two sentences are confusing. EPA includes the option and requirements to flare **untreated** landfill gas earlier in proposed section 60.762. The requirements EPA proposes in paragraph (C) apply only to **treated** landfill gas. It is unnecessary and confusing to include the second, parenthetical sentence in paragraph (C).

**Comment Response:**

The EPA understands that there has been some confusion during implementation of subparts Cc and WWW on flaring requirements for LFG that has been treated. The EPA also understands that it is not always possible to beneficially use all treated LFG, due to either capacity limitations of the end-user, market conditions for gas sales, or other unforeseeable shutdowns of the beneficial use equipment. EPA has added language to subpart XXX and subpart Cf to clarify the intended requirements when a landfill must flare treated LFG.

Venting of treated LFG to the ambient air is not allowed. If LFG that has been treated according to the rules must be flared, then the flares destroying the LFG must still meet the requirements in 40 CFR 60.762(b)(2)(iii)(A) or (B) (for subpart XXX) or 40 CFR 60.33f(c)(1) or (2) (for subpart Cf), depending on the type of flare or other enclosed combustor equipment used to demonstrate compliance with the control system requirements. That is, the flare requirements apply to any gas routed to flares, either treated or non-treated LFG because the flared gas is not routed to a treatment system that processes the gas for subsequent sale or beneficial use, the gas is flared. The language in 40 CFR 60.762(b)(2)(iii)(C) and 40 CFR 60.33f(c)(3) was added not to prohibit landfills from flaring treated landfill gas, but instead to clarify that the landfill could not demonstrate compliance with the treated landfill gas option if the gas was flared.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 55

**Comment Excerpt:**

EPA states that combustion of treated gas in a flare is not allowed, but then states if flares are used they must meet the flare requirements (§ 60.33f(c)(3)). In some cases, the treatment system may be installed prior to the delivery piping to the flare and intended beneficial end use. We do not believe EPA's intent is to prohibit treated gas from being burned in a flare or to exempt flares from operational requirements. We therefore recommend EPA revise the rule text to read as follows.

*"(3) Route the collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-Btu gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air or combustion in a flare is not allowed under this option. (If flares are used, they must meet the requirements in paragraphs (c)(1) or (c)(2) of this section.)"*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0078.1, excerpt number 2, under comment code 11k.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 44

**Comment Excerpt:**

In § 60.33f(c)(3), EPA says combustion of treated gas in a flare is not allowed, but then states that if flares are used they must meet flare requirements. In some cases, the treatment system may be installed prior to the delivery piping to the flare and intended beneficial end use. We do not believe EPA's intent is to prohibit treated gas from being burned in a flare or to exempt flares from operational requirements. We therefore recommend EPA revise the rule text to read as follows:

*(3) Route the collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-Btu gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air or combustion in a flare is not allowed under this option. (If flares are used, they must meet the requirements in paragraphs (c) (1) or (c) (2) of this section.)*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0078.1, excerpt number 2, under comment code 11k.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 72

**Comment Excerpt:**

The rule should not prohibit flares from burning treated landfill gas.

We are confused with proposal language that indicates combustion of treated gas in a flare is not allowed but then states that if flares are used they must meet the flare requirements. (See § 60.33f(c)(3)) In some cases, the treatment system may be installed prior to the delivery piping to the flare and intended beneficial end use. In addition, emissions from any atmospheric vent from the gas treatment system must be routed to a an open flare or enclosed combustor (see 60.33(c)(4)). We do not believe EPA's intent is to prohibit treated gas from being burned in a flare or to exempt flares from operational requirements. We therefore recommend EPA revise the rule text to read as follows:

*§ 60.33f(c)(3) Route the collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-Btu gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air or combustion in a flare must meet the requirements in paragraphs (c)(1) or (c)(2) of this section.)*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0078.1, excerpt number 2, under comment code 11k.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 54

**Comment Excerpt:**

EPA's proposal appears to be internally inconsistent by first stating that combustion of treated gas in a flare "is not allowed," but then imposing specific requirements on flares used to combust treated gas. *See* 40 C.F.R. § 60.33f(c)(3). Because Republic believes that there may be circumstances in which treated landfill gas may be combusted in a flare, we oppose the requirement to prohibit that practice and instead recommend the following changes to the proposed emission guidelines:

Venting of treated landfill gas to the ambient air or combustion in a flare ~~is not allowed under this option. (If flares are used, they must meet the requirements in paragraphs (c)(1) or (c)(2) of this section.)~~

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0078.1, excerpt number 2, under comment code 11k.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 10

**Comment Excerpt:**

KDAQ requests that the prohibition on flaring of treated landfill gas be removed (see 40 CFR 60.33f(c)(3)). It may create unintended restrictions on its beneficial use by restriction of treatment systems configurations. Flares are often used as a backup control, should any portion of the treatment or any equipment posttreatment go offline. This should be considered when writing the regulation regarding gas treatment.

KDAQ requests clarification of 40 CFR 60.33f(c)(3) and (4). These two regulatory requirements appear to contradict each other. Section 40 CFR 60.33f(c)(3) states that "Venting of treated landfill gas to the ambient air or combustion in a flare is not allowed under this option" but also contains a parenthetical with requirements for flares, while 40 CFR 60.33f(c)(4) discusses the

use of atmospheric vents from the gas treatment system which are prohibited by the previous regulation: 40 CFR 60.33f(c)(3).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0078.1, excerpt number 2, under comment code 11k.

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 5

**Comment Excerpt:**

EPA proposed to establish a specific water dew point of landfill gas for landfill gas treatment to promote proper destruction of NMOC. While this is a beneficial clarification to the proposed rule, EPA's proposal allows for the venting of landfill gas following treatment. To ensure the proper operation of the combustion system, the Division suggests EPA also specify a minimum heat content for treated gas so that the gas will support the intended combustion activity. In addition, the Division suggests that EPA require either truly continuous flow rate monitoring of the flare or require confirmation that gas is not being vented when the flare is shut down.

**Comment Response:**

The numeric definition for treatment proposed on July 17, 2014 is no longer applicable. The EPA is finalizing a definition that will allow the level of filtration, de-watering, and compression to be tailored to the type and design of the specific equipment in which the LFG is used. Owners or operators will need to identify monitoring parameters, be able to demonstrate that such parameters effectively monitor filtration, de-watering or compression system performance necessary for the end use of the treated LFG and keep records to demonstrate that the parameters are being met. Owners or operators will also need to develop a site-specific treatment system monitoring plan that will accommodate site-specific and end-use specific treatment requirements for different energy recovery technologies.

Neither the proposed rule nor the final rule allows for the venting of landfill gas following treatment. Landfill owners or operators must control the LFG according to 40 CFR 60.33f(c)(1), (2), or (3) of the Emission Guidelines and 40 CFR 60.762(b)(2)(iii)(A), (B), or (C) of the NSPS. Under 40 CFR 60.33f(c)(3) and 40 CFR 60.762(b)(2)(iii)(C), venting of treated landfill gas to the ambient air or combustion in a flare is not allowed when treating LFG to comply. If the treated LFG must be flared, then the flare must meet the requirements in 40 FR 60.33f(c)(1) or (2) of the emission guidelines and 40 CFR 60.762(b)(2)(iii)(A) or (B) of the NSPS.

If the gas collection and control system is not operating, then owners or operators must shut down the gas mover system and close all valves in the collection and control system contributing to venting of the gas to the atmosphere within 1 hour.

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**Commenter Name:** Comment submitted by Matt Lamb  
**Commenter Affiliation:** Smith Gardner, Inc  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0083  
**Comment Excerpt Number:** 3

**Comment Excerpt:**

The proposed rule clarifies the definition of treated landfill gas as landfill gas that has passed through a 10-micron or less filter, and has had the dew point reduced to at least 45°F. The use for treated landfill gas discusses uses as fuel for stationary combustion devices, vehicle fuel, high-Btu pipeline gas, or chemical manufacturing. This definition does not specifically recognize that many of these sources also incorporate a backup flare for use when the beneficial use equipment is down for maintenance or some other reason. The specific inclusion of landfill gas is requested, to avoid confusion over testing requirements.

**Comment Response:**

The numeric definition for treatment proposed in 2014 is no longer applicable. The EPA is finalizing a new definition that will allow the level of filtration, dewatering, and compression to be tailored to the type and design of the specific equipment in which the LFG is used. See response to DCN EPA-HQ-OAR-2003-0215-0078.1, excerpt number 2, under [comment code 11k] for the requirements for flaring treated LFG. See section VI.E. of the NSPS preamble for additional discussion on the final definition of landfill gas treatment.

## **11.10 LMOP Promotion of Beneficial Use of LFG**

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**Commenter Name:** John Quigley, Secretary  
**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0169  
**Comment Excerpt Number:** 9

**Comment Excerpt:**

The DEP supports the creation of technical documents and other tools for educating owners and operators of affected MSW landfills about how GCCS BMPs and oxidative controls can be implemented to achieve additional methane and NMOC reductions. As proposed, State Plans for MSW landfills are due to EPA nine months after the final Subpart Cf requirements are published in the *Federal Register*. To this end, EPA should provide technical documents and other tools in a timely manner to assist agencies in implementing the guidelines expeditiously.

**Comment Response:**

The EPA appreciates the commenter's support and suggestions.

## 11.11 Treatment-Other Uses

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**Commenter Name:** Comment submitted by Dave Heitz

**Commenter Affiliation:** Geosyntec Consultants

**Document Control Number:** EPA-HQ-OAR-2003-0215-0102.1

**Comment Excerpt Number:** 8

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### **Comment Excerpt:**

In Subpart XXX , §60.766(d) specifies the procedures for establishing monitoring parameters for "*... a device other than a non-enclosed flare or an enclosed combustor or a treatment system ...* " The equivalent section of Subpart WWW (§60.756(d)) states, "*... a device other than an open flare or an enclosed combustor ...* " Based on the revision made in Subpart XXX, it appears that §60.756(d) is not intended to be used for treatment systems. I recommend this be clarified through the rulemaking.

### **Comment Response:**

The EPA is not amending the language of subpart WWW in these final rule actions for subpart XXX, therefore the language in §60.756(d) will remain the same. It is the intent of section 60.766(d) of subpart XXX to exclude treatment systems and the final section 60.766(d) already states that paragraph (d) is not intended for treatment systems. "...using a device other than a non-enclosed flare or an enclosed combustor or a treatment system shall provide information to the Administrator..."

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 56

### **Comment Excerpt:**

In sum, the best estimates of which we are aware indicate that fugitive methane emissions are likely so high that more methane escapes than is being captured at landfills employing landfill-gas-to-energy systems. Consequently, we do not support treatment of landfill gas as "renewable" until there are demonstrated technologies and practices to fully monitor and mitigate methane leakage from landfills that collect gas for energy.

### **Comment Response:**

The landfills rules do not define LFG as renewable energy or not. However, the rules require the installation of a GCCS after the landfill exceeds the design capacity and NMOC emission rate thresholds. In addition, fugitive methane emissions must be monitored quarterly once a landfill is required to install a GCCS, and any leaks identified during this monitoring must be repaired in the timeframes established in the rule.



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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 70

**Comment Excerpt:**

EPA should clarify in the rule language that compliance obligation ends once landfill gas is treated.

We believe it is EPA's intent that compliance obligations for Subpart Cf and XXX requirements end after landfill gas is treated per the rule requirements. Therefore beneficial use projects and equipment are not subject to Subpart Cf and XXX requirements if they receive and use treated gas. As stated in our previous comments, the beneficial use projects and equipment are subject to other NSPS and NESHAPs requirements (i.e., 40 C.F.R. Part 60, Subpart JJJJ, 40 C.F.R. Part 63, Subpart ZZZZ, Renewable Fuel Standards, etc.) as well as state and federal construction and operating permit conditions for combustion emissions and practices. We request that EPA clearly confirm in the final rule language and preamble that the NSPS/EG compliance obligations are met when landfill gas is treated per the rule requirements. Accordingly, beneficial use projects that use treated gas will not be subject to compliance obligations under Subpart XXX and Cf. We understand that if the beneficial use project does not use treated gas then the end use could be subject to NSPS/EG requirements.

**Comment Response:**

Landfill owners or operators must control the LFG according to 40 CFR 60.33f(c)(1), (2), or (3) of the Emission Guidelines or 40 CFR 60.762(b)(2)(iii)(A), (B), or (C) of the NSPS. Once the LFG has met the requirements for treatment in 40 CFR 60.33f(c)(3) of the Emission Guidelines or 40 CFR 60.762(b)(2)(iii)(C) of the NSPS, then the landfill owner or operator has met the compliance obligation to control the LFG. LFG that has been treated according to the requirements in the landfills NSPS and Emission Guidelines are not subject to the combustion requirements in the landfills rules. That is, equipment combusting landfill gas does not have to reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen. However, if treated LFG must be combusted in a flare because the treatment system is not operating, then the flare must meet the requirements for flares in 40 CFR 60.33f(c)(1) or (2) of the Emission Guidelines or 40 CFR 60.762(b)(2)(iii)(A) or (B) of the NSPS.

See also the response to EPA-HQ-OAR-2003-0215-0078.1, excerpt number 2 in comment code 11k.

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**Commenter Name:** Richard M. DiGia, President & CEO

**Commenter Affiliation:** Aria Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0166

**Comment Excerpt Number: 3**

**Comment Excerpt:**

We believe the EPA was clear in their intent that compliance obligations end after the gas is treated, however we'd like to request EPA further clarify this by adding the following language to § 60.33(f)(3) – *NSPS/EG compliance obligations are met after gas is treated per the rule requirements.*

**Comment Response:**

[Need EPA input on whether to add the suggested language to the NSPS/EG]

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 71

**Will be summarized and responded to in the preamble:**

**Sort Order:** 500

**Response Status:** Final

**Comment Excerpt:**

We agree that a landfill gas treatment system is not a control device or emissions source; it is a compliance option.

In our previous comments (Docket ID Numbers EPA-HQ-OAR-2014-0451-0037, EPA-HQ-OAR-2003-0215-0100) we described why a landfill gas treatment system is not a control device and should not be treated as such in the NSPS and EG rules. In review of the proposed rules and Preamble (80 Fed. Reg. 52132) EPA makes a clear distinction that the treatment system is an alternative compliance option to a control device (i.e., open flare, enclosed combustor). EPA also clearly delineates control device from treatment system throughout the rule language. However there are still several places in the proposed rule language that warrant clarification as they appear in conflict with the distinction that a treatment system is not a control device. EPA should either revise the rule language as proposed below or add a statement within the rule language to clarify that a treatment system is not a control device.

*§60.33f(c) Control system. For approval, a State plan must include provisions for the control of the gas collected from within the landfill through the use of control devices **or treatment system** meeting the following requirements, except as provided in § 60.24*

*§60.37f(g) Each owner or operator seeking to demonstrate compliance with § 60.33f(c) using a landfill gas treatment system must calibrate, maintain, and operate according to the manufacturer's specifications a device that records flow to or bypass of the treatment system.*

*§60.38f(d)(4) If the owner or operator chooses to demonstrate compliance with the requirements of this subpart using a treatment system as defined in this subpart, then the owner*

*or operator must prepare a site-specific treatment system monitoring plan as specified in § 60.39f(b)(5)(ii)*

EPA determined the routing of collected gas to a treatment system is an effective alternative to a control device. EPA does not propose to establish any emission limit or operating requirements that would apply to the treatment process itself, correctly reflecting that landfill gas treatment is not a control device and does not produce emissions that may be monitored or subjected to specific operating parameters.

**Comment Response:**

[Need EPA input: Draft this response based on whether a treatment system is considered to be a control device.]

Regarding treatment systems not being an emission source, see DCN EPA-HQ-OAR-2003-0215-0100.1, Excerpt Number 40 under comment code 1z.

## **12.0 WELLHEAD MONITORING**

### **12.1 Monthly Monitoring and Negative Pressure**

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#### **12a. Monthly monitoring and negative pressure**

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 121

**Sort Order:** 100

**Comment Excerpt:**

The oxygen/nitrogen and temperature wellheads parameters are poor indicators of landfill fires or inhibited decomposition. The decomposition of municipal solid waste (MSW) produces primarily methane and carbon dioxide, but does not produce oxygen. Oxygen may be drawn into the waste mass when operating a GCCS and applying a vacuum to a LFG collector. However, when oxygen does enter the waste mass, it is consumed by numerous biological and chemical reactions as the waste decomposes. Oxygen is rarely seen in a gas well, particularly when the system is recovering sufficient gas and producing stable gas flows. When greater than five percent oxygen is detected in a well the most common problem is a collapsed or pinched well, or a loose fitting or coupling that allows atmospheric air to enter the wellhead. Alternatively, where the landfill owner/operator is implementing early gas collection using shallow horizontal collectors, air can easily be pulled into the collectors, causing a temporary increase in oxygen until more waste is placed over the collectors ceasing air intrusion. None of these examples would cause or contribute to a landfill fire, but they are the most typical circumstances for high oxygen readings in a wellhead.

**Comment Response:**

The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature. The EPA is retaining the operational standard for temperature because of concerns regarding fire hazards. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 41  
**Sort Order:** 101

**Comment Excerpt:**

The current wellhead monitoring provisions add significant burdens without providing any emission reduction benefits, and EPA's proposed revisions would likely increase the regulatory burden even further.

The performance standards for the monitoring of pressure, temperature, and either oxygen or nitrogen serve only two purposes: (1) to ensure the landfill gas collection system is operating properly and (2) to avoid propagation of a subsurface fire or conditions that can inhibit anaerobic decomposition by killing methanogens. However, the current temperature and oxygen/nitrogen monitoring requirements fail to accomplish either of these two goals. On the contrary, based on 18 years of experience implementing the NSPS, Republic has found that the temperature and oxygen/nitrogen monitoring requirement does little to avoid fires and can actually impede the proper operation of the collection system.

Although a temperature of above 55° C (131° F) and oxygen level of greater than 5 percent can indicate the potential for either a fire or conditions that could kill methanogens, additional investigation is often required to determine the true cause of the elevated temperature or oxygen concentration. In many cases, any "exceedance" simply reflects the natural state of the landfill and does not present a concern.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 43  
**Sort Order:** 102

**Comment Excerpt:**

As a result, landfills must typically respond to high temperature and oxygen/nitrogen readings in one of two ways—by either reducing flow from the well or by expanding the gas collection system, neither of which serves the intended purpose of the monitoring requirements. Reducing flow can lower temperature readings by allowing more ambient cooling to occur, but it also results in lower gas collection and control and can present an increased risk of surface methane exceedances if flow is significantly curtailed for an extended period of time. Expanding the landfill gas collection system may also contradict EPA’s intent by introducing more air into the landfill, which can exacerbate a fire and actually increase oxygen content. At a minimum, many such expansions are unwarranted, thus resulting in significant additional cost for no environmental benefit.

To avoid these unintended consequences, the prescriptive temperature and oxygen monitoring requirements should be eliminated in favor of more flexible requirements that allow landfills a better opportunity to determine whether a fire or unfavorable conditions actually exist before becoming subject to binding corrective action requirements that may be counterproductive. The surface monitoring requirements already contained in the current rule are sufficient to ensure proper operation of the GCCS and minimize emissions.

EPA’s request for comment on incorporating additional parameters into the regulation is difficult to respond to given the open-ended nature of such request. There is no evidence to suggest a need for additional parameters in wellhead monitoring at this time. Instead EPA should focus on providing operational flexibility to allow landfills to optimize GCCS operations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 26

**Sort Order:** 103

**Comment Excerpt:**

NW&RA and SWANA are in favor of eliminating these wellhead oxygen and temperature requirements. Examples of the problems with the prescriptive standards are discussed in the "Best System of Emission Reduction" section of this letter [EPA-HQ-OAR-2003-0215-0064.1.1]. Temperature, nitrogen and oxygen are not compliance parameters; rather they are indicators of air infiltration (79 FR 41838, 60.765 (a)(5)) that are in place with the intention to minimize the risk of subsurface fires. Landfill owners already have significant, inherent incentives to minimize these risks.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 15

**Sort Order:** 104

**Comment Excerpt:**

EPA has requested comment regarding reducing the frequency of monitoring LFG wells for oxygen and temperature. At present, temperature and oxygen or nitrogen content are measured monthly at every well. We are in favor of eliminating these requirements. The oxygen and temperature monitoring requirements are overly prescriptive and do not result in reduced emissions. These components are not compliance parameters; rather they are indicators of air infiltration that are in place with the intention to minimize the risk of subsurface fires (p. 41838,60.765 (a)(5)). Landfill owners have significant inherent incentive to minimize these risks. The compliance parameter of the collection system is negative pressure. The time and effort to monitor these parameters and to perform follow up monitoring and recordkeeping for each well on a monthly basis is time consuming and burdensome for landfill owners.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Dave Heitz

**Commenter Affiliation:** Geosyntec Consultants

**Document Control Number:** EPA-HQ-OAR-2003-0215-0102.1

**Comment Excerpt Number:** 1

**Sort Order:** 105

**Comment Excerpt:**

EPA should modify wellhead standards to eliminate temperature, nitrogen and oxygen requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Richard N. Lindstrom, P.E.

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2003-0215-0103

**Comment Excerpt Number:** 2

**Sort Order:** 106

**Comment Excerpt:**

Dozens of wellhead demonstrations have been encountered in which the questions of “fire” or “significantly inhibiting anaerobic decomposition by killing methanogens” (SIADKM) are pertinent. USEPA must define these terms so that the agencies and that facilities will know what constitutes acceptable performance. The uploaded files discuss these various issues with proposed Subpart XXX for USEPA’s consideration:

WWW\_753c\_Comment

Evaluation of Warm Well HOVs

[see the following table - original submittal DCN# 0103.5 for wellhead parameters and observations]

Assignment of Section 753(c) Status by Wellhead Parameters and O

Level	Descriptive Qualifier for Fire and/or Inhibition of Anaerobic Decomposition	Fire (includes smoldering & pyrolysis)	Fire	Fire	753 Status: Fire	753 Status: Inhibition	Inhibition; Aerobic	Inhi Ae
		Carbon Monoxide, ppm	Carbon Dioxide, %	Observations	Presence	Degree	Oxygen Consumption, cf/hcf LFG	Ca Diox
1	Marginal	50-100	<50		Likely	Insignificant	<0.5	<
2	Minor	100-200	50-52				0.5-1.0	4
3	Modest	200-500	52-54				1.0-1.5	4
4	Moderate	500-1000	54-56				1.5-2.0	4
5	Substantial	1000-2000	>56	Smoke, steam, subsidence, char	Definite	Significant	2.0-2.5	5
6	Abundant	2000-5000					2.5-3.0	5
7	Serious	5000-10000					3.0-3.5	5
8	Acute	10000-20000					3.5-4.0	5
9	Severe	20000-50000					4.0-5.0	5
10	Extreme	>50000				>5.0	>	Urgent

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 36

**Sort Order:** 107

**Comment Excerpt:**

Advocacy recommends that EPA consider adopting policy recommendation to remove wellhead operational standards.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 4

**Sort Order:** 108

**Comment Excerpt:**

We recommend eliminating wellhead performance standards for temperature and oxygen or nitrogen as these performance standards can hinder the most efficient operation of GCCS and decrease the amount of emissions reductions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Kimberly Smelker

**Commenter Affiliation:** Granger III and Associates, LLC

**Document Control Number:** EPA-HQ-OAR-2003-0215-0114.1

**Comment Excerpt Number:** 41



**Sort Order:** 109

**Comment Excerpt:**

EPA should modify wellhead standards to eliminate temperature, nitrogen and oxygen requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Charlie Sedlock, Director

**Commenter Affiliation:** Hamm, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0084.1

**Comment Excerpt Number:** 2

**Sort Order:** 110

**Comment Excerpt:**

We understand that one of the major difficulties with operating a landfill gas system relates to tuning the wells to comply with the wellhead standards. The rule is very rigid, lacking the flexibility to allow landfills to operate the landfill gas collection system in a way that is most protective of the environment. We recommend limiting wellhead standards to negative pressure and utilizing surface emissions monitoring to verify proper operation of the gas collection system.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 8

**Sort Order:** 111

**Comment Excerpt:**

Montauk supports the EPA's suggested approach to eliminate monthly monitoring of temperature and nitrogen/oxygen at the wellheads and rely on landfill surface emission monitoring requirements in combination with maintenance of negative pressure at wellheads to indicate proper operation of the GCCS. Beneficial use projects will continue to monitor wellhead

temperature and nitrogen/oxygen on a regular basis to ensure proper operation of the equipment as well as to maximize sales of energy produced. Therefore, this exemption will remove a significant amount of regulatory reporting burden for beneficial use projects.

Because Montauk will continue to monitor other wellhead parameters to ensure proper operation of beneficial use equipment, the total wellfield monitoring requirements would increase and not decrease this proposal.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 119

**Sort Order:** 112

**Comment Excerpt:**

EPA should remove the temperature and oxygen/nitrogen wellhead operating parameters from the NSPS and EG rules and rely on wellhead pressure and SEM to assure proper GCCS operation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 128

**Sort Order:** 113

**Comment Excerpt:**

Based on our nearly two decades of experience with operating gas collection systems, we urge EPA to remove the temperature and oxygen/nitrogen wellhead parameters, and instead rely on negative pressure and surface emissions monitoring to ensure proper operation of the gas collection system.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 13

**Sort Order:** 114

**Comment Excerpt:**

It would be helpful for the well operating parameters of temperature and nitrogen/oxygen to be guidance, rather than enforceable limits as EPA proposes in the NSPS. The time delay in seeking variances from the limits impedes operators in making needed adjustments. The benefit of trading these parameters for an enhanced surface emissions monitoring program is not clear. If a gas well has a defective seal and is pulling ambient air into the annular space in a well, the pressure gradient is into the waste mass. A surface emissions survey would not be useful in detecting air being pulled into the waste mass. Oxygen reading on the wellhead gas flow would be a more definitive demonstration of ambient air being pulled into the well.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 9

**Sort Order:** 115

**Comment Excerpt:**

Delaware supports the removal of the oxygen and temperature monitoring limits from the rule. We do think that continued monthly monitoring and retention of data is necessary. This includes percent methane, percent oxygen, percent carbon dioxide, calculated percent balance gas, static and differential pressure, temperature and flow (when possible). We recommend requiring biannual submission of readings that exceeded 5% oxygen and 130°F. Additionally, the reporting of any subsurface fire to the regulating air agency should be required.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 3

**Sort Order:** 116

**Comment Excerpt:**

We fully support EPA's decision to remove wellhead limitations for oxygen, nitrogen and temperature. This will greatly reduce the burden on landfills and will provide flexibility to allow landfills to begin earlier collection in low producing areas, which will in turn will be more protective of the environment. This proposed change is a perfect example of reducing unnecessary burdens while maintaining or improving environmental controls.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 3

**Sort Order:** 117

**Comment Excerpt:**

We support EPA's decision to remove wellhead limitations for oxygen, nitrogen and temperature. As acknowledged in the preamble, this will reduce the burden for landfills and will provide flexibility to allow landfills to begin earlier collection in low producing areas, better manage gas in older areas with reduced gas production, and address unique gas quality issues that arise in certain extraction wells.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 3

**Sort Order:** 118

**Comment Excerpt:**

NACAA supports the removal from the rule of the wellhead exceedance levels and required follow-up action, as long as language is added specifically requiring that, where applicable, an LFG collection and control system be installed, operated and maintained in a manner that effectively captures and reduces emissions. We also strongly support the requirement to continue collecting the wellhead data. We recommend that the rule specifically require recordkeeping of all parameters that are typically measured in a wellhead read, which include percent oxygen (or percent nitrogen) and temperature, as well as percent methane, percent carbon dioxide, calculated balance gas, initial and final pressure (static and differential) and flow, if possible. We suggest that readings over 5 percent oxygen (or 20 percent nitrogen) and 130°F, along with actions taken in response, be submitted in the Title V semi-annual reports.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 33

**Sort Order:** 119

**Comment Excerpt:**

**WM Supports EPA's proposed Removal of the Wellhead Operating Parameters for Temperature and Oxygen/Nitrogen.**

EPA considered and took comment in proposed Subpart XXX and the ANPRM on an option to eliminate the wellhead parameters for temperature, oxygen/nitrogen and rely on landfill SEM requirements in combination with maintenance of negative pressure at wellheads to indicate proper operation of GCCS and minimize surface emissions. We are very pleased that EPA has proposed this concept in the EG and request that both the final Subpart Cf and the final Subpart XXX reflect the same provision.

In our previous comments on the proposed NSPS and ANPRM, we described our concerns with required wellhead parameters that are counterproductive to optimally operating our gas collection and control systems and reducing emissions. For many years, these wellhead parameters have been among the most significant barriers to earlier installation of gas collection and control measures.

As we explained in our comments on the proposed NSPS and ANPRM, our implementation of Subparts WWW and Cc has demonstrated that the temperature and oxygen/nitrogen parameters

are poor indicators of landfill fires or inhibited waste decomposition. To comply with the arbitrary temperature parameter, sites are often forced to reduce LFG flow to the affected well, thereby decreasing system performance and increasing potential emissions. We also described the administrative burden imposed on both regulatory agencies and the regulated community when conforming to the wellhead operating parameters. We believe that EPA's proposal to remove the standards will alleviate these administrative burdens with no adverse impact on environmental quality or protection. By eliminating the parameters, EPA will be alleviating one of the most significant barriers to installing interim gas collection measures. As we described in our previous comments, interim measures are not designed to meet the NSPS operational parameters for GCCS. Nonetheless, they are very effective at controlling odor and emissions prior to the point where a landfill cell or area can generate enough LFG to support a full GCCS. Removal of the temperature and oxygen/nitrogen parameters will promote earlier LFG emissions controls.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills

**Document Control Number:** EPA-HQ-OAR-2014-0451-0145

**Comment Excerpt Number:** 9

**Sort Order:** 120

**Comment Excerpt:**

Foth and the BOW Group support the proposal to remove the corrective action requirements for oxygen/nitrogen and temperature, leaving in place corrective action requirements for pressure. The exclusion of oxygen corrective action requirements would in particular be beneficial to older landfills where gas generation has declined, which often have difficulty balancing wellfields to maintain compliance with oxygen limitations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 20

**Sort Order:** 121

**Comment Excerpt:**

Republic fully supports EPA's proposal to eliminate the prescriptive oxygen/nitrogen and temperature operational requirements for wellheads. As noted in our comments on the ANPRM and the revisions proposed for the NSPS last year, those requirements can interfere with implementation of best management practices for GCCS that maximize gas collection while minimizing the risk of a fire. Republic also believes that the elimination of these unnecessary compliance obligations will facilitate early installation of GCCS and use of appropriate best management practices generally. For example, supplemental or temporary wells can be an effective means of maximizing gas capture, but they are more likely to exceed the current oxygen/nitrogen and temperature requirements. As a result, those requirements discourage the use of supplemental or temporary wells, even under circumstances in which they would be beneficial to the landfill and to the environment. Thus, Republic supports the elimination of the oxygen/nitrogen and temperature operation requirements and the counter-productive incentives they generate.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 21

**Sort Order:** 122

**Comment Excerpt:**

Republic agrees that the remaining requirements – negative pressure at wellheads and surface monitoring – are sufficient to ensure the GCCS is well-designed and well-operated, in accordance with EPA's determination of the best system of emission reduction for MSW landfills. Republic also agrees that continued monitoring of those parameters may serve as a useful source of information in making appropriate adjustments to ensure optimal operation of a GCCS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 23

**Sort Order:** 123

**Comment Excerpt:**

The proposed change in wellhead operating standards will allow landfills a better opportunity to determine whether a fire or unfavorable conditions actually exist before becoming subject to binding corrective action requirements that may be counterproductive. Republic has found that the temperature and oxygen/nitrogen monitoring requirements do little to avoid fires and can actually impede the proper operation of the collection system, as noted above and as we previously explained in our comments on the ANPRM. *See* EPA-HQ-OAR-2014-0451-0061.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Andrew Campanella, Chief Executive Officer (CEO)

**Commenter Affiliation:** Loci Controls, Inc.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0179

**Comment Excerpt Number:** 2

**Sort Order:** 124

**Comment Excerpt:**

We support the revised operational standards related to oxygen/nitrogen and temperature. This revision will allow gas collection system (GCS) operators the ability to manage the GCS in a manner that will maximize gas capture, and minimize fugitive emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent

**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota

**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1

**Comment Excerpt Number:** 5

**Sort Order:** 125

**Comment Excerpt:**

New administrative requirements will hamper optimization of LFG collection. The landfill sector has been requesting operational flexibility to move away from the overly prescriptive wellhead standards, which hamper proper operation of gas collection and the early installation of gas collection systems that will actually reduce air emissions. The proposal makes a bad situation



worse by requiring additional paperwork, and multi-step agency review and approval simply to optimize LFG collection.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 121, under comment code 12a.

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**Commenter Name:** Comment submitted by Sheila Holman, Director, Division of Air Quality  
**Commenter Affiliation:** North Carolina Department of Environment and Natural Resources (NCDENR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0089.1

**Comment Excerpt Number:** 9

**Sort Order:** 200

**Comment Excerpt:**

DAQ is concerned with the suggested exclusion from the temperature and oxygen/nitrogen monitoring requirements. Wellhead monitoring of temperature and oxygen/nitrogen is an important indicator of the condition of the landfill. There is a relationship between oxygen level and surface methane emissions but there are other biological reactions that cannot be detected by methane surface emissions only. DAQ recommends continuing the current wellhead monitoring requirements while maintaining the current surface methane monitoring method. Monthly wellhead monitoring encourages landfills to ensure the most effective gas extraction with the least environmental impacts and safety risks.

**Comment Response:**

The EPA has retained monthly wellhead monitoring for temperature, oxygen/nitrogen, and negative pressure and landfills must take corrective action for exceedances of temperature and negative pressure. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 51

**Sort Order:** 201

**Comment Excerpt:**

**Monthly wellhead testing for oxygen, nitrogen and temperature should not be eliminated.** Landfill owners believe that they may not “consistently meet [current wellhead monitoring] parameters,” and in particular monitoring for high oxygen levels or temperature

readings in capture landfill gas. EPA seeks comments on whether the frequency of monitoring should be reduced or eliminated, or whether other measures might be proper. Wellhead monitoring requirements should not be weakened but instead substantially strengthened.

Wellhead monitoring furnishes essential indicators of the presence of conditions that could create a deadly underground fire. Subsurface fires are a disaster because they destroy the landfill's safety systems, release massive volumes of hazardous air pollutants, and cause terrible odors. Reduced or omitted monitoring of these items cannot be justified in light of the severe risks posed by a failure to receive early indicators of potential problems of this most serious issue, demonstrated by the tragic events at the Countywide Landfill in Ohio, and the Bridgeton Landfill in Missouri.

Difficulties in meeting these criteria most likely stem from improper site management and failure to maintain tight seals, which lead to too much air intake. Asking EPA to reduce or eliminate monitoring is asking it to turn off the alarm bell that rings when owners fail to undertake essential repairs needed to prevent further oxygen infiltration, in disregard of the threat created to their neighbors and to the environment if the situation runs out of control. It is urgent and essential that regulators see elevated values and monitor trends so that they are in a position to act as soon as possible and it is too late to intervene.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 37

**Sort Order:** 202

**Comment Excerpt:**

We also oppose the elimination of monthly wellhead testing.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** Matt Lamb, Scientist, Smith Gardner, Inc.

**Commenter Affiliation:** Smith Gardner, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0190

**Comment Excerpt Number:** 2

**Sort Order:** 203

**Comment Excerpt:**

The removal of monitoring and compliance requirements on oxygen and temperature may reduce economic and regulatory burden on a facility in the short term, but may increase this burden in the long term if improper wellfield operations result in unchecked/undetected subsurface oxidation of waste [fire], or reduction in combustion efficiency of LFG and NMOCs due to excess oxygen in the collection system. Conversely, requirements to maintain wellheads under negative pressure may cause similar effects due to applying vacuum to a non-productive well or leachate cleanout.

**Oxygen/Temperature:** S+G recommends maintaining the current requirement to operate wellheads at minimum oxygen and temperature criteria, with the understanding that in many cases wellheads may be operated at higher than <5% oxygen and 550C without endangering the landfill. S+G recommends that EPA require that site-specific oxygen and temperature operating thresholds be designated by the facility in the GCCS Design Plan. If the facility then believes that wellheads can be operated at higher levels without compromising compliance with NMOC destruction requirements, or creating the hazard for landfill fire, it should have the flexibility to demonstrate so through wellhead monitoring data for methane and carbon monoxide, and system monitoring for methane at the blower inlet. The 5 day/15 day compliance period to make such a demonstration is not sufficient. S+G recommends 120 days to allow for data collection and analysis over a period of time.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** William C. Allison V, Director, Air pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2014-0451-0163

**Comment Excerpt Number:** 3

**Sort Order:** 204

**Comment Excerpt:**

The Division has identified noncompliance with operational standards through Colorado's MSW landfills monthly monitoring data. The Division supports monthly monitoring, especially in arid areas like Colorado where the wellfield needs to be adjusted frequently to ensure optimal operation and compliance with the operational specifications for oxygen content and negative pressure.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** T.Thalhamer and V.Babrauskas  
**Commenter Affiliation:** P. Foss-Smith  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0167  
**Comment Excerpt Number:** 1  
**Sort Order:** 205

**Comment Excerpt:**

We, the three signatories to this letter, are each recognized experts in the subject of subsurface landfill fires, who have published widely in the technical literature, and served as consultants to agencies supervising fire emergencies (Dr. Babrauskas was the state's expert in the Countywide landfill heating and fire/smoldering event, and Mr. Thalhamer in the Bridgeton landfill heating fire/smoldering event). Our qualifications are provided in the attached Statement of Qualifications of Todd Thalhamer, Vytenis Babrauskas and Patrick Foss-Smith.

We submit the following comments to the Environmental Protection Agency (EPA) on the part of the proposed rules that repeals existing requirements to either inform regulators of operational exceedances that are well established precursors of heating events, subsurface fires/smoldering events, or to take any corrective action to prevent such a fire. Instead, the question of what to do about high readings observed by the operator is left to management's unfettered discretion without regulatory or public oversight.

Subsurface landfill fires/smoldering events are a matter of great concern. Once started, they are difficult-to-impossible to extinguish, and, uncontrolled, can last for decades before exhausting the fuel source. This often compromises or destroys the landfill's environmental control systems and re-connecting the waste mass to the environment. These special emergency can cause millions of dollars of damage for example, the repair of a heat-affected synthetic liner has never been attempted due to cost and technical difficulty. At worst, the life of a heat-affected liner can result in a reduction from 300 years to 18 months.

Also, hazardous byproducts from incomplete combustion, along with noxious odors, are released into the atmosphere affecting the health and well-being of neighbors.

Unfortunately, unlike surface fires at landfills that are immediately visible to site operators, subsurface fires/smoldering events often are not. Since these types of fires can inflict great damage, one must balance the interests of appropriate data collection with a strong emphasis of early detection and avoidance.

Long standing industry practice here in the United States, Canada, and the European Union have identified several reliable indicators of the conditions that often lead to a heating events or subsurface fires/smoldering events, and which may leave a short window in time to take preventive actions that can serious environmental damage. Early indicators include oxygen levels in landfill gas greater than 5% (or, as its surrogate, greater than 20% nitrogen), or temperatures in excess of 131°F, which is above the normal heat levels generated by mesophilic anaerobic decomposition in a landfill. [Note: mesophilic anaerobic decompositon has an optimum temperature of approximately 95°F, while thermophilic anaerobic has an approximate optimum temperature of 131 °F.

It is for these reasons that EPA's existing landfill air rules rightly require monitoring for the precursors of heating events and/or subsurface fires/smoldering events, namely those oxygen/nitrogen levels and temperatures in the gas wells, 40 CFR §60.753(c), and for corrective actions within 5 days when exceedances are observed, 40 CFR §755(a)(iii)(5).

In its place, EPA states in its Notice that: "The EPA proposes to remove the operational standards (i.e., the requirement to meet operating limits) for temperature and nitrogen/oxygen at the wellheads. Landfill owners or operators would not be required to take corrective action based on exceedances of specified operational standards, but they would continue to monitor temperature and oxygen/nitrogen levels at wellheads in order to inform any necessary adjustments to the GCCS and would maintain records of monthly readings." (Notice, at PDF page 58.)

EPA supports this new policy by stating:

"The EPA expects that eliminating the operational standards for oxygen/nitrogen and temperature will drastically reduce the number of requests for alternative timelines for making necessary corrections." (Notice, at PDF p. 59.)

"[T]he EPA is proposing to remove the wellhead temperature and oxygen/nitrogen performance requirements and the corresponding requirement to take corrective action upon exceeding one of these parameters, thereby providing flexibility with regard to wellhead operating parameters." (Notice, at PDF p. 79.)

"Commenters asserted that the wellhead monitoring parameters are poor indicators of landfill fires or inhibited decomposition and impede proper operation of the collection system without providing any of the expected benefits. They also explained that landfill operators typically respond to high temperature and oxygen/nitrogen readings by reducing flow from the well or expanding the gas collection system. They explained that both approaches can have unintended and harmful consequences, including exacerbating a fire, and reducing the collection efficiency of the GCCS. In addition, they asserted that expanding a GCCS in an area with poor gas quality or quantity does not assist with achieving additional reductions. Commenters emphasized the difficulty of meeting the wellhead standards in areas of the landfill with declining gas flowrates or gas quality, which is more common in older or closed areas of the landfill. Several commenters stated that landfill owners already have inherent incentives to minimize fire risks in order to protect significant investments in GCCS and energy recovery infrastructure. (Notice, at PDF p. 127.)

"Based on the feedback provided by commenters and our analysis of available information, the EPA believes these adjustments provide more flexibility to landfills, can result in additional reductions of LFG emissions from other GCCS components, and will reduce the burden of corrective action on both the landfill owner or operator and the implementing authority. Based on public input, the EPA expects that eliminating the operational standards for oxygen/nitrogen and temperature will drastically reduce the number of requests for HOVs and alternative timelines for making corrections while ensuring that the GCCS continues to operate properly. The procedures for approving HOVs for wellheads not demonstrating compliance with the negative pressure standard are discussed in section VI.D of this preamble." (Notice, at PDF p. 133.)

In our opinion, the proposed change to the existing NSPS regulations will leaves the matter to landfill management without regulatory or public oversight. This will be a grievous error.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** T.Thalhamer and V.Babrauskas  
**Commenter Affiliation:** P. Foss-Smith  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0167  
**Comment Excerpt Number:** 2  
**Sort Order:** 206

**Comment Excerpt:**

The agency's explanations for its decision does nothing to alter our view for the following reasons.

For these reasons, we strongly urge EPA to not change the current NSPS related rules, other than to increase the timely public dissemination of exceedances and planned corrective actions, and to provide opportunity for public comment.

Contrary to the industry's arguments, the requirements have proven themselves in practice to reliably warn operators and regulators when there are strong indicators of conditions indicative of heating and subsurface fires/smoldering events. We are dismayed that US EPA did not consider outside independent comments to these rules and accepted industry comments in whole. These regulatory requirements are protocols to ensure landfill operators respond quickly with corrective actions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** T.Thalhamer and V.Babrauskas  
**Commenter Affiliation:** P. Foss-Smith  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0167  
**Comment Excerpt Number:** 4  
**Sort Order:** 207

**Comment Excerpt:**

The EPA's primary justification for the change does not hold up under scrutiny. Essentially, the argument is that the greater flexibility provided by the rule change would make the situation better by eliminating the small number cases where the precursors give a false alarm. Although

not stated in the Notice, because the consequences of either a heating event or a subsurface fire/smoldering event are devastating, presumably EPA's justification must also state that operating at temperatures greater than the 131°F threshold could be allowed without any possibility of creating a full fledged subsurface fire/smoldering event.

In fact, however, the proposed rule, which continues to require monitoring but no longer disclosure, does nothing to impart any new information that would help distinguish if there is a false alarm. Moreover, since the existing rule already allows the operator to request more time to take corrective action, the option to delay and watch for further developments, or to test the effectiveness of alternative measures to address the heat buildup, is not precluded either – so long as the regulator's concurrence is secured. In fact it is important to note our past heating events and smoldering event investigations have always centered around temperatures over the 131°F threshold. This threshold has been the one common thread in our forensic studies and without the required public reporting these data points would not be readily available.

That is to say, under examination, the proposed change really has nothing to do with flexibility, which we have no problem with if it is supervised, and is everything about removing regulatory oversight for the determination of whether proper precautions are being taken to prevent subsurface fires/smoldering events when exceedances occur.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** T.Thalhamer and V.Babrauskas

**Commenter Affiliation:** P. Foss-Smith

**Document Control Number:** EPA-HQ-OAR-2014-0451-0167

**Comment Excerpt Number:** 5

**Sort Order:** 208

**Comment Excerpt:**

In light of recent history in the US with heating and smoldering events, we are concerned why EPA would consider eliminating these reporting requirements without any study or independent evaluation.

The past ten years there have been at least ten significant heating and or smoldering events in the U.S. alone. Two of the worst subsurface landfill heating and smoldering events are currently ongoing at the first Allied and then Republic owned Bridgeton Landfill north of St. Louis, which was first observed in 2010, and at the first Waste Management and then Republic owned Countywide Landfill in Stark County, Ohio, first reported in 2006. Both begun with elevated temperatures.

In the end of the day, according to the company's latest SEC filings, remediation at Countywide is expected to cost \$74.1 million and at Bridgeton, \$385.4 million, Republic, SEC Form 10-Q (July 16, 2015), and the likelihood is that far more than presently estimated will ultimately be

incurred. Thus, the factual record indicates appropriate regulatory oversight is needed and not less.

At the same time, we acknowledge that, during the time leading up to these heating and smoldering events, as a function of deregulatory politics, the state regulators just noted and only sometimes attempted, but did not always press, to enforce the rules. But, we do not interpret that fact as a reason to reject the value of regulation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** T.Thalhamer and V.Babrauskas

**Commenter Affiliation:** P. Foss-Smith

**Document Control Number:** EPA-HQ-OAR-2014-0451-0167

**Comment Excerpt Number:** 6

**Sort Order:** 209

**Comment Excerpt:**

In passing as regards the final justification listed in the Notice, in our view it is illogical to claim that the requirement for corrective actions to avoid heating and smoldering events should be repealed because doing so can sometimes temporarily hamper gas collection efficiency. Transiently, it may be true that this can initially happen when vacuum pressures are lowered to reduce further oxygen infiltration. But to focus on that period of correction to the exclusion of what would otherwise ensue is an untenable position. If the impending heating and/or smoldering event is not prevented, a substantial breakdown of the gas collection system and cover will occur, and that will cause major releases of an entirely new panoply of noxious odors and toxic emissions from incomplete combustion, along with the far greater release of methane and carbon dioxide.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** Jennifer Marsee, Bureau Supervisor

**Commenter Affiliation:** Regional Air Pollution Control Agency (RAPCA)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0168

**Comment Excerpt Number:** 1

**Sort Order:** 210

**Comment Excerpt:**



RAPCA is a part of Public Health - Dayton & Montgomery County and is the local air pollution control agency serving Clark, Darke, Greene, Miami, Montgomery and Preble counties in Southwest Ohio. RAPCA finds the proposed revisions removing numerical limits for the landfill gas temperature, nitrogen, and oxygen operating parameters are cause for concern. While we agree with the industry commenters that contend the limits are overly prescriptive and that the requirements to obtain a higher operating value are a burden for both agencies and the landfills, RAPCA is concerned that the removal of the reporting requirements for these parameters will limit our knowledge of subsurface oxidation events as they are beginning to occur. Given that these events can progress rapidly and can cause the unintended release of potentially noxious gasses, we feel it is important that we be informed in a timely manner so that we may take steps to minimize the potential impacts to the general public. We recommend that landfills continue to take wellhead readings as specified in the current rule as well as the percent methane and carbon dioxide and that a reporting requirement for temperature and for the methane to carbon dioxide ratio be included in the rule. We propose that any temperature exceeding 150°F and any methane to carbon dioxide ratio less than 1 be reported on a quarterly basis. These values are two of the parameters that RAPCA and Ohio EPA has determined are indicators for subsurface events and in our experience these two parameters have been the most useful in evaluating events as they occur. We are not recommending that these be limits under the rule, only that exceedances be reported.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader

**Commenter Affiliation:** Sierra Club, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0178

**Comment Excerpt Number:** 37

**Sort Order:** 210

**Comment Excerpt:**

The bulk of the proposed rule-making actually has nothing to do with a response to the White House methane initiative. Rather, like a Trojan Horse, it consists of the landfill industry's long laundry wish list.

This is wholly inappropriate. The entire grab bag of unrelated provisions should be removed from this rule-making and, if the Agency still desires to proceed, do so separately so that they can stand or fall on their own merits, not be slipped through unnoticed under cover of climate action.

To illustrate why they should be stricken from this record, worst among a long list of bad proposals is the one to repeal the existing requirement to inform regulators when key readings known to be precursors of underground fires are too high, as well as to take corrective action to prevent a fire. In its place, the question about what to do about high temperatures or oxygen infiltration is left to management's discretion without regulatory oversight.

Since the existing rule already allows the operator to request more time to take corrective action, the option to delay and watch for further developments, or to test the effectiveness of alternative measures to address the heat buildup, is not precluded either – *so long as the regulator's concurrence is secured.*<sup>48</sup>

That is to say, under examination, the proposed change really has nothing to do with flexibility. Instead, it is everything about removing regulatory oversight for the determination of whether proper precautions are being taken to prevent subsurface fires with reference to the unique circumstances of a particular case.

The real issue here is whether, if fire concerns arise, profit making companies (who control the majority of landfill capacity) will make a better decision without regulatory oversight to protect the environment, when many of the costs of a wrong decision are externalized and delayed.

In light of recent history, we are at a loss of how EPA could consider that the facts bear out its laissez-faire approach, when history manifestly shows precisely the opposite. Not only do the facts demonstrate that more, not less, oversight is needed. In addition, America's decades long hollowing out of its regulatory agencies, both in terms of political pressure to de-regulate, staff layoffs and funding cutbacks, has undermined the quality, capacity and will of administrative agencies to regulate. Removing critical regulatory oversight if anything only worsens, and does not improve, that unfortunate situation.

The two worst subsurface landfill fires in the U.S. are currently ongoing at the Bridgeton Landfill in Missouri and the Countywide Landfill in Ohio. Both were begun due to clear mismanagement that was closely associated with cost cutting, boosting revenues and earning bonuses for executives, without any record of due regard for the untoward consequences. In the Bridgeton case, fire also raised the unprecedented risk of mobilizing radionuclides from illegally dumped WWII era atomic bomb wastes.

At Bridgeton, mismanagement is shown by the company's refusal to install a legally mandated non-permeable cover to prevent oxygen infiltration, and later by its delaying remedial actions until they were too late. At Countywide, this involved accepting aluminum dross that is long known to be highly reactive in contact with water, not to mention the fact this special waste was specifically listed as proscribed. To compound this inexplicably reckless act, the operator next began recirculating leachate. Recirculation, which increased moisture levels and insured that the reactions would become explosive without any visible regard for the certainty of causing a fire, was apparently instituted to boost profitability, as was the decision to accept proscribed industrial wastes. It does this by accelerating decomposition, and settlement, in order to resell recovered airspace twice. Finally, the operator refused to excavate a fire break to prevent the fire from reaching another open, and revenue-generating, part of the landfill until it was ordered to do so.

Thus, managers not only took actions that appeared to devalue, if not denigrate, the interests of the innocent neighbors and of the environment. In addition, and seemingly inexplicably, their actions ignored the fact that the predictable long term costs of their malfeasance on their own company was magnitudes greater than what was saved or added in the short term.

The culprit for Countywide was a few million dollars in revenues from acceptance of the outlawed wastes, and for Bridgeton, the savings was possibly \$20 million for the foregone low

permeable cover. In the end of the day, Countywide is expected to cost close to \$100 million and at Bridgeton, close to one half billion dollars.

Thus, the factual record indicates that not only can landfill operators not be trusted to exercise the correct judgment without regulatory oversight, but also that the drive to meet quarterly profit targets and bonus criteria leads management to sometimes ignore their own company's long term financial interests, as well.

Because of those deregulatory politics mentioned a moment ago, we acknowledge that, during the time leading up to these fires, the state regulators just noted and only sometimes attempted, but did not always press, to enforce the rules that could have averted the disasters that ensued. But, we do not interpret that fact as a reason to reject the value of regulation. For one thing, once the fire's presence became manifest, regulators did snap back to properly perform their responsibilities, while operators never did.

It is true that EPA has no authority to change the corrosive political environment that is responsible for part of regulators' sometimes lackluster performance. However, EPA can further its proper role to protect the public by fostering transparency so that the public is kept currently informed in real time as to the latest data and its meaning. The possible price in overly agitated neighbors may be the only tonic we have to create offsetting pressure to counteract improper political influences in technical decisions.

[Footnote 48] Notice, at PDF p. 58.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** Lynn Fieder, Division Chief, Air Quality Division

**Commenter Affiliation:** State of Michigan Department of Environmental Quality (MDEQ)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0183

**Comment Excerpt Number:** 1

**Sort Order:** 211

**Comment Excerpt:**

There are concerns regarding the proposed removal of the operational standards for temperature and oxygen/nitrogen at gas collection system wellheads. Specifically, removing prescribed operating values to monitor against, could lead to some landfill owners/operators not operating the gas collection and control system (GCCS) in an effective manner, thus creating a potential for increased landfill gas emissions through the landfill surface. Although the current proposal maintains a negative pressure requirement, a GCCS can be operated poorly and continue to maintain negative pressure in wellheads. If operational standards are not defined in the rule, then landfill owners/operators should be required to develop site specific operational parameters that demonstrate proper operation of the GCCS. This could be done through an approved operation and maintenance plan or through the GCCS design plan approval.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** Lynn Fieder, Division Chief, Air Quality Division

**Commenter Affiliation:** State of Michigan Department of Environmental Quality (MDEQ)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0183

**Comment Excerpt Number:** 4

**Sort Order:** 212

**Comment Excerpt:**

Strictly relying on surface emission monitoring rather than monitoring gas collection system operating parameters could result in poor GCCS operation and maintenance practices by landfill owners/operators resulting in excess emissions and odor problems.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator

**Commenter Affiliation:** Californians Against Waste, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0191

**Comment Excerpt Number:** 15

**Sort Order:** 213

**Comment Excerpt:**

The EPA is proposing to remove operational standards for temperature and nitrogen/ oxygen at wellheads, as well as the requirement for corrective action.<sup>22</sup> These parameters are the only warning signal for potential fire hazard, which is a particular problem at wet-cell landfills. The proposed change is predicated on reducing regulatory burden and costs to operators, but the EPA's duty to ensure public safety far outpaces issues of cost to industry. Thus, the Center and Californians Against Waste urge the EPA to retain the current provisions requiring monitoring, reporting, and correcting exceedances in temperature and oxygen/nitrogen standards at landfills.

Footnote:

22 Proposed Rule at 52,125.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** Frank L. Kohlasch, Manager, Air Assessment Section Environmental Analysis and Outcome Division

**Commenter Affiliation:** Minnesota Pollution Control Agency (MPCA)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0197

**Comment Excerpt Number:** 5

**Sort Order:** 214

**Comment Excerpt:**

While removal of gas wellhead operating limits (temperature, nitrogen, and oxygen) in this proposal will reduce landfills' regulatory burden, the MPCA notes that landfill operators should not relax their vigilance over wellhead conditions, given the risk of deep-seated fires if oxygen is pulled into newly expanded and renovated gas control systems. Indications of a waste fire should be detected and acted on, without delay. Therefore, the MPCA supports EPA's proposal of continued monitoring of wellhead operating parameters (40 CFR 60.37f), as well as recording and maintaining the record of monitored results (40 CFR 60.39f (c)).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1 excerpt number 9, under comment code 12a.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 8

**Sort Order:** 300

**Comment Excerpt:**

Landfill gas to energy (LFGTE) projects in Pennsylvania have yielded over 185 MW of electrical power for more than 20 years, ranking Pennsylvania second in the nation for using landfill gas productively. The DEP believes that the revenue generated from the sale of electricity, Renewable Energy Certificates and energy cost savings will continue to provide incentives for LFGTE projects.

**Comment Response:**

Aside from maintaining the compliance provisions for treating LFG and providing additional clarifications about the uses of treated landfill gas, the EPA is not finalizing additional incentives in the final rules for encouraging LFG energy. As noted by the commenter, the revenue from the projects will continue to provide incentives for pursuing LFG energy projects when it is cost effective to do so.

## 12.2 Difficulty Meeting Oxygen and Temperature

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### 12b. Difficulty meeting O2 and Temperature

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 27

**Sort Order:** 100

#### **Comment Excerpt:**

Subpart WWW requires that a vacuum be maintained at all LFG extraction wells while the GCCS is in operation. However, operation under constant vacuum is not always compatible with declining gas production. It becomes a difficult balance to minimize air intrusion while maintaining appropriate gas composition. Despite continued efforts to minimize air intrusion by reducing the applied vacuum at these wells, the extracted LFG can continue to exhibit poor gas quality (i.e., low methane, high oxygen and/or nitrogen). Continued efforts to improve gas composition by closing off the wellhead control valve eventually results in extremely low vacuums being applied to the well. Under these conditions, natural changes in the atmospheric pressure can result in positive pressures observed at the well. As such, the landfill owner has limited choices: to operate the well with an oxygen exceedance or pressure exceedance; to expand the system in the face of declining gas production; to decommission the well; or to request an alternative plan.

Under Subpart WWW and proposed Subpart XXX, an active LFG extraction well(s) operating with positive pressure and/or more than 5 percent oxygen is classified as having an exceedance. However, a well located in non-producing area cannot be further adjusted to reduce the oxygen level below 5 percent and maintain negative pressure. If the gas collection system is expanded in the general area of the well experiencing an operational exceedance, it is highly likely that additional expansion well(s), when installed in the general area of such a well, would also demonstrate similar performance characteristics. Adding additional wells may increase air intrusion, which not only is detrimental to the anaerobic conditions within a landfill, but could also lead to subsurface fires.

Operational flexibility is the most appropriate step to address these areas with declining flow. Allowing the landfill to decommission (as defined above) the well retains future flexibility since the well remains in place and is merely temporarily shut off until gas flow increases. To streamline the process EPA should clarify that decommissioning a well does not require Agency approval, since this approach is currently allowed in the existing Subpart WWW rules. After decommissioning, periodic well monitoring would be conducted to determine when the gas production is sufficient to maintain negative pressure; however, EPA should clarify that the wellhead standards do not apply to a decommissioned well. In addition, SEM monitoring and cover integrity checks would still be performed to ensure adequate performance of the GCCS. There is ample precedent for this flexibility. Periodic closing and opening of the wells in areas of declining gas flows has previously been approved by EPA in a number of determinations.<sup>12</sup>

Decommissioning a well should not require agency approval; however, sites should identify decommissioned wells in the NSPS/EG compliance reports.

[Footnote 12] See EPA's Applicability Determination Index Control Numbers 0600062 and 1200088 as well as Attachment #5 of Docket ID Number EPA-HQ-OAR-2014-0451-0037

**Comment Response:**

In the final rules, the EPA has removed the operational standard and corrective action requirements for oxygen exceedances, but retained the requirement for negative pressure. See Section IV.B.1 of the 2016 NSPS Final Preamble and Section IV.B.1 of the 2016 Emission Guidelines Final Preamble for additional discussion. Additionally, while corrective action is still required for negative pressure, the EPA has also modified its approach for corrective action based on a root cause analysis that allows the owner or operator to determine the appropriate corrective action instead of requiring expansion of the GCCS by default in order to provide additional operational flexibility. See Section IV.B.3 of the 2016 NSPS Final Preamble and Section IV.B.3 of the 2016 Final Emission Guidelines Preamble for additional discussion of the root cause approach.

Regarding well decommissioning, the EPA has expanded the GCCS removal or capping criteria to also cover well decommissioning. The EPA has provided an opportunity for landfills to demonstrate to the regulatory agency that the GCCS will be unable to operate due to declining gas flows. See Section V.C of the 2016 NSPS and Emission Guidelines Final Preambles for additional discussion about addressing non-productive areas.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 29

**Sort Order:** 101

**Comment Excerpt:**

Operational flexibility is the most appropriate step to address these areas with declining flow. Allowing the landfill to decommission (as defined above) the well retains future flexibility since the well remains in place and is merely temporarily shut off until gas flow increases. To streamline the process EPA should clarify that decommissioning a well does not require Agency approval, since this approach is currently allowed in the existing Subpart WWW rules. After decommissioning, periodic well monitoring would be conducted to determine when the gas production is sufficient to maintain negative pressure; however, EPA should clarify that the wellhead standards do not apply to a decommissioned well. In addition, SEM monitoring and cover integrity checks would still be performed to ensure adequate performance of the GCCS. There is ample precedent for this flexibility. Periodic closing and opening of the wells in areas of declining gas flows has previously been approved by EPA in a number of determinations.<sup>12</sup> Decommissioning a well should not require agency approval; however, sites should identify decommissioned wells in the NSPS/EG compliance reports.

[Footnote 12] See EPA's Applicability Determination Index Control Numbers 0600062 and 1200088 as well as Attachment #5 of Docket ID Number EPA-HQ-OAR-2014-0451-0037 .

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198.1 excerpt number 27, under comment code 12b.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 20

**Sort Order:** 102

**Comment Excerpt:**

For non-producing areas of an active landfill, the use of SEM is also useful in establishing when an exemption to the operational wellhead standards may be justified for a well or wells. Similar to a closed landfill area, often a portion of a landfill which is not permanently closed but is not currently accepting waste may experience a period of time during which the area does not produce a sufficient quantity or quality of gas to maintain the operational wellhead standards. Requiring a well or wells to meet prescriptive wellhead standards during periods when there is no apparent need, increases the cost and administrative burden to all parties involved with no benefit to the environment. TXSWANA believes that these areas that are nonproducing can be more efficiently and effectively addressed by following the procedures set out below. These proposed procedures follow the current EPA Applicability Determination Index (ADI) control No. 0600062 with some additional details regarding SEM.

- Collection points where oxygen concentrations do not decline to acceptable levels after more than one hour of reduced vacuum will be shut off until the gas quality recovers.
- The monthly monitoring will be conducted for the collection point which has been shut down, but positive pressure or elevated oxygen concentrations will not be considered exceedances of the wellhead operating standards.
- If monthly monitoring indicates that pressure has built up in the collection point and the oxygen concentration still exceeds five percent, the well will be opened to relieve the pressure and will be shut down until it is monitored the following month.
- If monthly monitoring indicates that the gas quality has improved (i.e., the oxygen concentration has dropped below five percent), the well will be brought back on line until the gas quality declines again.
- The quarterly surface emissions monitoring will be conducted in the areas of the nonproducing collection points. The well may continue to remain shut down if no SEM exceedances are found within 30-meters of the collection point which cannot be remediated without needing to reactivate the collection point. If, however, SEM exceedances within 30-meters of the collection point



cannot be remediated within the timelines and re-monitoring procedures currently outlined in the rule, then the collection point will be brought back on-line or another alternative will be approved by the administrator.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198.1 excerpt number 27, under comment code 12b.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 16

**Sort Order:** 103

**Comment Excerpt:**

The proposed rule should provide operational flexibility to shut-off wells or to temporarily lock out the vacuum to a well in order to deal with declining gas flows, operational issues, filling operations, or other site activities that would require portions of the GCCS to be taken off-line. We believe that these situations can be more efficiently and effectively addressed by following the procedures set out below. These procedures generally follow the current EPA Applicability Determination Index (ADI) Control No. 0600062 with some additional details regarding SEM and a modification based on the elimination of the oxygen and temperature wellhead criteria.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198.1 excerpt number 27, under comment code 12b.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 70

**Sort Order:** 104

**Comment Excerpt:**

For non-producing areas of an active landfill, the use of SEM is also useful in establishing when an exemption to the operational wellhead standards may be justified for a well or wells. Similar to a closed landfill area, often a portion of a landfill which is not permanently closed, but is not currently accepting waste, may undergo a period of time in which the area does not produce a

sufficient quantity or quality of gas to maintain the operational wellhead standards. Requiring a well or wells to meet prescriptive wellhead standards during periods when there is no apparent need, increases cost and burden to all parties involved with no benefit to the environment. We believe that these areas that are non-producing can be more efficiently and effectively addressed by following the procedures set out below. These procedures follow the current EPA Applicability Determination Index (ADI) control No. 0600062 with some additional details regarding SEM.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198.1 excerpt number 27, under comment code 12b.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 71

**Sort Order:** 105

**Comment Excerpt:**

Collection points where oxygen concentrations do not decline to acceptable levels after more than one hour of reduced vacuum will be shut off until the gas quality recovers.

The monthly monitoring will be conducted for the collection point which has been shut down, but positive pressure or elevated oxygen concentrations will not be considered exceedances of the wellhead operating standards.

If monthly monitoring indicates that pressure has built up in the collection point and the oxygen concentration still exceeds five percent, the well will be opened to relieve the pressure and will be shut down until it is monitored the following month.

If monthly monitoring indicates that the gas quality has improved (i.e., the oxygen concentration has dropped below five percent), the well will be brought back on line until the gas quality declines again.

The quarterly SEM will be conducted in the areas of the non-producing collection points. The well may continue to remain shut down if no SEM exceedances are found within 30-meters of the collection point which cannot be remediated without needing to reactivate the collection point. If however, SEM exceedance within 30-meters of the collection point cannot be remediated within the timelines and re-monitoring procedures currently outlined in the rule, then the collection point will be brought back on-line or another alternative will be approved by the Administrator.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198.1 excerpt number 27, under comment code 12b.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 6

**Sort Order:** 106

**Comment Excerpt:**

KDAQ does not agree with the continuance of the operational requirement to maintain negative pressure at all times without exception at gas collectors other than vertical wells. KDAQ finds that the changes to standard operating procedure frequently approved by U.S. EPA as an alternative to the requirement to maintain negative pressure in low gas-producing areas (e.g. U.S. EPA Applicability Determination Index [ADI] Control Number 0600062) and at gas collectors other than vertical wells should be codified and provided to landfill operators as a regulatory alternative to the negative pressure requirement.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198.1 excerpt number 27, under comment code 12b.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 26

**Sort Order:** 107

**Comment Excerpt:**

The proposed rule should provide operational flexibility to shut-off wells or to temporarily lock out the vacuum to a well in order to deal with declining gas flows, operational issues, or other site activities that would require portions of the GCCS to be taken off-line. We believe that these situations can be more efficiently and effectively addressed by following the procedures set forth below. These procedures generally follow the current EPA Applicability Determination Index (ADI) control No. 0600062 with some additional details regarding SEM and a modification based on the elimination of the oxygen and temperature wellhead criteria.

- Monthly monitoring will be conducted for the collection point which has been temporarily shut down, but positive pressure will not be considered an exceedance of the wellhead operating standard.
- If monthly monitoring indicates that pressure has built up in the collection point, the well will be opened to relieve the pressure, but may be shut down again until it is monitored the following month.
- If monthly monitoring indicates that the gas quality has improved, the well will be brought back on line until the gas quality declines again. While on-line, it must meet wellhead requirements in the rule.
- The quarterly SEM will be conducted in the areas of the non-producing collection points. The well may continue to remain shut down if no SEM exceedances are found within 30-meters of the collection point which cannot be remediated without reactivating the collection point. If however, an SEM exceedance within 30-meters of the collection point cannot be remediated within the timelines and re-monitoring procedures currently outlined in the rule, then the collection point will be brought back on-line or another alternative will be requested of/approved by the Administrator.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198.1 excerpt number 27, under comment code 12b.

**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 112

**Sort Order:** 200

**Comment Excerpt:**

Subpart WWW requires that a vacuum be maintained at all LFG extraction wells while the GCCS is in operation. However, for closed areas with declining flow, the quality of the LFG extracted while under a constant vacuum can be detrimentally affected due to certain site-specific conditions. Despite continued efforts to minimize the air intrusion by reducing the applied vacuum at these wells, the extracted LFG can continue to exhibit poor gas composition. Continued efforts to improve gas composition by further closing of the wellhead control valve eventually results in extremely low vacuums being applied to the well. Under these conditions, natural changes in the atmospheric pressure can result in positive well pressure under certain ambient conditions. As such, the landfill owner has limited choices: either operate the well with an oxygen exceedance or pressure exceedance, expand the system, decommission the well or request an alternative plan.

Under Subpart WWW and proposed Subpart XXX, an active LFG extraction well(s) operating with positive pressure and/or more than 5 percent oxygen is classified as having an exceedance. However, a well located in non-producing area cannot be further adjusted to reduce the oxygen level below 5 percent and maintain negative pressure. If the gas collection system is expanded in

the general area of the well experiencing an operational exceedance, it is highly likely that additional expansion well(s), when installed in the general area of such a well, would also demonstrate similar performance characteristics. Adding additional wells may increase air intrusion, which not only is detrimental to the anaerobic conditions within a landfill, but could also lead to subsurface fires.

**Comment Response:**

In the final rules, the EPA has removed the operational standard and corrective action requirements for oxygen exceedances, but retained the requirement for negative pressure. See Section IV.B.1 of the 2016 NSPS Final Preamble and Section IV.B.1 of the 2016 Emission Guidelines Final Preamble for additional discussion. Additionally, while corrective action is still required for negative pressure, the EPA has also modified its approach for corrective action based on a root cause analysis that allows the owner or operator to determine the appropriate corrective action instead of requiring expansion of the GCCS by default in order to provide additional operational flexibility. See Section IV.B.3 of the 2016 NSPS Final Preamble and Section IV.B.3 of the 2016 Final Emission Guidelines Preamble for additional discussion of the root cause approach.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 17

**Sort Order:** 201

**Comment Excerpt:**

Wellhead standards lead to operations contrary to BSER:

When subsurface temperatures in an area of the landfill become elevated, the best practice for avoiding the risk of a subsurface fire is to close the well. This action eliminates the potential for air to be pulled into the landfill feeding the subsurface oxidation (SSO) event. However, there may be other reasons unrelated to SSO that the temperature measured at the wellhead becomes elevated. These include the type of waste landfilled, and the presence of thermophilic methanogens. In these cases, the well may be able to be operated normally (e.g., without the risk of an SSO event). Further, closing the well may cause the temperature to increase further. Also in these cases, the elevated temperature may continue for longer than 15 days or even longer than 120 days. The only remedy in the rule for an exceedance is to expand the GCCS within 120 days or request an alternative timeline. Drilling into waste that is experiencing a high temperature can be detrimental in that it can create or perpetuate a subsurface fire.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 112, under comment code 12b.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 122  
**Sort Order:** 202

**Comment Excerpt:**

The temperature of flowing LFG varies widely under normal landfill conditions. Landfill gas is generated by a biological reaction and the greater the intensity of this reaction, the greater the heat produced by the biological activity. Therefore, some newly installed gas wells exhibit elevated temperatures naturally. In order to reduce temperature to meet NSPS compliance, the gas flow to the well must be turned off or significantly reduced. This undermines the optimal operation of the system. Although Subpart WWW offers landfill owners the opportunity to establish a higher operating value (HOV) for the well, these alternatives are often ignored or denied by the agencies. Some regulatory agencies claim they are unable to authorize an HOV and simply tell the landfill operator to expand the system.

Expanding the system by installing more wells in the area does not resolve the higher well temperature, but rather increases compliance risk by creating additional wells with elevated temperatures. Increasing the number of wells will not affect the temperature of the biologic reaction, nor result in increased gas collection, and the extra well or wells along with the existing collectors will likely be less productive. The well-informed landfill owner/operator will want to avoid this circumstance.

Therefore, to comply with the temperature parameter, sites are forced to reduce LFG flow to the well, thereby decreasing system performance and increasing potential emissions. By decreasing flow enough to cool the temperature to below 131 degrees, a site can experience positive pressure (as discussed above). Meeting the NSPS temperature parameter neither "prevents" fires from occurring within a landfill nor increases the methanogenic process. However, it directly affects the ability of the LFG technician to properly tune and maximize proper operation of the system.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 112, under comment code 12b.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)  
**Commenter Affiliation:** Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1  
**Comment Excerpt Number:** 19

**Sort Order:** 203

**Comment Excerpt:**

Older landfills with declining landfill gas production will also experience oxygen exceedances that cannot be corrected at the wellhead. Even though the reason for the inability to correct the exceedance is the poor quality of the gas (e.g., low methane/more air) and the overall lack of available landfill gas, compliance with the rule still requires system expansion which will not fix the problem, but make it worse.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1 excerpt number 112, under comment code 12b.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 114

**Sort Order:** 300

**Comment Excerpt:**

Operational flexibility is the most appropriate step to address these areas with declining flow. Eliminating the oxygen and temperature wellhead operating standards would be a viable option since the area is closed and air infiltration is not the issue. To address negative pressure, the landfill could still deactivate a well as long as the well remains in place and is merely temporarily shut off until gas flow increases. To streamline the process EPA should clarify that deactivating a well does not require Agency approval as this approach is currently allowed in the existing Subpart WWW rules. Periodic well monitoring would be conducted to determine when the gas concentrations are sufficient to maintain negative pressure; however, EPA should clarify that the wellhead parameters do not apply to a deactivated well. In addition, SEM monitoring and cover integrity checks would still be performed to ensure optimal performance of the GCCS.

**Comment Response:**

The EPA has expanded the GCCS removal or capping criteria to also cover well decommissioning. The EPA has provided an opportunity for landfills to demonstrate to the regulatory agency that the GCCS will be unable to operate due to declining gas flows. See Section V.C of the 2016 NSPS and Emission Guidelines Final Preambles for additional discussion about addressing non-productive areas.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 115  
**Sort Order:** 301

**Comment Excerpt:**

EPA memorialized its agreement with well deactivation in a 2003 letter from George T. Czerniak (EPA Region 5) to Darrin F. Hartman, the Akron Regional Landfill, Inc. (ARLI). (See Attachment 5 [of DCN EPA-HQ-OAR-2003-0215-0100.1].) By letter dated December 17, 2002, ARLI had requested a variance for four wells, which could not meet the temperature and oxygen/nitrogen wellhead operating parameters due to declining methane production. EPA indicated that locking out the vacuum valves for each well, while maintaining the casings and heads, would be viewed as an operational change not requiring Agency approval, and directed ARLI to continue its required SEM to ensure proper operation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 114, under comment code 12b.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 30  
**Sort Order:** 400

**Comment Excerpt:**

A landfill that experiences declining flows may need to take a well off-line permanently (abandon a well). In this case, the well is disconnected from the vacuum but may or may not be physically removed or drilled out and capped, depending on access or site conditions. Once a well is abandoned it is not part of the NSPS/EG collection and control system. Well abandonment records would be kept for the required rule timeframe. As long as SEM requirements are met in the area of the abandoned well, the abandonment should not be considered a design change requiring a revision to the GCCS Design Plan. Abandoned wells will be listed in the NSPS/EG compliance report and the as-built drawing would be updated to remove abandoned wells as required by the NSPS/EG rule. We request EPA include a definition of abandoned well in the NSPS/EG rule, as follows:

*An abandoned well or collector means a well or collector that has been permanently disconnected from the gas collection system.*

**Comment Response:**

The EPA has not defined the term abandoned well in the final rules. The EPA has expanded the GCCS removal or capping criteria to also cover well decommissioning. The EPA has provided an opportunity for landfills to demonstrate to the regulatory agency that the GCCS will be unable



to operate due to declining gas flows. See Section V.C of the 2016 NSPS and Emission Guidelines Final Preambles for additional discussion about addressing non-productive areas.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 7  
**Sort Order:** 700

**Comment Excerpt:**

Why does a landfill need to maintain negative pressure at every collector or even be required to monitor the landfill if the surface emissions are monitored and corrected on a timely basis? This may seem overly simple, but the reality is that much time and energy is used chasing various exceedances when surface emissions may very well be clean in the area surrounding and exceeding well. Using yet another historical fact, Cornerstone recommended that a client maintain positive pressure at several wells at an uncapped landfill for over 5 years while the state agency reviewed various pending higher operating values for temperature. During this same timeframe, the landfill never had an uncorrectable surface emission in the areas surrounding these collectors during the entire timeframe. Of course this mode of operation complied with the NSPS the entire duration. Therefore, is negative pressure (vacuum) a performance standard that should be required? Cornerstone is not advocating that only surface scans are important, but the USEPA has a duty to evaluate the facts and simplify the regulatory framework to encourage a better future so that the citizens continue to enjoy reasonable waste disposal costs while understanding that emissions continue to be controlled.

**Comment Response:**

In the final rules, the EPA has retained the requirement for negative pressure. However, the EPA has expanded the GCCS removal or capping criteria to also cover well decommissioning. The EPA has provided an opportunity for landfills to demonstrate to the regulatory agency that the GCCS will be unable to operate due to declining gas flows. See Section V.C of the 2016 NSPS and Emission Guidelines Final Preambles for additional discussion about addressing non-productive areas.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 123  
**Sort Order:** 800

**Comment Excerpt:**

The industry is highly incentivized to prevent fires, which can significantly damage the multimillion dollar GCCS or the landfill liner or jeopardize energy recovery projects. Landfill

sector experience and research has determined that the requirement to operate wellheads at a temperature below 55 degrees C or 131 degrees F is not associated with landfill fires or with a decrease in active anaerobic decomposition. A good illustration is work done by the Solid Waste Authority of Palm Beach, Florida. The Authority was required to conduct extensive, multi-year field research because their GCCS with 16 active, LFG extraction wells was operating at temperatures well above 131 degrees F. After three years of monitoring pressure, temperature, flow rate, methane composition, carbon dioxide, oxygen and balance gases, they concluded that temperatures as high as 176 degrees F supported high rates of methane production, active anaerobic decomposition, with no indications of fire.<sup>3</sup>

[Footnote]

(3) Mullah-Saleh, A, Hernandez, M, Mesojedec, J., Elevated Temperatures (As High as 176' F) Detected in Landfill Gas Wellheads!, SWANA (Attachment 6 [of DCN EPA-OAR-2003-0215-0100.1])

**Comment Response:**

Due to the extreme environmental consequences of a subsurface landfill fire, these provisions obligate landfill owners or operators to take all practical steps necessary to avoid landfill fires. The EPA has set a conservative operating standard value for temperature in order to be environmentally protective. While this value works for many landfills and wells across the country, there are climates and well configurations where, with the appropriate justification and data, higher temperature values are appropriate. The final rules retain the ability for a landfill to request higher operating values, as appropriate.

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**Commenter Name:** T.Thalhamer and V.Babrauskas

**Commenter Affiliation:** P. Foss-Smith

**Document Control Number:** EPA-HQ-OAR-2014-0451-0167

**Comment Excerpt Number:** 3

**Sort Order:** 801

**Comment Excerpt:**

The thresholds in the rules are not tightly set to conservatively be the lowest level of concern, such that false positives would be a common occurrence. To the contrary, they instead already provide substantial leeway for operators such that, even with localized variations around the mean, false positives are not as uncommon as reported. The true issue is US EPA's lack of guidance with HOVs. Unfortunately, US EPA has not taken the time to clearly articulate the importance of why these regulations are in place. US EPA has not even researched how many HOVs have been issued and what are the issues surrounding the HOVs, but now US EPA is recommending these HOVs limits be eliminated.

Thus, with regard to the oxygen limit, although 5% oxygen is the formal oxygen limit found in the rule, in practice, best practice based on decades of experience is, when temperature concerns arise, for operators to maintain oxygen below 2%. In fact the gold standard in the industry both

in the USA and Europe, is to operate an interior gas collection wells at an oxygen level target at 1%.

With regard to heat, for one thing, the temperature of the gas at the well head is the average of the temperatures from the bottom to the top of the vertical pipe that often extends over hundreds of feet, while heating event and/or subsurface fires/smoldering will tend to be confined to, perhaps 50 feet of that span. For this reason, the average well head temperature reading can easily be 20 or more degrees Fahrenheit less than temperatures of concern in the actual fire zone. Similar, for another thing, even in idealized conditions for decay, the heat from the more common mesophilic anaerobic decomposition in landfills is not likely to exceed 113°F, which is 14% less than the 131°F threshold in the existing rule.

That is to say, these regulatory thresholds reduce the possibility of false positives. While some temperatures up to 175 °F have shown not to produce carbon monoxide (i.e., a sign of incomplete combustion), US EPA has failed to provide guidance as to the potential damage environmental control systems at the landfill.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 123, under comment code 12b.

## **12.3 Wellhead Monitoring and BMPs**

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### **12c. Wellhead Monitoring and BMPs**

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 124

**Sort Order:** 100

**Comment Excerpt:**

Conforming to the wellhead operating standards is an administrative nightmare and conflicts with maintaining the best system of emissions reduction (BSER). Efforts to comply with the prescriptive Landfill NSPS wellhead operating standards in 60.753(c), particularly oxygen/nitrogen and temperature, have been extremely burdensome and counterproductive to controlling surface emissions of methane. Many of the implementation challenges are due to widely varying agency interpretations that are constantly subject to change, even though EPA has not revised the rules since 2000. The amount of data tracking, record keeping and reporting is not only extremely burdensome for the landfill sector and the regulators, but many of the agencies' ultimate decisions are in direct conflict with GCCS Design Plans, which are certified by Professional Engineers, and the fundamental goal of the NSPS to implement BSER and minimize emissions. We increasingly find ourselves in situations where state agencies deny our HOV requests, despite our provision of all required documentation, and order us to expand the GCCS at significant and unnecessary cost. It becomes a "Catch-22" of either risking compliance with state agency directives or expanding the system in a manner which will not alleviate the

wellhead parameter issue, and may cause more problems. Following are some recent examples that illustrate some of these instances.

In August 2010, the Trail Ridge Landfill located in Florida submitted its initial demonstration for a temperature HOV at one well and requested 120 days to gather additional documentation to support the HOV. The Florida DEP denied both requests, requiring the site to expand the system within 120 days, and deemed the initial exceedance to be a violation of the NSPS operational requirements and a reportable Title V deviation. The landfill subsequently installed three additional wells which did not resolve the higher temperature in the existing well. In fact, all four wells exhibited elevated temperature. The landfill again requested a temperature HOV, this time for all four wells, or alternatively, to decommission the newly installed wells as the system expansion did not correct the initial exceedance. In a March 17, 2011 letter to Trail Ridge Landfill, the Florida DEP indicated it did not have the authority to allow the site to decommission the three new wells it had directed the site to install and therefore denied the HOV request for the three wells. The agency did however grant the HOV for the initial well (*See Attachment 7*).

On June 2, 2014, EPA Region 5 issued a letter to Roxana Landfill. EPA denied a May 12, 2014 HOV request for temperature at one well, stating that methane is present in the well and that the elevated temperature warranted expansion of the gas system (*See Attachment 8*).

In these cases, the denial of the temperature HOVs and ultimate requirement to install more wells actually decreased system performance. In order to meet the NSPS temperature parameter, a facility must decrease flow to the well otherwise face additional system expansion. This runs contrary to BSER for the collection system.

**Comment Response:**

The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature. The EPA is also finalizing corrective action requirements that generally give owners or operators 60 days to investigate, determine appropriate corrective action, and implement the action. The EPA believes that the refinements to the corrective action requirements will reduce the need for landfill owners or operators to submit requests for higher operating values. See Section VI.A.1 and VI.A.2 of the 2016 NSPS Final Preamble. See Section VI.A.1 and VI.A.2 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 16

**Sort Order:** 101

**Comment Excerpt:**

However, the industry believes that many of the prescriptive requirements are counter to efforts needed for a "well operated" GCCS. For example, the temperature, oxygen and nitrogen well head standards and the attendant corrective actions required by the rule often lead instead to a poorly operated GCCS. Therefore, consistent with the California landfill methane regulations, we recommend that monitoring for negative pressure at the wellhead be the standard by which a well operated GCCS is determined, and that BSER be verified using SEM. With this compliance standard, temperature and oxygen/nitrogen standards are unnecessary and should be removed.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 124, under comment code 12c.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 127

**Sort Order:** 200

**Comment Excerpt:**

Despite the environmental benefits of early gas collection, only a few states have accommodated early collection systems with flexible alternatives to the wellhead operating parameters. For example, Michigan and some regions within Pennsylvania have exempted some sites from complying with the pressure and oxygen/nitrogen wellhead operating parameters at leachate collection system components (because they are not interior wells or relied upon as part of the GCCS Design Plan). Nebraska provided relief from meeting oxygen/nitrogen operating requirements, and allowed a WM site to rely on surface emissions monitoring to demonstrate sufficient collection from leachate risers. A November 7, 2008 determination issued by EPA Region 4 to Alabama allowed WM sites to rely on surface emissions monitoring to determine if/when the sites can connect to the leachate system (*See Attachment 9 [to DCN EPA-HQ-OAR-2003-0215-0100.1]*).

However, too few agencies are willing to review and grant such flexibilities for various reasons including lack of resources, conflicting determinations from EPA and lack of trained personnel who understand landfill operations. In some cases, the agency interpretation prevents early collection and is contrary to BSER.

For example, EPA Region 5 issued a letter to Roxana Landfill dated March 23, 2013. EPA denied the HOV request for oxygen at one well. EPA denied the HOV because the agency believed the higher oxygen level significantly inhibited anaerobic decomposition by killing methanogens and referenced several other Applicability Determination Index ("ADI") letters to support this interpretation. EPA stated that the acceptable methane concentration must be in the 40 - 50% range. Roxana data indicated the methane concentration in the well ranged between 17 and 63%. (see ADI Number 1400009, <http://cfpub.epa.gov/adi/pdf/adi-nsp-1400009.pdf>). The agency's interpretation that methane concentration must be between 40-50% to receive the HOV is arbitrary. We find no such requirement in subpart WWW or the EG, nor has the Agency issued

guidance or any justification for this approach. We raise the issue here because this decision, and others like it, actually have the perverse effect of actually preventing sites from implementing early collection BMPs (i.e., tie-in to leachate collection system) and denies operating flexibility for non-producing wells in closed areas. Further, this determination appears to conflict with previous Region 5 determination that allow for higher oxygen at wells with low methane quality (see ADI Number 0800040 and <http://cfpub.epa.gov/adi/pdf/adinsps-0800040.pdf>).

**Comment Response:**

The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 EG Final Preamble.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 118  
**Sort Order:** 201

**Comment Excerpt:**

Earlier installation of GCCS occurs at many WM landfills. However, far more early installation, particularly of interim gas collection methods, would occur if not for the prescriptive wellhead operating parameters. As discussed in Section III, the parameters for temperature (T) and oxygen/nitrogen (O/N) are the most significant barriers to earlier installation or expansion of gas collection. Reducing the timeframes will only exacerbate these on-going issues.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 127, under comment code 12c.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0176  
**Comment Excerpt Number:** 25  
**Sort Order:** 202

**Comment Excerpt:**

Removing the prescriptive requirement barriers of oxygen/nitrogen and temperature and focusing the requiring monthly monitoring and recordkeeping of these parameters will promote early installation of the GCCS and BMP's. With those requirements in place, the installation of supplemental and temporary GCCS components could place landfills at risk of exceeding the operational standards of oxygen/nitrogen and temperature; without those requirements in place,

installation of those emission control measures can be completed as appropriate without presenting a potential compliance concern.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 127, under comment code 12c.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 5

**Sort Order:** 203

**Comment Excerpt:**

If the concerns with wellhead standards were eliminated, landfill owners would be more likely to install GCCS components sooner, to connect the GCCS to other structures (e.g. the leachate collection system) and to use horizontal collectors and/or perimeter extraction wells. Each of these has the potential to improve effectiveness and lessen emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 127, under comment code 12c.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 126

**Sort Order:** 300

**Comment Excerpt:**

Horizontal collectors and leachate systems are effective at capturing early gas production, but often have difficulty meeting NSPS wellhead operational parameters for the following reasons:

1. They are not designed to be air tight; 2. They are not constructed "in" refuse, but are instead below or adjacent to the refuse; and 3. They are unable to collect enough gas to meet the NSPS operational standards.

The gas quality and quantity collected from these features can be highly variable; some collectors never produce quality gas and others may produce upwards of 100 to 150 cfm of gas. Collection rates also vary, fluctuating between producing and non-producing. Consequently,

horizontal collectors and leachate system components are not designed to meet the pressure, temperature and nitrogen/oxygen operating parameters in the NSPS/EG.

**Comment Response:**

The EPA is not requiring horizontal collectors in the final rule. The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature and pressure, which is expected to provide some flexibility on operating parameters for horizontal collectors. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 EG Final Preamble.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 16

**Sort Order:** 301

**Comment Excerpt:**

It must be acknowledged that the limit of 5% oxygen has been a roadblock for many facilities to effectively control odors/emissions from leachate collection systems (LCS). It is common for portions of the LCS to be gravity flow systems, which results in higher than 5% oxygen being present. The oxygen standard is an automatic disincentive to pursue LFG collection from the LCS, if it is deemed necessary to meet the 5% wellhead standard.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 126, under comment code 12c.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 6

**Sort Order:** 302

**Comment Excerpt:**

It is often difficult for these locations [facilities with connections to LCRS] to meet NSPS wellhead operating standards, since: 1) they were not designed to be air tight; 2) they are not constructed "in" refuse, but are instead below or adjacent to the refuse; and 3) when the leachate collection system contains liquids (as it was designed to do), the piping that conveys the leachate (and the landfill gas) may be unable to collect enough gas until the liquids are removed. Therefore, when a vacuum is applied, ambient air can be pulled into riser pipes, resulting in



elevated oxygen concentrations, which would constitute an exceedance of the NSPS operating criteria. Consequently, landfill owners/operators frequently must request HOVs or other alternative operating procedures from the applicable regulatory agency due to potentially high oxygen levels at these system components, if required to meet wellhead standards. Regulatory agencies have proven extremely reluctant to grant such alternatives due to unfamiliarity with LFG control technology and existing site conditions. This is often why landfill operators do not tie-in to the leachate system; the NSPS wellhead standards are a significant barrier.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 126, under comment code 12c.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 80  
**Sort Order:** 303

**Comment Excerpt:**

It is often difficult for these locations to meet NSPS wellhead operating standards, since: 1) they were not designed to be air tight; 2) they are not "in" refuse, but are instead below or adjacent to the refuse; and 3) when the leachate collection system contains liquids (as it was designed to do), the piping that conveys the leachate (and the landfill gas) may be unable to collect enough gas until the liquids are removed. Therefore, when vacuum is applied, ambient air can be pulled into riser pipes, resulting in elevated oxygen concentrations, which can result in an exceedance of the NSPS operating criteria. Consequently, landfill owners/operators frequently must request HOVs or other alternative operating procedures from the applicable regulatory agency due to potentially high oxygen levels at these wellheads. Regulatory agencies have proven extremely reluctant to grant such alternatives due to unfamiliarity with LFG control technology and existing site conditions. As a result, landfill operators often do not tie the GCCS into the leachate system.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 126, under comment code 12c.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director  
**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1  
**Comment Excerpt Number:** 5  
**Sort Order:** 304

**Comment Excerpt:**

Such horizontal collector piping for gas and seeps should also not be subject to the operating limits for temperature and gas content (oxygen and nitrogen) imposed on gas extraction wells. Leachate collection pipes are designed for liquid flow and for access by pipe cleaning equipment, not for the seals and valves used in gas extraction wells. Some intake of ambient air will likely occur, at least earlier in the filling life of a cell. The operator should have the flexibility of deciding the balance between gas flow and oxygen intake and deciding on whether to cease extracting landfill gas from collection pipes, attempting to seal the upper end of the leachate collection layer, reducing gas flow rates, or using some other method. Operators will have incentive to limit oxygen entry into the gas extraction system and should have the flexibility of deciding if connecting collector piping to a gas header line or leachate cleanout pipe is acceptable or if a temporary flare is needed specifically for the collector piping. The time delay associated with modifying an NSPS plan or seeking approval for alternative operating limits for gas concentrations serves no purpose and is time wasting when applied to collector pipes for seep and odor control.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 126, under comment code 12c.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 34

**Sort Order:** 305

**Comment Excerpt:**

The most problematic prescriptive requirement that inhibits the efficient operation of a GCCS system and that creates a disincentive to operators to expand their GCCS systems to include leachate collection systems as components in a GCCS system are the temperature, oxygen and nitrogen well head standards coupled with the unnecessarily redundant and time consuming approval process.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 126, under comment code 12c.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 22

**Sort Order:** 306

**Comment Excerpt:**

The proposed rule is considering alternative wellhead monitoring requirements which could reduce monitoring requirements for temperature and nitrogen/oxygen. If USEPA intends to remove the operational standards that limit temperature and nitrogen/oxygen content then the reduced monitoring requirements would potentially enable facilities to reduce emissions. With the current limits in place, facilities may be reluctant to connect the leachate collection system, or other potential sources of landfill gas emissions, that were never designed or installed with the intent of being airtight. However, If there is no intent to remove the operational standards limiting temperature or nitrogen/oxygen, then any reduction in monitoring frequency is meaningless.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 126, under comment code 12c.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 125

**Sort Order:** 307

**Comment Excerpt:**

The wellhead operating parameters are significant barriers to implementing cost effective gas collection enhancements and/or earlier gas collection. Many landfill owners/operators understand the environmental benefits of reducing odors and methane emissions by using interim gas collection practices prior to the point at which the landfill is producing enough LFG to warrant a full Gees. Two such practices include connecting to the leachate collection system and installing horizontal collectors. However, many NSPS/EG sites do not take advantage of these practices solely because of compliance issues with the wellhead operating requirements. Although use of horizontal collectors and leachate systems are interim measures for early gas collection, and are not intended to be part of the formal GCCS Design Plan, many agencies nonetheless apply wellhead operating standards to these devices.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 126, under comment code 12c.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner,

Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 18

**Sort Order:** 308

**Comment Excerpt:**

Many landfills owners find that a tie-in to their leachate collection systems (LCS) can be an effective practice to collect additional landfill gas. Yet actions, such as connecting to the main GCCS, are often not taken for fear that the LCS will not be able to comply with the prescriptive oxygen standard, they are reluctant to connect to the GCCS to the LCS. In this case, the oxygen standard leads to greater emissions than without it.

Earlier collection of LFG is likely to lead to more oxygen exceedances. Therefore, many landfill operators are reluctant to collect landfill gas earlier than required, because LFG generation is just beginning in areas of new refuse, and not be able to meet the wellhead criteria.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 126, under comment code 12c.

## **12.4 Alt. 1 - Removing Applicability**

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### **12d. Alt. 1 - Removing Applicability**

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**Commenter Name:** Comment submitted by Todd Parfitt, Director

**Commenter Affiliation:** Wyoming Department of Environmental Quality (WDEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0081.1

**Comment Excerpt Number:** 6

**Sort Order:** 100

**Comment Excerpt:**

Many of the landfills in Wyoming are owned or operated by small entities as defined in Section XI.C "Regulatory Flexibility Act" of the preamble, which defines small entities as: *(1) A small business that is primarily engaged in the collection and disposal of refuse in a landfill operations as defined by NAICS codes 562212 with annual receipts less than \$35.5 million; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000, and (3) a small organization that is any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.*<sup>2</sup> In Wyoming, more than 80% of the municipal solid waste landfills are owned or operated by small governmental jurisdictions that fall into the second category of the small entity definition. WDEQ is aware of three landfills currently above the design capacity threshold, one of which is owned/operated by a small entity. Moreover, WDEQ is anticipating several landfill expansions in the future that will trigger applicability of this rule, and possibly the installation of landfill gas

collection and control systems (GCCS). In each instance, the landfill would meet the definition of a small entity.

Opportunities to beneficially use landfill gas in a sparsely populated state like Wyoming can be limited due to several factors. Geographic location alone can restrict how a landfill may use collected gas. Many landfills in this state are constructed in remote, rural localities which often lack necessary infrastructure, such as pipelines used to convey the landfill gas off-site. It's difficult to justify the cost of installing such infrastructure, because there is typically no beneficial end-user nearby (e.g., industrial or commercial entities that are capable of beneficially using the landfill gas).

The relatively minor quantities of municipal solid waste, coupled with an arid climate, result in much smaller methane generation rates. However, based on the thresholds in the proposed rule, several of the aforementioned facilities in Wyoming may become subject to the requirement to install GCCS in the future. These small entities would greatly benefit from every flexibility afforded to them under the final rule.

For these reasons, WDEQ strongly encourages EPA to extend the use of alternative wellhead monitoring requirements to small entities owning or operating landfills, regardless of beneficial use.

Reference

(2) 79 FR 41,828

**Comment Response:**

The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature and pressure. This change to the operational standards applies to all landfills, regardless of beneficial use employed at the landfill. Despite the change in operational standards for nitrogen/oxygen, the EPA is retaining the requirement for monthly monitoring of nitrogen/oxygen. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 EG Final Preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 27

**Sort Order:** 101

**Comment Excerpt:**

EPA has requested comment regarding whether an adjustment to monitoring frequency should apply only to landfills that beneficially use landfill gas. We disagree with this. Providing relief from the wellhead standards not only relieves some of the burden that landfills have, it actually reduces emissions. Therefore, this change should be applied to everyone. In addition, some

landfills are unable to sustain a beneficial use project. This could be due to many circumstances (e.g. remote location, local/onsite emission restrictions, insufficient gas flow, or inability to gain financing), but most often it is because the landfill is either too old or too small. It would be unfair to penalize smaller landfills simply because they do not have sufficient landfill gas to attract a beneficial use.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0081.1, excerpt number 6, under comment code 12d.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 12

**Sort Order:** 102

**Comment Excerpt:**

DEQ is in favor of the alternative monitoring provision which proposes an exclusion from the temperature, nitrogen and oxygen monitoring requirements, or a reduction in monitoring frequency, for landfills that beneficially use LFG. Owner/operators beneficially reusing LFG are currently motivated to optimize their collection and control equipment to efficiently extract gas. Owner/operators want to maximize return on the large capital investment in their GCCS and energy recovery equipment by extracting the maximum amount of gas possible without introducing oxygen into the system and creating potential for subsurface fires in the waste mass. DEQ believes this motivation is sufficient enough to preclude the need for frequent monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0081.1, excerpt number 6, under comment code 12d.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 11

**Sort Order:** 103

**Comment Excerpt:**

WDNR does not see a connection between the need for wellhead monitoring versus the beneficial use of landfill gas. These are separate activities. In whatever way wellhead monitoring

is defined, there are enough unknowns and changes in the waste that any landfill operation can run into problems with individual wells, changes in gas production rates, well flooding, integrity of hardware due to wear and tear, etc. From Wisconsin program experience, MSW landfills need periodic inspection and monitoring to prevent problems from going undetected or from progressing.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0081.1, excerpt number 6, under comment code 12d.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 10

**Sort Order:** 104

**Comment Excerpt:**

Alternative Monitoring Requirement, Beneficial Use of Gas. Ohio EPA does not support adjusting monitoring requirements for landfills that beneficially use landfill gas. Use of landfill gas has no bearing on proper management of a gas collection system. Indeed, where gas is extracted for beneficial use, Ohio EPA has encountered more incidents of excessive vacuum and air infiltration. In addition, when adjustments are necessary to the operation of the gas collection and control system, there has been more resistance by operators of those systems where gas is beneficially used. In part, this is because the gas system operator is not typically the landfill owner or operator at landfills that beneficially use landfill gas.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0081.1, excerpt number 6, under comment code 12d.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 12

**Sort Order:** 105

**Comment Excerpt:**

EPA should not tie revisions to gas system monitoring to a beneficial use effort that can be compromised by so many factors outside the control of the landfill operators. Opportunities for beneficial use of landfill gas also tend to be very site specific. Utilities vary in how much effort

and cost it takes to tie into an electric grid. Proximity to a potential customer for landfill gas as boiler fuel supplement is extremely helpful but also unusual. The recent production of shale gas and oil has significantly altered fuel markets and has affected the return on using landfill gas for electricity production. In the past few years, some MSW landfill operators have decommissioned electricity generation in favor of flaring, due to unfavorable financial returns. Such decisions would be unaffected by the ability to change wellhead monitoring schedules or parameters.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0081.1, excerpt number 6, under comment code 12d.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 44  
**Sort Order:** 400

**Comment Excerpt:**

Monitoring requirements should be in place to serve an environmental benefit, not to incentivize a separate effort. Beneficial use of landfill gas can be (and is) incentivized through programs such as tax credits, and the recent classification of vehicle fuel derived from LFG as a cellulosic biofuel. Further incentives could be realized by allowing potential to emit (PTE) calculations for beneficial use projects to take credit for avoided fossil fuel emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0081.1, excerpt number 6, under comment code 12d regarding the monitoring requirements in the final rules. The commenters request for PTE calculations at beneficial use projects to take credit for avoided fossil fuel emissions is outside the scope of the final rulemakings for MSW landfills.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)  
**Commenter Affiliation:** Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1  
**Comment Excerpt Number:** 28  
**Sort Order:** 401

**Comment Excerpt:**

Monitoring requirements should be in place to serve an environmental benefit, not to incentivize a separate effort. Beneficial use of landfill gas can be (and is) incentivized through programs



such as tax credits, and the recent classification of vehicle fuel derived from LFG as a cellulosic biofuel. Further incentives could be realized by allowing potential to emit (PTE) calculations for beneficial use projects to take credit for avoided fossil fuel emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 44, under comment code 12d.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 39

**Sort Order:** 402

**Comment Excerpt:**

We oppose incentivizing landfill gas-to-energy projects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 44, under comment code 12d.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 13

**Sort Order:** 403

**Comment Excerpt:**

The DEQ does not think it necessary to make the availability of the exclusion contingent upon a set minimum percentage of beneficial reuse. Once collection and reuse equipment or agreements are in place, incentive exists to maximize the amount of gas reused, negating the need to regulate a minimal percentage of reuse to earn the benefit of monitoring exclusion or lessened frequency.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 44, under comment code 12d.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 17

**Sort Order:** 404

**Comment Excerpt:**

We do not think that bargaining monitoring requirements to create an incentive to beneficially use landfill gas is a worthwhile course of action. Some landfills are unable to sustain a beneficial use project. This could be due to many circumstances (e.g. remote location, local onsite emission restrictions, insufficient gas flow, or inability to gain financing), but it would be disingenuous of the Agency to show preference to certain facilities or landfill owners based on their ability to organize or finance a beneficial use project. Monitoring requirements should be **in** place to serve an environmental benefit, not to incentivize a separate effort. Beneficial use of landfill gas can be (and is) incentivized through programs such as tax credits, and the recent classification of vehicle fuel derived from LFG as a cellulosic biofuel. Further incentives could be realized by allowing PTE calculations for beneficial use projects to take credit for avoided fossil fuel emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 44, under comment code 12d.

**12g. Alt. 2 - Reduced frequency Applicability**

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1

**Comment Excerpt Number:** 3

**Sort Order:** 100

**Comment Excerpt:**

Foth and the BOW Group support reduced frequency of wellhead monitoring and/or exclusion of the temperature and oxygen/nitrogen monitoring requirements, in particular if the majority of the landfill gas recovered is beneficially used. Entities that beneficially use landfill gas are already motivated to be as efficient as possible in landfill gas collection and recovery. Reduced monitoring requirements may encourage additional landfills to beneficially use landfill gas. The exclusion of oxygen monitoring requirements would in particular be beneficial to older landfills where gas generation has declined, which often have difficulty balancing wellfields to maintain compliance with oxygen limitations.

**Comment Response:**

The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 6

**Sort Order:** 200

**Comment Excerpt:**

The Division has identified noncompliance with the current operational standards through Colorado's MSW landfills monthly monitoring data. The Division believes that quarterly or semi-annual monitoring would allow noncompliance to persist, especially in arid areas like Colorado where the wellfield needs to be monitored and adjusted frequently to ensure optimal operation and compliance with the operational specifications for oxygen content and negative pressure. Therefore, the Division requests that EPA maintain the monthly wellhead monitoring frequency.

**Comment Response:**

The EPA has retained wellhead monitoring for temperature, oxygen/nitrogen, and negative pressure on a monthly frequency and landfill owners and operators must take corrective action for exceedances of temperature and negative pressure. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 Emission Guidelines Final Preamble.

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## **12.5 Alt. 2 - Reduced Frequency Applicability**

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### **12g. Alt. 2 - Reduced frequency Applicability**

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

Foth and the BOW Group support reduced frequency of wellhead monitoring and/or exclusion of the temperature and oxygen/nitrogen monitoring requirements, in particular if the majority of the landfill gas recovered is beneficially used. Entities that beneficially use landfill gas are already motivated to be as efficient as possible in landfill gas collection and recovery. Reduced monitoring requirements may encourage additional landfills to beneficially use landfill gas. The exclusion of oxygen monitoring requirements would in particular be beneficial to older landfills where gas generation has declined, which often have difficulty balancing wellfields to maintain compliance with oxygen limitations.

**Comment Response:**

The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 Emission Guidelines Final Preamble.

---

**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

The Division has identified noncompliance with the current operational standards through Colorado's MSW landfills monthly monitoring data. The Division believes that quarterly or semi-annual monitoring would allow noncompliance to persist, especially in arid areas like Colorado where the wellfield needs to be monitored and adjusted frequently to ensure optimal operation and compliance with the operational specifications for oxygen content and negative pressure. Therefore, the Division requests that EPA maintain the monthly wellhead monitoring frequency.

**Comment Response:**

The EPA has retained wellhead monitoring for temperature, oxygen/nitrogen, and negative pressure on a monthly frequency and landfill owners and operators must take corrective action for exceedances of temperature and negative pressure. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 Emission Guidelines Final Preamble.

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## 12.6 Alt. 3 - Continuous Monitoring

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### 12i. Alt. 3 - Continuous

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 14

**Sort Order:** 100

**Comment Excerpt:**

DEQ sees potential value in automating wellhead data collection using remote wellhead sensors with a central data logger. An automated system could potentially collect continuous data with less investment in labor serving to more quickly identify problematic wells. DEQ believes automated systems should be considered as a voluntary alternative to traditional monitoring with no prescription to submit continuous data to the delegate authority for review.

**Comment Response:**

The EPA thanks the commenter for their input on this issue. However, the EPA did not receive any information during the comment period on any landfills that have successfully implemented automated monitoring. As such, this technology may still be in research and development phase and not adequately demonstrated for commercial use and widespread implementation. Real world applications will face issues such as excessive heat, excessive cold, precipitation, lightning strikes, lack of a sufficient electrical source, and pests and insects. The equipment needs to be robust enough to handle these issues. While such technology may exist, the EPA did not receive adequate information to show successful field deployment of these systems at landfills, and as such, the EPA has decided not to require automated monitoring at landfills in the final rule.

The EPA agrees that automated systems could be used to identify problematic wells more quickly and to improve gas collection system operations. If an owner or operator wanted to use an automated system voluntarily, the EPA would encourage the owner or operator to do so. Voluntary use of such systems could help to improve the technology such that it becomes standard use in the future.

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**Commenter Name:** Comment submitted by Richard N. Lindstrom, P.E.  
**Commenter Affiliation:** Private Citizen  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0103  
**Comment Excerpt Number:** 1  
**Sort Order:** 101

**Comment Excerpt:**

Ready availability of data (vacuum, flow rate, temperature) can give:

1. Early alert to problems
2. More complete ranges of data
3. Better averages

The baropneumatic method (from Hydro Geo Chem) can be used to give initial calibration of flow rate for a given well.

The uploaded files show typical barometric pressure changes in Ohio.

Port\_Columbus\_April\_2012\_presssures

Port\_Columbus\_May\_2012\_presssures

Port\_Columbus\_June\_2012\_presssures

[See original submittals DCN# 103.2, 103.3 and 103.4 for barometric pressure data for 3 months of 2012.]

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 14, under comment code 12i.

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**Commenter Name:** Andrew Campanella, Chief Executive Officer (CEO)

**Commenter Affiliation:** Loci Controls, Inc.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0179

**Comment Excerpt Number:** 1

**Sort Order:** 101

**Comment Excerpt:**

We feel an opportunity to further reduce landfill gas emissions is not being considered in the proposed guidelines. Because this draft is requesting comments related to wellhead operational standards, BSERs and BMPs, we feel this is the appropriate time to make the EPA aware of additional opportunities for emission reduction and request the provided information be considered when drafting the final EG. Advances in low power sensors, wireless communication, solar panels, and batteries have paved the way for significant technical innovation across all industries, or as it is more commonly known, the “internet of things”. Taking advantage of these technological advances, the industry has developed wireless, continuous monitoring capabilities that can be used on any type of landfill gas collection well. It is not only possible to wirelessly measure all critical components of landfill gas at an individual wellhead (pressure, temperature, oxygen) but also to do so for an entire site at a user cost that is equivalent to the manual process currently in use as the industry standard. The accuracy, precision, and efficacy of these continuous monitoring systems are similar to the hand held analyzers being utilized by virtually every landfill across the country. These real time monitoring systems can significantly improve gas collection system operations by providing the operators with increased system transparency, allowing them to make more informed and timely wellhead tuning decisions. Continuous monitoring of individual gas wells is now a reality; however, the proposed rules as written do not anticipate this technological advancement. We believe the final EG should include specific rules or guidelines related to monitoring, recordkeeping & reporting for landfill sites using continuous wellhead monitoring systems. Because these continuous monitoring systems have the potential to significantly increase the efficacy of the gas capture systems, we believe the proposed rules should be written to encourage such technologies, rather than serve as a roadblock to rapid industry wide adoption.

Our specific concern is that if EG are not written in a way that anticipates the feasibility of cost effective continuous monitoring systems, operators may be negatively incentivized to implement such systems. In particular, there would be regulatory uncertainty in the rules about reporting and responding to transient exceedances that might occur due to inevitable short-term problems with the gas collection system. Under current and proposed rules, an engine or blower outage that lasts for one or several hours would almost certainly not require a specific corrective action and associated reporting, for the simple reason that such routine maintenance outages are unlikely to occur at the same time compliance measurements are being taken. In the case of a continuous wellhead monitoring system, these events would be observed and could potentially lead to an additional burden on site operators unless some regulatory clarity is provided. It is our belief that the spirit of the proposed rule changes aims to reduce emissions and encourage landfill operators to operate and maintain GCCS to ensure they are in proper working order as much as possible. To this end, continuous wellhead monitoring at the individual collection wells has the potential

to improve site operators' real time knowledge about the performance of the system, allowing them to identify and correct issues as they arise. For this reason, we strongly suggest that rules are crafted in a way that does not penalize operators who choose to collect additional information about the operation of the GCCS above and beyond the proposed rules.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 14, under comment code 12i.

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**Commenter Name:** Andrew Campanella, Chief Executive Officer (CEO)

**Commenter Affiliation:** Loci Controls, Inc.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0179

**Comment Excerpt Number:** 4

**Sort Order:** 102

**Comment Excerpt:**

The proposed rule document states that "... a well-designed and well operated landfill GCCS with a control device capable of reducing NMOC by 98 percent by weight continues to be the best system of emission reduction (BSER) for controlling LFG emissions".

Although we agree that 98% NMOC destruction is a reasonable criterion for control devices, we believe an additional opportunity exists to significantly reduce methane emissions through improving the operation of the gas collection system. Regardless of how well a gas collection system is designed and operated, monthly monitoring is inadequate to ensure consistent negative wellhead pressure. Monthly monitoring cannot identify temporary changes due to environmental conditions and other factors that affect gas collection rate. By utilizing continuous monitoring of all wellheads for pressure, collection system operators will receive continuous feedback on system operation. This can lead to the real time identification of a number of factors that cause the collection system to work sub-optimally, allowing operators to make adjustments as issues occur. Continuous wellhead monitoring ensures collection efficiency is maximized and we believe is a best management practice for operating to gas the collection system.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 14, under comment code 12i.

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**Commenter Name:** Andrew Campanella, Chief Executive Officer (CEO)

**Commenter Affiliation:** Loci Controls, Inc.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0179

**Comment Excerpt Number:** 3

**Sort Order:** 103

**Comment Excerpt:**

Furthermore, in order to ensure continuous negative pressure on all wellheads we suggest incorporating rules that encourage sites to utilize a greater measurement frequency for wellhead pressure monitoring. The best indicator of gas collection system performance is wellhead pressure. However, wellhead pressure is a function of many externalities, most of which are not able to be controlled. The only way to ensure continuous compliance with this rule is to check the system often and to make adjustments as any number of externalities can result in increased wellhead pressure.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 14, under comment code 12i.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 16

**Sort Order:** 104

**Comment Excerpt:**

Continuous Wellhead Monitoring, Paragraph (a). The area of origin for gas in a wellhead will vary depending on conditions surrounding the well. At times, external barometric changes as well as internal pressures may cause gas from one area to predominate over another. As a consequence, results from wellhead monitoring will swing depending on the time of day, weather patterns, or for no apparent reason. Ohio EPA suggests that US EPA consider continuous wellhead monitoring and averaging of results to provide a more accurate assessment of conditions within the landfill and wellhead.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0085.1, excerpt number 14, under comment code 12i.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 29

**Sort Order:** 300

**Comment Excerpt:**



EPA has said it is considering an alternative that would require automation of wellhead monitoring. Automated systems are appealing to landfill owners because of the idea that the system would control itself. However, current automation technologies are not ready for wide-spread implementation due to an array of technical, site specific and economic issues. At this point, tuning of a wellfield (adjustment of wellhead valves to maximize extraction while also minimizing odors, and oxygen intrusion) is more of an art than a science. Field technicians learn how different wells behave and broad generalizations cannot and should not be applied. This is not a task that can be easily assigned to an automated system and left to "self-operate".

Again, NW&RA and SWANA note that facilities being expanded or modified will also fall under Subpart XXX. It is not practical and may not be possible to retroactively incorporate an automated system into an existing LFG collection system that was not designed to accommodate the technology. We recommend that automated wellhead monitoring, as well as any other additional parameters, not be mandated at this time.

With respect to incorporating additional parameters into the regulation, it is not possible to comment intelligently on such an open-ended request within the time allotted, except to say that there is no evidence to suggest a need for additional parameters in wellhead monitoring at this time.

**Comment Response:**

The EPA thanks the commenter for their input on this issue. As the EPA did not receive any information during the comment period on any landfills that have successfully implemented automated monitoring, and a number of commenters noted this technology may still be in the research and development phase, the EPA has decided not to require automated monitoring at landfills in the final rule.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 19

**Sort Order:** 301

**Comment Excerpt:**

With respect to incorporating additional parameters into the regulation, it is not possible to comment intelligently on such an open ended request except to say that there is no evidence that there is or would be a need to incorporate additional parameter into wellhead monitoring at this time.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 29, under comment code 12i.

**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director  
**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1  
**Comment Excerpt Number:** 14  
**Sort Order:** 302

**Comment Excerpt:**

WDNR does not disagree with the advantages that an electronic data recording and transmission system may provide, but we are not confident that the current equipment is robust enough to mandate all-electronic data recording and transmission, particularly if the data are going to be used for tracking enforceable limits. Manual data recording and instrument upkeep will still be necessary. Our field staff have observed, or been informed of, all of the following events that have happened to MSW landfill gas collection and control systems and which led to physical damage that required repair or replacement of equipment:

Lightning strikes - on wellheads, blowers, flares, etc.

Collisions by inspection, hauling, compaction vehicles

Broken wires due to weather, stretching due to settlement, animal gnawing

Weather and season - rain, wind, snow, ice, winter cold

Insect nests (e.g., wasps)

Vandalism

Any of these would lead to a break in a data record or data transmission.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 29, under comment code 12i.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 50  
**Sort Order:** 303

**Comment Excerpt:**

At this time Republic is unaware of automated monitoring systems that should be considered for the proposed rule. No such systems for wellhead monitoring have been thoroughly developed and tested, much less implemented on a full scale basis to warrant consideration. Field technicians remain the most effective means to maximize landfill gas extraction while ensuring proper wellhead operation. It is also impractical and most likely not possible for existing landfills

to retroactively incorporate an automated systems into an existing LFG collection system that was not designed to accommodate the technology. Further consideration of automated monitoring should be postponed until the technology can be adequately demonstrated.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 29, under comment code 12i.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 21

**Sort Order:** 304

**Comment Excerpt:**

No viable options exist today for automated remote wellhead monitoring and data recording. The technology is still in research and development; it is not anywhere near commercial scale. Several companies (Landtec and Lodi Controls) recently started testing units at select sites. Parameters being monitored include one or more of the following: methane, carbon dioxide, oxygen, balance gas, temperature, static and differential pressure. A sustainable electrical source is critical to drive sensor and upload data. Batteries are cumbersome and expensive and have limited life. Solar panels are being tested to determine if battery life can be extended. Technology for determining gas quality typically involves electro-chemical sensors that require calibration. Light sensing equipment such as small lasers tuned to methane able to run on batteries are years away from commercial scale application for individual wellheads.

In regards to calibration, the assumption is that there will be some drift in the monitoring equipment. It is critical to determine the frequency of instrumentation drift and degree of accuracy of the monitoring equipment. Calibration may be impacted by ambient weather conditions (i.e., moisture) and may require purging for calibration. There are currently no viable data recording options for wellhead based systems to export data due to the sensor issues. Further, the amount of data to record and manage could be infeasible. Careful consideration of recording frequency and averaging times would be necessary. Tuning adjustments, such as increase in vacuum, may not immediately translate to changes in methane quality. Weather conditions for instance can influence the results due to the landfill's biologic process. In other words, certain conditions may exist that require several hours or days to record the full effect of the adjustment when dealing with a biological process.

WM does not support automated wellhead monitoring for regulatory application in Subpart XXX or through the ANPRM; the technology is still in research and development and is not commercially available today, and thus, has not been adequately demonstrated. However, WM does support further development of this technology for future application.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 29, under comment code 12i.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 18

**Sort Order:** 305

**Comment Excerpt:**

We are extremely concerned that the automation technologies that are currently available are not ready for wide spread implementation due to climate limitations, long term durability and high cost. The tuning of a wellfield (adjustment of wellhead valves to maximize extraction while also minimizing odors, and oxygen intrusion) is more of an art than a science. Field technicians learn how different wells behave and broad generalizations cannot and should not be applied. This is not a task that can be easily assigned to an automated system and left to "self-operate". Also, although this rule was written with primarily "green field" facilities in mind, it is common for facilities to undergo expansions which would bring existing facilities into XXX. It is not practical (and may not be possible) to incorporate the installation of automated systems into an existing landfill gas collection system that was not designed with this technology in mind.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 29, under comment code 12i.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 15

**Sort Order:** 306

**Comment Excerpt:**

We are not aware of any landfill that uses automated monitoring. Due to the ever-changing nature of a GCCS, it seems like removing the intellectual piece of well field monitoring (i.e. field technicians who know and understand the GCCS and its limitations) would be a dangerous way to run a GCCS. In addition, the infrastructure for delivering automated monitoring would be burden on the facility to maintain.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, excerpt number 29, under comment code 12i.

## 12.7 Wellhead Monitoring-Other

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### 12z. Wellhead monitoring other

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0176  
**Comment Excerpt Number:** 22  
**Sort Order:** 200

#### Comment Excerpt:

Republic disputes the relevance and utility of the websites EPA referenced in the proposal as resources for continued monitoring. See 50 Fed. Reg. at 52126. The first document, "*Landfill Gas Operation & Maintenance Manual of Practice*", is dated March 1997 and thus woefully outdated. The second document, "*Engineering Guide #78 Alternative Timeline Requests for Correcting an Exceedance of Temperature, Oxygen or Nitrogen, or Positive Pressure at the Landfill Gas Wells & Higher Operating Value Demonstrations*," is entirely irrelevant because it focuses on a correction action requirement that would no longer apply under EPA's proposal. Not only should EPA eliminate the references to these documents due to their shortcomings, EPA should also make clear that, even to the extent these documents contain relevant information, they are merely guidance and not legally binding requirements under the proposed emission guidelines.

#### Comment Response:

Regardless of the references cited, the EPA maintains its position that monthly wellhead monitoring serves as useful guidance for landfill operators and landfill gas energy project operators because they assess GCCS performance and thus help to periodically adjust or tune the GCCS to minimize LFG emissions and maintain safe operating conditions at the landfill. The EPA does note, however, that the two references cited are not legally binding requirements under the landfills regulations.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 34  
**Sort Order:** 201

#### Comment Excerpt:

EPA proposes in the Preamble (*See 80 Fed Reg at 52126*) that landfill owners or operators continue monthly monitoring and recordkeeping of the wellhead temperature and oxygen/nitrogen values, *consistent with operational guidance documents and best practices for operating a GCCS in a safe and efficient manner*. (Emphasis added). The Agency, however, includes references that are not representative of best practices because the referenced manual is outdated (nearly two decades old) and does not represent current practice, and the referenced OhioEPA document is irrelevant as it addresses alternative timelines for removed wellhead parameters. We are concerned that state agencies may interpret EPA's inclusion of these references as a mandate requiring their use for monitoring, recordkeeping and operational practices. We recommend EPA eliminate the references to these documents from its discussion in the Preamble.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0176, excerpt number 22, under comment code 12z.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 22

**Sort Order:** 300

**Comment Excerpt:**

The State of Delaware also requests the development of reference materials to address some basic topics such as how to control H<sub>2</sub>S formation in landfills and how to properly address subsurface fires.

**Comment Response:**

Hydrogen sulfide is not a regulated pollutant in the landfills NSPS or Emission Guidelines. Therefore, the EPA does not plan to provide guidance for controlling the formation of hydrogen sulfide as part of this rulemaking. To identify and possibly prevent landfill fires, the final rules require owners or operators to monitor oxygen/nitrogen levels and to monitor and take corrective action for landfill gas temperature at the wellhead. The EPA retained monitoring and corrective action for the wellhead temperature operational standard to help identify or prevent landfill fires. The EPA does not plan to develop reference materials to address how to properly address subsurface fires as part of this rulemaking.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 18

**Sort Order:** 500

**Comment Excerpt:**

As alternate technologies such as biocovers, wellhead seals and new well pumps emerge and their use becomes standard practice, it is important for the rule to allow appropriate implementation of these technologies. NACAA supports the creation of technical support documents for emerging technologies. We also recommend that EPA add basic practices to the reference library, including information about properly addressing subsurface fires, wellfield tuning and hydrogen sulfide (H<sub>2</sub>S) generating waste materials.

**Comment Response:**

The final rule allows for alternate technologies such as biocovers, wellhead seals, and new well pumps, however, these have not been determined to be a component of the BSER. If landfill owners or operators employ alternate technologies, the GCCS must still meet the design and operational standards of the final rules. The EPA does not plan to develop technical support documents for emerging technologies add basic practices add references on the topics listed in the comment, as part of this rulemaking effort.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 6

**Sort Order:** 600

**Comment Excerpt:**

Alternative Monitoring Parameters, Paragraph (c). For an owner or operator to establish a higher operating temperature, nitrogen, or oxygen at a well, the methane to carbon dioxide ratio needs to be above 1.0. Ratios below 1.0 are an indicator that excess carbon dioxide is being generated, either through fire or through aerobic decomposition. Methane and carbon dioxide are parameters already monitored by landfill operators.

Other parameters Ohio EPA has used to determine the status of the waste mass are hydrogen and carbon monoxide as well as including both nitrogen and oxygen. See the Appendix for more information. [See Appendix to EPA-HG-OAR-2003-0215-0079.1,]

**Comment Response:**

The EPA appreciates the commenter sharing the parameters that it has used to determine the status of waste when considering a higher operating value. In the final landfills rules, a landfill owner or operator must demonstrate that a higher operating value neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens and these parameters may prove useful.

**Commenter Name:** Comment submitted by Craig W. Butler, Director  
**Commenter Affiliation:** Ohio EPA  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1  
**Comment Excerpt Number:** 15  
**Sort Order:** 601

**Comment Excerpt:**

Monitor Flow. Ohio EPA recommends monitoring routine monitoring of the flow rate at each wellhead. In addition to using actual flow data to project maximum expected gas generation flow rate (paragraph (a)(1)), it can be used to: (1) meet the requirement of paragraph (a)(3), (2) detect whether a well is waterlogged, clogged, or pinched (high vacuum but low flow, i.e. a liquid level measurement would not be needed), (3) support the contention that a well can be decommissioned due to decreased gas generation, (4) support the contention that the system needs to be expanded due to increased gas generation, and (5) support the contention that a fire is present (increasing flow with increasing pressure and temperature).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0079.1, excerpt number 6, under comment code 12z.

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**Commenter Name:** Comment submitted by Curt Publow  
**Commenter Affiliation:** Decatur Hills Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1  
**Comment Excerpt Number:** 18  
**Sort Order:** 700

**Comment Excerpt:**

The proposed rule states that the gauge pressure in the gas collection header be measured on a monthly basis. This too has been a source of confusion over the years. Presumably the rule intends for the "measurement of the gauge pressure applied to the well". Some have thought the gauge pressure of the system and the well are needed to comply with this requirement. The rule should be revised to address the confusion.

**Comment Response:**

The final landfills rules clarify this measurement as follows: 60.765(a)(3): ...the owner or operator must measure gauge pressure in the gas collection header applied to each individual well, monthly.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division  
**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1



**Comment Excerpt Number:** 7  
**Sort Order:** 800

**Comment Excerpt:**

Subpart XXX clarifies that owner/operators proposing alternative parameters for temperature, nitrogen and oxygen values at the wellhead, must demonstrate that the alternative parameters will not cause fires and will not be detrimental to methanogenic bacteria. DEQ believes this may be unnecessary and places additional burden on the owner/operator of the GCCS and on the delegated authority to review and approve such alternatives. DEQ questions if optimization of the GCCS system could be more quickly accomplished by the owner/operator of the CCS without involving the delegated authority. DEQ believes incentives exist for owner/operators to optimize their system that preclude the need for regulation. DEQ, as the delegated authority, is also concerned about administrative burden created by this provision along with that of additional design plan reviews.

**Comment Response:**

The EPA is retaining the requirement to demonstrate that the alternative parameters will not cause fires and will not be detrimental to methanogenic bacteria. See Section VI.A.1 of the 2016 NSPS Final Preamble.

The final rule does not require the landfill owner or operator to update the GCCS design plan prior to implementing an alternative operating parameter value for temperature, nitrogen, or oxygen; therefore, there is no additional burden associated with additional design plan reviews.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 120  
**Sort Order:** 900

**Comment Excerpt:**

In the 1996 Subpart WWW preamble EPA described the requirement for surface emission monitoring and the maintenance of negative pressure at all wells, except under specified conditions, as the means to ensure proper collection system design and operation. The wellhead operating parameters for temperature and oxygen/nitrogen were described as simply indicators for determining potential air intrusion; they were not promulgated to ensure proper collection system operation or to determine compliance. 61 Fed. Reg. at 9912. Nonetheless, the indicators have been applied in the same manner as compliance standards by several state agencies.

In the nearly two decades since promulgation of the Landfill NSPS, the landfill sector has designed and operated GCCS at the majority of landfills subject to the NSPS. WM operates over 200 GCCS and more than 70 WM-owned LFGTE projects at our sites across the country. We therefore believe we can speak with authority on implementation issues with the Landfill NSPS/EG requirements.

On multiple occasions over the last 8 years, WM has discussed our concerns with EPA and offered solutions for how the NSPS and EG should address wellhead monitoring (*See* Docket ID Numbers EPA-HQ-OAR-2003-0215-0017, EPA-HQ-OAR-2003-0215-0047, EPA-HQ-OAR-2003-0215-0053, EPA-OAR-2003-0215-0055 and EPA-HQ-OAR-2003-0215-0058).

**Comment Response:**

The EPA has retained monthly wellhead monitoring for temperature, oxygen/nitrogen, and negative pressure and landfills must take corrective action for exceedances of temperature and negative pressure. See Section VI.A.1 of the 2016 NSPS Final Preamble.

The EPA disagrees with the commenters interpretation of 61 FR 9911 and 9912. The numerical requirements (for the N<sub>2</sub> or O<sub>2</sub> levels, landfill temperature and surface concentration) are new requirements that will verify that the system is being adequately operated and maintained. These requirements are indeed to ensure that the gas collection system is well operated.

## 13.0 SURFACE MONITORING

### 13.1 Surface Monitoring: Cover Penetrations

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 15

**Sort Order:** 100

**Comment Excerpt:**

Surface surveys of all penetrations of the cover should be explicitly called out in the rule and continue to be done quarterly. Seals around penetrations can be compromised due to effects of settlement, separation from the barrier layers or boot materials, cracking of cover soils tied into penetrations and other mechanisms, which can happen long after the final cover is placed.

**Comment Response:**

The EPA is finalizing the requirement to monitor all surface penetrations at landfills. See Section I.B and IV.B.2 of the final NSPS preamble. See Section I.B and IV.B.2 of the final Emission Guidelines preamble.

The EPA appreciates the commenters' support in monitoring all cover penetrations. In light of the commenter concerns and consistent with similar concerns that have come up during implementation of the existing rules, we are finalizing the requirement to monitor all surface penetrations at landfills during quarterly surface emissions monitoring and during the Tier 4 surface emissions monitoring demonstration. With these provisions, we are reiterating the position that when conducting quarterly surface emissions monitoring, landfills must monitor all cover penetrations and openings within the area of the landfill where waste has been placed and a gas collection system is required. Specifically, landfill owners or operators must conduct surface monitoring around the entire perimeter of the landfill, at 30-meter intervals across the surface of

the landfill, where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover, and all cover penetrations. The EPA maintains that cover penetrations can be observed visually and are clearly a place where gas would be escaping from the cover, so monitoring of them is required. The regulatory language gives distressed vegetation and cracks as an example of a visual indication that gas may be escaping, but this example does not limit the places that should be monitored by landfill staff or by enforcement agency inspectors. Thus, consistent with the EPA's historical intent and interpretation, the landfill owner or operator must monitor any openings that are within an area of the landfill where waste has been placed and a gas collection system is required in order to minimize surface methane emissions.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 19

**Sort Order:** 101

**Comment Excerpt:**

EDF urges EPA to adopt enhanced surface monitoring requirements for both new and existing landfills. EDF supports EPA's proposed clarification in the NSPS that all surface penetrations and openings must be inspected during quarterly monitoring surveys.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 40

**Sort Order:** 102

**Comment Excerpt:**

At 60.763 (d), the addition of "*and all cover penetrations*" is a good feature. Our field staff report that landfill gas detects at penetrations is fairly common during surface surveys, whereas detects over areas of composite cap seldom occur. In the same sentence, the specification of a 30 meter interval for traverse patterns should be deleted or changed if later sections of the rule specify a traverse interval of 25 feet. EPA should also use "*no more than*" before either 30 meters or 25 feet, so as not to imply that use of a lesser traverse interval would not be acceptable.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

See response to DCN EPA-HQ-OAR-2003-0215-0198 excerpt number 22, under comment code 13c.

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**Commenter Name:** Comment submitted by Paul Aud, Environmental Engineering Manager  
**Commenter Affiliation:** Louisville Metro Air Pollution Control District (APCD)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0091.1  
**Comment Excerpt Number:** 6  
**Sort Order:** 103

**Comment Excerpt:**

SEM should be required at all penetrations and at the outer limits of radii of influence.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Ali Mirzakhali, Director  
**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0191  
**Comment Excerpt Number:** 11  
**Sort Order:** 104

**Comment Excerpt:**

Monitoring of all landfill cover penetrations has been a Title V permit requirement for all Landfill NSPS facilities in the State of Delaware for approximately 10 years. This monitoring has proved invaluable for areas where waste is placed in thin lifts so that the same location receives waste many times over a period of years. In these areas, vertical wells are raised with solid pipe, which can limit the effectiveness of the wells.

The other area where monitoring of all penetrations has proved necessary is on exposed geomembranes. Delaware has two facilities that are partially covered by exposed geomembranes. Due to lack of vegetation, there are no visual clues on the surface to indicate the presence of surface emissions, so performing SEM at all penetrations is essential.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Peter Zalzal  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0204  
**Comment Excerpt Number:** 28  
**Sort Order:** 105

**Comment Excerpt:**

*Support for Proposed Clarifications and Enhancements.* EDF supports EPA's proposed clarification that operators must monitor all cover penetrations and openings within the area of the landfill where waste has been placed and a gas collection system is required to be in place. As EPA notes in the proposed EG, this clarification is consistent with the original intent and historical interpretation of the current surface monitoring requirements.<sup>78</sup> Further, EPA studies of fugitive emissions from landfills have confirmed that significant emissions can result from cracks and leaks near improperly sealed wellheads and other surface penetrations.<sup>79</sup>

[Footnote 78] 80 Fed. Reg. 52,124.

[Footnote 79] EPA, *Quantifying Methane Abatement at Three Municipal Solid Waste Landfills* 3-9 (Jan. 2012).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Lynn Fieder, Division Chief, Air Quality Division  
**Commenter Affiliation:** State of Michigan Department of Environmental Quality (MDEQ)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0183  
**Comment Excerpt Number:** 5  
**Sort Order:** 106

**Comment Excerpt:**

In addition to the required monitoring traverse path and areas that might indicate elevated landfill gas concentrations, monitoring of all cover penetrations (including wells, risers, manholes, etc.) should be conducted during surface emission monitoring events.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Ali Mirzakhali, Director  
**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 17

**Sort Order:** 107

**Comment Excerpt:**

Require monitoring of leachate seeps in addition to the required monitoring of distressed vegetation.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 8

**Sort Order:** 108

**Comment Excerpt:**

SEM of all cover penetrations is a change in how facilities and some regulators have previously interpreted the rule. This monitoring will increase the cost of SEM for facilities depending on the number of surface penetrations present at a facility, but can yield useful data, especially in areas where wells are raised with solid pipe or where an exposed geomembrane cap is in use. NACAA supports the inclusion of penetration monitoring, however we suggest the addition of language that would facilitate state and local agency discretion to grant waivers to monitoring all penetrations as necessary. For example, some facilities install super-silt fences, which consist of chain link fencing that is installed with fabric mesh, on the landfill to control erosion. Requiring monitoring of the fence posts could result in monitoring of hundreds of additional penetrations that are unlikely to be a source of emissions because they are likely to have extensive cover. The regulatory agency should have the discretion to exempt these points upon request of the facility.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

In the Section IV.B.2 of the 2016 NSPS preamble and Section IV.B.2 of the 2016 Emission Guidelines preamble, we have clarified that cover penetrations include wellheads, but do not include items such as survey stakes, fencing or litter fencing, flags, signs, trees, and utility poles.

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**Commenter Name:** S. Woodson

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0148

**Comment Excerpt Number:** 2

**Sort Order:** 109

**Comment Excerpt:**

EPA's proposed revision specifically addresses the enhancement of landfill surface emission monitoring. A major source of effluxed LFG emissions is due in part to minor cracks, penetrations, or perforations in the landfill cover (Ng et. al, 2015). The revision of 40 CFR part 60, subpart Cf addresses surface emission monitoring, collection and control requirements (EPA, 2015). The projected revisions will ensure a thorough detection method of identifying exceedances and point source monitoring of methane and other landfill gases.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 12

**Sort Order:** 110

**Comment Excerpt:**

Cap penetrations could be checked more frequently, for example monthly instead of quarterly with the surface scan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 38

**Sort Order:** 200

**Comment Excerpt:**

Republic does not agree with EPA's statement that every cover penetration is "clearly a place where gas would be escaping from the cover." 79 Fed. Reg. at 41817. Landfill and gas collection systems are designed to include certain features that extend through the cover, such as collection wellheads. These features are designed with a seal to ensure that cover integrity is maintained. In the absence of a visual observation of escaping gas, distressed vegetation or cracks or compromise of seal materials, the existence of a cover penetration by itself does not warrant surface monitoring. Requiring such monitoring at every cover penetration in addition to the required traverse points would significantly increase the monitoring cost and burden with minimal benefit.

The landfill industry has already adopted a procedure whereby cover penetrations are monitored when visual or olfactory observations during surface emission monitoring or cover integrity monitoring events indicate the potential for surface emissions. The current policy does not ignore penetrations, but rather relies on a targeted approach to focus on penetrations likely to present an emissions concern. Using the targeted approach, industry data suggests that less than 3% of the monitored penetrations show any exceedance, as explained further below in the section regarding “enhanced surface monitoring.” This data directly contradicts EPA’s contention that all penetrations must be monitored.

**Comment Response:**

The EPA and regulating agencies have observed that seals around penetrations can be compromised due to settlement and other changing conditions at the landfill over time and that high concentrations of methane are common around penetrations. Other commenters have observed that surface monitoring is important on exposed geomembrane covers, where there are no visual clues to indicate the presence of surface emissions. For common landfill cover penetrations such as leachate risers, manholes, wells and other GCCS components, the EPA does not believe that visual or olfactory observations are enough to determine the presence of surface emissions. The EPA maintains that cover penetrations can be observed visually and are clearly a place where gas would be escaping from the cover.

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 156

**Sort Order:** 201

**Comment Excerpt:**

To the extent that EPA intends to expand the surface monitoring requirement to include cover penetrations, EPA must clarify that the requirement would include only those penetrations that are not part of the landfill design, and that based on visual observations of odors, cracks or distressed vegetation would pose a risk of surface emissions. Cover penetrations within the waste disposal area that are designed to ensure maintenance of cover integrity and function, such as vertical extraction wells and leachate features, should not be subject to surface monitoring unless visual observations indicate elevated concentrations of landfill gas via cracks, seeps, distressed vegetation or odors.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Comment submitted by Curt Publow  
**Commenter Affiliation:** Decatur Hills Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1  
**Comment Excerpt Number:** 4  
**Sort Order:** 202

**Comment Excerpt:**

*The first concern with these changes in the proposed rule deal with the issue of surface emissions monitoring requirements at all cover penetrations. For cover penetrations the rule says "and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover" (page 116). It doesn't say look for areas where landfill gas could escape. The proposed rule is basically re-interpreting WWW and making it seem as if landfills should have always been monitoring all penetrations. We disagree with this re-interpretation of the surface emission monitoring requirements.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 154  
**Will be summarized and responded to in the preamble:**  
**Sort Order:** 203  
**Response Status:** Final

**Comment Excerpt:**

WM does not agree with EPA's statement that every cover penetration is "clearly a place where gas would be escaping from the cover." 79 Fed. Reg. at 41817. Landfill and gas collection systems are designed to include certain features that extend through the cover, such as collection wellheads. These features are designed with a seal to ensure that cover integrity is maintained. In the absence of a visual observation of escaping gas, distressed vegetation or cracks or compromise of seal materials, the existence of a cover penetration by itself does not warrant surface monitoring. Requiring such monitoring at every cover penetration in addition to the required traverse points would significantly increase the monitoring cost and burden with minimal benefit.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 30

**Sort Order:** 204

**Comment Excerpt:**

EPA has taken the position that the quarterly monitoring path should include the monitoring of every cover penetration, since "cover penetrations can be observed visually and are clearly a place where gas would be escaping from the cover, so monitoring of them would be required by the regulatory language" (79 F.R. 41817). We disagree with this interpretation.

To assume that all cover penetrations, including gas extraction wells, are a place where gas is escaping is unwarranted since the gas system is under vacuum.

The landfill industry has adopted a procedure whereby cover penetrations are monitored when visual or olfactory observations during SEM or cover integrity monitoring events indicate the potential for surface emissions. Therefore, we are not ignoring penetrations, but simply applying a targeted approach that identifies penetrations where problems are likely and monitors those locations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 22

**Will be summarized and responded to in the preamble:**

**Sort Order:** 205

**Response Status:** Final

**Comment Excerpt:**

Monitoring at the wellhead itself has never been a matter of practice. Because the wellhead is under vacuum any leak at the wellhead itself would result in increased oxygen rather than exceedances.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Comment submitted by Michael Rice, Past President  
**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1  
**Comment Excerpt Number:** 14  
**Sort Order:** 206

**Comment Excerpt:**

The preamble to the proposed rule stated that the quarterly SEM path should include the monitoring of every cover penetration, since "cover penetrations can be observed visually and are clearly a place where gas would be escaping from the cover, so monitoring of them would be required by the regulatory language." Although we can see how it could be assumed that cover penetrations are a potential source of emissions, we disagree with this interpretation. To assume that all cover penetrations, including gas extraction wells, are a place where gas is escaping is not correct. With the use of cover materials and well seals, most penetrations are very effective in capturing and controlling LFG emissions. No changes are needed to the existing rule in order to address penetrations. With the current requirement to monitor on a 30 meter path coupled with checking any visual observations which might indicate elevated concentrations of LFG, there is no need to increase the amount of monitoring as there is no documented evidence that penetrations create or are likely to create surface emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO  
**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0196  
**Comment Excerpt Number:** 8  
**Sort Order:** 207

**Comment Excerpt:**

EPA has taken the position that the quarterly monitoring path should include the monitoring of every cover penetration, since "cover penetrations can be observed visually and are clearly a place where gas would be escaping from the cover, so monitoring of them would be required by the regulatory language" (80 FR 52124). We disagree with this interpretation.

To assume that all cover penetrations, including gas extraction wells, are a place where gas is escaping is unwarranted. The landfill industry, as a best practice, monitors cover penetrations when visual or olfactory observations during SEM and/or cover integrity monitoring events indicate the potential for surface emissions. That is, we check for gas odors in the vicinity of a penetration and/or we visually identify where cracks have appeared in the cover around a penetration. Therefore, we are not ignoring penetrations, but simply applying a targeted approach

that identifies penetrations where problems are likely to occur and monitors those locations promptly.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 155

**Sort Order:** 208

**Comment Excerpt:**

Recently, WM and Republic commissioned SCS engineers to conduct a comparative analysis of monitoring approaches under the NSPS and the CA Landfill Methane Rule (LMR). This study evaluates the efficacy of penetration monitoring using the before- and after-LMR NSPS data compiled by SCS. (See the next section [pgs. 38-40 of DCN EPA-HQ-OAR-2003-0215-0100.1] for a more complete description of the study.) In the before-LMR, NSPS dataset, penetrations were monitored based on the standard industry practice of sampling penetrations with visual or other signs indicative of elevated concentrations of LFG. The LMR, by contrast, explicitly requires monitoring of every penetration to the landfill cover.

Following the before-LMR approach, NSPS landfills monitored 26,231 penetrations and detected exceedances at 2.7% of penetrations monitored. Under the LMR, the monitoring burden (number of penetrations monitored) increased by 84% (to 48,153), but only 243 additional penetrations were detected, which results in detected exceedances at only 1.1% of the additional penetrations monitored. Put another way, the effort expended to monitor every penetration at a landfill was much less effective in finding exceedances than the before-LMR NSPS approach of monitoring penetrations when there is an indication of a problem. The expanded requirement under the CA LMR did not deliver benefits commensurate with the cost of visiting every penetration.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 21

**Sort Order:** 209

**Comment Excerpt:**

We understand that the California Landfill Methane Rule (LMR) requires this monitoring, and likewise, the State of Delaware has made the quarterly monitoring of every landfill penetration required practice for DSWA. This practice was adopted in the State of Delaware with the intention of being more conservative than the NSPS. The additional monitoring of every cover penetration has added significant cost to the quarterly SEM performed at DSWA facilities with little added benefit. We estimate that this increased monitoring doubles the monitoring time at each of our facilities. While there are exceedances detected at penetrations we believe that most of these exceedances would be detected in the normal path monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 6

**Sort Order:** 210

**Comment Excerpt:**

The proposed rule requires the monitoring of every cover penetration. The landfill industry has followed the procedure whereby cover penetrations are monitored when visual observations during SEM events indicate the potential for surface emissions. Therefore, the industry is not ignoring penetrations, but simply applying a targeted approach that identifies penetrations where problems are likely to occur and monitors those locations promptly.

Data submitted by other commenters show that quarterly monitoring of every penetration during every monitoring event is not necessary and that a continuation of the program used under Subpart WWW is sufficient. The docket for the proposed rule has no data or technical documentation showing that any emissions reductions would result from this penetration monitoring requirement, only a general suggestion that more surface leaks would be discovered and remediated. Given the significant costs associated with additional penetration monitoring and no quantified emissions reductions to justify the added expense, we recommend maintaining the existing SEM requirements from Subpart WWW, whereby penetrations would be treated as other landfill areas; where visual observations indicating possible elevated levels of LFG in those areas would be monitored using the procedures discussed above.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 9

**Sort Order:** 211

**Comment Excerpt:**

The docket for the proposed rule has no data or technical documentation showing any emissions reductions from this penetration monitoring requirement, only a general suggestion that more surface leaks would be discovered and remediated. Given the significant costs associated with additional penetration monitoring and no quantified emissions reductions to justify the added expense, we recommend maintaining the existing SEM requirements from Subpart WWW whereby penetrations would be treated as other landfill areas where visual and olfactory observations indicate possible elevated levels of LFG and monitored using the procedures discussed above.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 46

**Sort Order:** 212

**Comment Excerpt:**

**Requiring Quarterly Monitoring of all Surface Penetrations will be Neither Cost Effective, Nor Result in Significant Emissions Reductions.**

The Agency is proposing that all surface penetrations "and openings" at existing landfills must be monitored as part of quarterly SEM. *See 80 Fed. Reg. at 52111.* WM is concerned that this provision will add significant costs to the performance of quarterly SEM while accomplishing little in terms of emissions reductions. Landfill and gas collection systems are designed to include certain features that extend through the cover, such as collection wellheads. These features are designed with a seal to ensure that cover integrity is maintained. In the absence of a visual observation of escaping gas, distressed vegetation or cracks or compromise of seal materials, the existence of a cover penetration by itself does not warrant surface monitoring. Requiring such monitoring at every cover penetration in addition to the required traverse points would significantly increase the monitoring cost and burden with minimal benefit. EPA asserts in the preamble of the Proposed NSPS that every cover penetration is "clearly a place where gas would be escaping from the cover."<sup>14</sup> The Agency has not supported this assertion with field observations or actual field data. Further, the Agency provided no data or technical analysis

showing estimated emissions reductions from the proposed penetration monitoring requirement, only a suggestion that additional surface leaks would be discovered and remediated.

EPA has not provided information demonstrating that quarterly penetration monitoring will achieve cost-effective emissions reductions. We reviewed the cost-benefit analysis memorandum in the docket entitled, "Updated Methodology for Estimating Testing and Monitoring Costs for MSW Landfill Regulations, June 2015 (EPA-HQ-OAR-2014-0451-0078). We were unable to find any indication in the memorandum that the costs of monitoring all penetrations were evaluated or included in the Agency's cost-benefits analysis.

[Footnote 14] See 79 Fed. Reg. at 41817.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 15

**Sort Order:** 213

**Comment Excerpt:**

To the extent EPA persists in addressing the monitoring requirements for surface penetrations in its proposal, EPA should at least clarify that the requirement would include only those penetrations that are part of the landfill GCCS design or those where visual observations of odors, cracks, or distressed vegetation indicate an increased risk of surface emissions. More specifically, EPA should clarify that cover penetrations within the waste disposal area that are designed to ensure maintenance of cover integrity and function, such as vertical extraction wells and leachate features, should not be subject to surface monitoring unless visual observations indicate elevated concentrations of landfill gas via cracks, seeps, distressed vegetation, or odors.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 60

**Comment Excerpt:**

*Monitoring All Landfill Penetrations is Not Cost-Effective.* Republic has also evaluated the efficacy of penetration monitoring using the before- and after-LMR NSPS data compiled by

SCS. In the before-LMR dataset, NSPS landfills monitored penetrations on the standard industry practice of sampling penetrations with visual or other signs indicative of elevated concentrations of LFG. The LMR, by contrast, explicitly requires monitoring of every penetration to the landfill cover.

Following the before-LMR approach, NSPS landfills monitored 26,231 penetrations and detected exceedances at 2.7% of penetrations monitored. Under the LMR, the monitoring burden (e.g., the number of penetrations monitored) increased by 84%. Only 243 additional penetration exceedances were detected at the 48,153 penetrations monitored, which represents an incremental improvement of only 1.1%. Put another way, the effort expended to monitor every penetration at a landfill was much less effective in finding exceedances than the before-LMR approach of monitoring penetrations when there is an indication of a problem.

In the proposed NSPS revisions, EPA has proposed a revision to the rule (see 79 Fed. Reg. at 41812) to clarify that monitoring of all penetrations is required. We urge EPA to reconsider this decision in light of the data available from California. The expanded requirement under the CA LMR did not deliver benefits commensurate with the cost of visiting every penetration.

**Comment Response:**

The EPA appreciates the data submitted by the commenters. The EPA recognizes and expects that the number of penetrations monitored would increase under a scenario that would require monitoring of every cover penetration. The EPA also recognizes that as more penetrations are monitored, more exceedances are found. In spite of the additional effort required by landfill owners and operators, the EPA wants the landfill owners and operators to identify and correct as many surface monitoring exceedances as possible. Identifying and correcting exceedances reduces emissions from the surface of the landfill. Therefore, in final rules, the EPA is finalizing the requirement to monitor all surface penetrations at landfills during quarterly surface emissions monitoring in order to minimize surface methane emissions.

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 38, under comment code 13a.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 47

**Comment Excerpt:**

The landfill sector, however, has evaluated the costs and results associated with monitoring all surface penetrations under the California Landfill Methane Rule (LMR) and we found the monitoring to be highly cost-ineffective.

As discussed in our previous comments, WM and Republic commissioned SCS Engineers to conduct a comparative analysis of monitoring approaches under the NSPS and the CA Landfill Methane Rule (LMR). This 2014 study evaluated the efficacy of penetration monitoring using the before- and after-LMR NSPS data compiled by SCS. (See docket ID Number EPA-HQ-



OAR-2014-0451-0140). In the before-LMR, NSPS dataset, penetrations were monitored based on the standard industry practice of sampling penetrations with visual or other signs indicative of elevated concentrations of LFG. The LMR, by contrast, explicitly requires monitoring of every penetration to the landfill cover.

Following the before-LMR approach, NSPS landfills monitored 26,231 penetrations and detected exceedances at 2.7% of penetrations monitored. Under the LMR, the monitoring burden (number of penetrations monitored) increased by 84% (to 48,153), but only 243 additional penetrations were detected, which results in detected exceedances at only 1.1% of the additional penetrations monitored. Because labor costs are the primary driver of penetration monitoring costs, this finding implies the costs of penetration monitoring would increase by a similar percentage (84%) with very marginal benefit (1.1%).

The effort expended to monitor every penetration at a landfill was much less effective in finding exceedances than the more targeted NSPS approach of monitoring penetrations when there is an indication of a problem. The expanded requirement under the CA LMR did not deliver benefits commensurate with the cost of visiting every penetration. The EPA has offered no data or analysis to refute these findings.

The SCS analysis therefore demonstrates that quarterly monitoring of every penetration during every monitoring event is not necessary and that a continuation of the program used under Subpart WWW is sufficient. Should EPA nonetheless want to expand the SEM requirements, quarterly monitoring is clearly not necessary, and annual monitoring would be more than sufficient.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 78, under comment code 13j.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 14

**Comment Excerpt:**

Forcing landfills to abandon a targeted approach in favor of monitoring every penetration add cost without benefit. As discussed in our previous comments, Republic and WM commissioned SCS Engineers to conduct a comparative analysis of the different monitoring policies adopted under EPA's NSPS and California's Landfill Methane Rule (LMR). This 2014 study evaluated the efficacy of penetration monitoring using data compiled by SCS to compare the results of the NSPS monitoring approach to the LMR monitoring approach. *See* EPA-HQ-OAR-2014-0451-0140. In the NSPS monitoring approach dataset, surface penetrations were monitored based on the standard industry practice of sampling penetrations where visual or other signs indicated the potential for elevated concentrations of landfill gas emissions. The LMR monitoring approach dataset, by contrast, reflects the results of landfills explicitly required by the State of California to monitor every penetration of the landfill cover.

The result of the SCS study were telling. Under the NSPS approach, the landfills evaluated monitored 26,231 penetrations and detected exceedances at 2.7% of the penetrations monitored. Under the LMR approach, the number of penetrations monitored was 84% higher (48,153), likely resulting in a commiserate increase in monitoring costs, given that labor expenses represent the bulk of the cost and are largely dependent on the number of penetrations monitored. However, despite nearly doubling the number of monitored penetrations, only 243 additional penetrations were detected—only 1.1% of the additional penetrations monitored. Thus, the SCS study confirms that monitoring every penetration is a far less effective, but far more costly, means of addressing surface penetrations than a more targeted approach currently employed under existing EPA regulations. EPA has not made any attempt to justify the additional cost of its proposed surface monitoring provisions in light of the lack of benefit.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 78, under comment code 13j.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 10

**Comment Excerpt:**

The landfill industry previously submitted a report to EPA comparing SEM requirements under the California AB-32 landfill methane rule (LMR) to those contained within Subpart WWW. As part of that report, an evaluation of penetration monitoring was conducted. We believe these data demonstrate that quarterly monitoring of every penetration during every monitoring event is not necessary and that a continuation of the program of targeted monitoring used under Subpart WWW is sufficient. At a minimum, the data demonstrate that quarterly monitoring is not necessary and that annual monitoring would be sufficient (Docket ID Number EPA-HQ-OAR-2014-0451-0140).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 78, under comment code 13j.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 158

**Sort Order:** 300

**Comment Excerpt:**

If EPA seeks to implement an expanded surface emissions monitoring requirement through Subpart XXX, EPA must clarify that the requirement applies prospectively under Subpart XXX only, and not to existing landfills that are regulated under Subpart WWW and the Emission Guidelines. First, EPA has not solicited comment on a parallel clarifying provision in Subpart WWW and the Emission Guidelines that would require surface monitoring around all cover penetrations at existing sites. Second, even if such a requirement is included within Subpart XXX, it would constitute a substantive change in regulation, rather than a clarification of existing requirements. The existing monitoring requirement under Subpart WWW is not ambiguous; it requires surface monitoring in areas where: "visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover." *See* 40 C.F.R. §60.753(d). Monitoring of all cover penetrations is not required, and has not been put forth consistently by EPA as its interpretation of the existing requirement. Thus, any such rule change is just that, a change, rather than a clarification. *See Levy v. Sterling Holding Co., LLC*, 544 F.3d 493,506 (3d Cir. 2008). Further, EPA must provide clarification and comfort to owners and operators of existing landfills that it will not seek to use its enforcement authority to achieve a retroactive imposition of this requirement. To do so would violate principles of fair notice, reasonable reliance, and settled expectations, all of which are applicable considerations in the current context.

**Comment Response:**

The EPA continues to maintain that cover penetrations can be observed visually and are clearly a place where gas would be escaping from the cover, so monitoring of them is required by the regulatory language (80 FR 52124). The EPA reflected this intent in the final subparts Cf and XXX by adding "and all cover penetrations" as follows: 60.763(d) The owner or operator must conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover and all cover penetrations. See the response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

This clarification does not apply retroactively to 40 CFR part 60, subpart WWW.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 28

**Sort Order:** 301

**Comment Excerpt:**

DSW A requests that EPA further clarify that WWW does not require monitoring of every penetration.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 113

**Sort Order:** 302

**Comment Excerpt:**

If EPA seeks to implement an expanded surface emissions monitoring requirement through Subparts XXX and Cf, EPA must clarify that the requirement applies prospectively under Subpart Cf and XXX only, and not to existing landfills that are regulated under Subpart WWW and the current Emission Guidelines. Any such rule change is just that, a change, rather than a clarification. *See Levy v. Sterling Holding Co., LLC*, 544 F.3d 493,506 (3d Cir. 2008). Further, EPA must provide clarification and comfort to owners and operators of existing landfills that it will not seek to use its enforcement authority to achieve a retroactive imposition of this requirement. To do so would violate principles of fair notice, reasonable reliance, and settled expectations, all of which are applicable considerations in the current context.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 83

**Sort Order:** 303

**Comment Excerpt:**

EPA's suggestion in its preamble that it has previously interpreted the existing surface monitoring provisions of Subpart WWW to require the inclusion of "all cover penetrations" is incorrect. Compliance with the surface emission monitoring requirement of Subpart WWW has been based exclusively on monitoring those penetrations "where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover." See 40 C.F. R. § 60.753(d). Neither the regulatory language, nor agencies' interpretation and implementation of the language have included all cover penetrations, such as those relating to landfill and gas collection system design features. Further, Republic does not believe that EPA or state agencies have consistently indicated that all cover penetrations, such as collections wells, must be monitored. For example, EPA included guidance and a sample surface monitoring traverse pattern in its summary of the requirements for the *New Source Performance Standards and Emission Guidelines for Municipal Solid Waste Landfills*, but did not identify wellheads or

other surface features as required monitoring points. See EPA 453R/96-004, February 1999, at p. 2-24. Likewise, Republic does not routinely include collection wells or leachate features in its surface emission monitoring procedures outlined in its GCCS plans. Yet, in many cases, these plans have been approved without comment.

Because monitoring of all cover penetrations is not currently required by regulation or guidance, EPA's proposal to require monitoring of all cover penetrations is not a clarification, but rather a substantive revision to the NSPS. EPA should recognize that reality and reassure the industry that it will not attempt to retroactively apply the substantive change it has proposed retroactively by claiming that the NSPS has always required monitoring of all cover penetrations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 157

**Sort Order:** 304

**Comment Excerpt:**

EPA's suggestion in its preamble language that it has previously interpreted the existing surface monitoring provisions of Subpart www to require the inclusion of "all cover penetrations" is disingenuous and incorrect. Compliance with the surface emission monitoring requirement of Subpart WWW has been based exclusively on "where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover." *See* 40 C.F. R. § 60.753(d). Neither the regulatory language, nor agencies' interpretation and implementation of the language have included all cover penetrations, such as those relating to landfill and gas collection system design features. Further, WM does not believe that EPA or state agencies have consistently indicated an "intent" that all cover penetrations, such as collections wells, must be monitored. For example, EPA included guidance and a sample surface monitoring traverse pattern in its summary of the requirements for the *New Source Performance Standards and Emission Guidelines for Municipal Solid Waste Landfills*, but did not in that context identify wellheads or other surface features as required monitoring points. *See* EPA 453R/96-004, February 1999, at p. 2-24. Likewise, WM does not routinely include collection wells or leachate features in its surface emission monitoring procedures outlined in its GCCS plans. Yet, in many cases, these plans have been approved without comment.<sup>13</sup>

[Footnote]

(13) WM is aware that EPA has focused enforcement efforts in certain areas on the need for monitoring leachate collection system features. WM entered a Consent Agreement and Final Order with EPA pursuant to which WM agreed to conduct surface monitoring near certain leachate features at its landfills in Region 3. EPA has not taken this approach in every region,

and WM has not been required to routinely conduct monitoring near leachate collection features, in the absence of some visual indication of surface emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 88

**Sort Order:** 305

**Comment Excerpt:**

The assertion that all cover penetrations are required to be monitored quarterly for surface emissions is contrary to regulatory interpretation and industry practice that has successfully been in place over the past 18 years under Subpart WWW. The industry is concerned that state agencies will interpret EPA's mandate to monitor all penetrations, to mean that landfills have been in violation of Subpart WWW during that time. We request that EPA clarify that monitoring of every cover penetration is not required by Subpart XXX and likewise has not ever been required by Subpart WWW.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 20

**Sort Order:** 306

**Comment Excerpt:**

In the preamble of the proposed NSPS EPA asserts the position that quarterly SEM of all cover penetrations has always been required by the rule. DSW A finds these statements confusing. We do not believe that monitoring of every penetration of landfill cover was ever previously anticipated.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 60

**Sort Order:** 307

**Comment Excerpt:**

The assertion that all cover penetrations are required to be monitored quarterly for surface emissions is contrary to current regulatory interpretation and industry practice that has successfully been in place over the past 18 years under Subpart WWW. The industry is concerned that EPA's enforcement office and/or state or local agencies will interpret EPA's mandate to monitor all penetrations to mean that landfills have been in violation of Subpart WWW during this entire time as EPA has stated in the preamble that monitoring of penetrations is "...consistent with EPA's historical intent and interpretation." Therefore, we request that EPA clarify that monitoring of every cover penetration has not been previously required by Subpart WWW or state/local EG rules and that if it is ultimately included in Subparts Cf and WWW, it is a new requirement. In fact, in November 1998, EPA issued questions and answers on NSPS clarifying that SEM did not require the technician to travel from well to well.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 50

**Sort Order:** 308

**Comment Excerpt:**

Any changes in EPA interpretation and rule language should apply prospectively, not retrospectively.

EPA's suggestion in the Subpart Cf preamble language that it has previously interpreted the existing surface monitoring provisions of Subpart WWW to require the inclusion of "all cover penetrations" is incorrect. 80 Fed. Reg. at 52124. Compliance with the surface emission monitoring requirement of Subpart WWW has been based exclusively on "where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and

cracks or seeps in the cover." See 40 C.F. R. § 60.753(d). Neither the regulatory language, nor agencies' interpretation and implementation of the language have included all cover penetrations, such as those relating to landfill and gas collection system design features. Further, WM does not believe that EPA or state agencies have consistently indicated any "intent" that all cover penetrations, such as collection wells, must be monitored. For example, EPA included guidance and a sample surface monitoring traverse pattern in its summary of the requirements for the *New Source Performance Standards and Emission Guidelines for Municipal Solid Waste Landfills*, but did not in that context identify wellheads or other surface features as required monitoring points. See EPA 453R/96-004, February 1999, at p. 2-24. Likewise, WM does not routinely include collection wells or leachate features in its surface emission monitoring procedures outlined in its GCCS plans. Yet, in many cases, these plans have been approved without comment.<sup>15</sup>

[Footnote 15] WM is aware that EPA has focused enforcement efforts in certain areas on the need for monitoring leachate collection system features. WM entered a Consent Agreement and Final Order with EPA pursuant to which WM agreed to conduct surface monitoring near certain leachate features at its landfills in Region 3. EPA has not taken this approach in every region, and WM has not been required to routinely conduct monitoring near leachate collection features, in the absence of some visual indication of surface emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 13

**Sort Order:** 309

**Comment Excerpt:**

EPA should not attempt to alter the current policy of monitoring only those surface penetrations that exhibit elevated emissions.

Republic disagrees with numerous statements made by EPA with respect to surface penetrations and with its proposed revisions to the emission guidelines to address them. As an initial matter, Republic does not agree that every cover penetration is "clearly a place where gas would be escaping from the cover." 80 Fed. Reg. at 52124. Landfill and gas collection systems are designed to include certain features that extend through the cover, such as collection wellheads. These features are designed with a seal to ensure that cover integrity is maintained. In the absence of a visual observation of escaping gas, distressed vegetation, or cracks or compromise of seal materials, the existence of a cover penetration by itself does not warrant surface monitoring.

Second, Republic disputes EPA's claim that its current regulations must be interpreted to require monitoring of "all cover penetrations," or that EPA and state regulatory authorities have



consistently followed that interpretation in the past. In Republic's experience, both EPA and states have interpreted the surface emission monitoring provisions of Subpart WWW to require monitoring only of those penetrations "where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover." See 40 C.F. R. § 60.753(d). Neither the regulatory language nor previous practices support the interpretation that landfills must monitor all cover penetrations, including those associated with GCCS design features. Previous statements by EPA confirm this understanding. For example, EPA's guidance entitled *New Source Performance Standards and Emission Guidelines for Municipal Solid Waste Landfills*, contains a sample surface monitoring traverse pattern, does not identify wellheads or other surface features as required monitoring points. See EPA 453R/96-004 at 2-24 (Feb. 1999). Likewise, Republic does not routinely include collection wells or leachate features in the surface emission monitoring procedures outlined in its GCCS plans. Yet, in many cases, these plans have been approved without comment.

Because monitoring of all cover penetrations is not currently required by regulation or guidance, EPA's proposal to require monitoring of all cover penetrations is not a clarification, but rather a substantive revision to the NSPS. But requiring such monitoring at every cover penetration in addition to the required traverse points would significantly increase the monitoring cost and burden with minimal or no benefit. Rather than monitoring every penetration, as EPA now suggests should be required in its proposal, the landfill industry has historically followed a procedure for monitoring cover penetrations when visual or olfactory observations indicate the potential for surface emissions. As noted above, the flexibility afforded under the current emission guidelines has allowed landfills to rely on this targeted and cost-effective approach by focusing on those penetrations most likely to present an emissions concern.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0176  
**Comment Excerpt Number:** 17  
**Sort Order:** 310

**Comment Excerpt:**

Republic also asks EPA to confirm that it will not attempt to retroactively impose this new substantive revision on landfills that remain subject only to the current regulations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 20  
**Sort Order:** 311

**Comment Excerpt:**

The first concern with these changes in the proposed rule deal with the issue of surface emissions monitoring requirements at all cover penetrations. For cover penetrations the rule says "and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover" (page 116). It doesn't say look for areas where landfill gas could escape. The proposed rule is basically re-interpreting WWW and making it seem as if landfills should have always been monitoring all penetrations. We disagree with this re-interpretation of the surface emission monitoring requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 158, under comment code 13a.

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**Commenter Name:** Ellen Smyth, President  
**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0194  
**Comment Excerpt Number:** 8  
**Sort Order:** 400

**Comment Excerpt:**

If EPA maintains the requirement to monitor penetrations, then we request further that monitoring frequency be limited to annual monitoring. Industry experience shows that: (1) only a small percentage of penetrations show exceedances in any monitoring event, (2) the percentage of penetration exceedances reduces over time once they are initially monitored and remediated, and (3) penetrations that are remediated do not have subsequent exceedances within a year. As such, we believe the data support annual monitoring instead of quarterly. We believe annual monitoring would be a much more reasonable and cost effective approach to penetration monitoring, as it will significantly reduce the additional burden associated with compliance with this requirement.

**Comment Response:**

The EPA disagrees with reducing the frequency of monitoring at cover penetrations from monthly to annually. As other commenters have said, many of these penetrations are in the line of the traverse pattern itself and other commenters have expressed concerns with increased measures of exceedances at penetrations. See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a for the approach taken in the final rules.

**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 12

**Sort Order:** 401

**Comment Excerpt:**

If EPA maintains the requirement to monitor penetrations, then we further request that monitoring frequency be limited to annual monitoring. This will significantly reduce the additional burden associated with compliance with this requirement. In addition, industry experience, as supported by the analysis of LMR data, demonstrates that only a small percentage of penetrations show exceedance in any monitoring event. The SCS LMR study (Docket ID Number EPA-HQ-OAR-2014-0451-0140 Attachment A) shows that only 1.5% of the monitored penetrations are exceedances. As such, we believe the data do not support monitoring every penetration on a quarterly basis. Again, we continue to support penetration monitoring where visual observations indicate the area around the penetration shows signs of distressed vegetation or other physical signs of distress. But, if EPA continues to require penetration monitoring, then they should consider a reduced monitoring frequency (such as annual) as supported by the study results.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0194 comment excerpt 8, under comment code 13a.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 48

**Sort Order:** 600

**Comment Excerpt:**

**EPA Must Define What is and What is not a Penetration and Opening.**

Should the Agency expand surface monitoring requirements to include cover penetrations, EPA must clarify that the requirement would include only those penetrations that are part of the landfill GCCS design, and that based on visual observations of odors, cracks or distressed vegetation would pose a risk of surface emissions. Cover penetrations within the waste disposal area that are designed to ensure maintenance of cover integrity and function, such as vertical extraction wells and leachate features, should not be subject to surface monitoring unless visual observations indicate elevated concentrations of landfill gas via cracks, seeps, distressed vegetation or odors.

EPA must clearly define what constitutes a penetration and what does not constitute a penetration. The definition should only include gas system devices or components that have potential to be a source of surface emissions. There are many temporary and/or shallow field components (e.g., fence posts, survey stakes, flags, signage, utility posts, trees, manholes, barriers, fencing, grass, and weeds, etc.) at landfills that may superficially penetrate into the cover, but not through the cover or into the waste to be a source of emissions. For example, some landfills have begun installing trees as part of phytocovers. Use of these types of BMPs could be deterred if they were considered penetrations.

We suggest the following definition of a penetration:

*A penetration is any landfill gas collection well or landfill gas collection device included in the GCCS Design Plan that completely passes through the landfill cover into waste and is located within an area of the landfill where waste has been placed and a gas collection system is required. Examples of what is not a penetration for purposes of this subpart include, but are not limited to: Survey stakes; fencing, including litter fences; flags; signage; utility posts;; manholes; barriers; , trees; grass; and weeds.*

This recommended definition is consistent with Preamble discussion at 80 Fed. Reg. at 52124 and proposed rule language at 60.34f(d).

#### **Comment Response:**

In the Section IV.B.2 of the 2016 NSPS preamble and Section IV.B.2 of the 2016 Emission Guidelines preamble, the EPA has clarified that a cover penetration includes any component of the GCCS system or leachate collection and control system that completely passes through the landfill cover into waste, such as wellheads, leachate risers, and manholes. The EPA has clarified in the preambles to the final rules that cover penetrations do not include items such as survey stakes, fencing or litter fencing, flags, signs, trees, and utility poles.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 11

**Sort Order:** 601

#### **Comment Excerpt:**

If EPA maintains the requirement to monitor penetrations, then we request a clear definition and delineation as to what constitutes a penetration or opening. The term "opening" in the preamble is confusing and seems unnecessary. Therefore, we request that the term "opening" be removed and, the term "penetration" be used consistently. More importantly, we request that EPA define penetrations in a way that is meaningful in terms of their potential to be a source of surface emissions. There are many temporary and/or shallow field components (e.g., fence posts, stakes, etc.) at landfills that may penetrate into the cover, but not significantly into the waste to be a source of emissions.

For example, landfills have begun installing trees as part of phytocovers. Use of these types of BMPs could be deterred if they were considered penetrations. As such, we request the following definition be adopted for "penetrations" requiring monitoring:

*"A penetration is any landfill gas collection well or landfill gas collection device included in the GCCS Design Plan that completely passes through the landfill cover into waste and is located within an area of the landfill where waste has been placed and a gas collection system is required. Examples of what is not a penetration for purposes of this subpart include but are not limited to: survey stakes, fencing including litter fences, flags, signs, utility posts, trash, manholes, barriers, trees, grass, and weeds."*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 comment excerpt 48, under comment code 13a.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 49

**Sort Order:** 602

**Comment Excerpt:**

EPA must also remove or clarify the term "openings" in the Preamble and proposed rule text. (see 80 Fed. Reg. pages 52102, 52111, 52124 and 52150). We recommend EPA remove this term and references to it in the Preamble and the regulatory text as it is ambiguous. Because it is a catch-all phrase it will cause compliance uncertainty and therefore there is no practical enforceability.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 comment excerpt 48, under comment code 13a.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 2

**Sort Order:** 603

**Comment Excerpt:**

KDAQ requests that the U.S. EPA further clarify that "cover penetrations", when used in relation to the surface scanning requirements, include wellheads. If the Gas Capture and Control System (GCCS) is not operated properly (i.e. negative pressure is not maintained), the methane

concentration near the wellhead could increase, making this location an important monitoring point.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 comment excerpt 48, under comment code 13a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 16

**Sort Order:** 604

**Comment Excerpt:**

More generally, EPA should also clearly define what constitutes a penetration and what does not constitute a penetration. The definition should only include gas system devices or components that have potential to be a source of surface emissions. There are many temporary and/or shallow field components (e.g., fence posts, survey stakes, flags, signage, utility posts, trees, manholes, barriers, fencing, grass, and weeds, etc.) at landfills that may superficially penetrate into the cover, but not through the cover or into the waste to be a source of emissions. Landfills have begun installing trees as part of phytocovers. Use of these types of BMPs could be deterred if they were considered penetrations.

Republic recommends the following definition of a penetration:

- A penetration is any landfill gas collection well or landfill gas collection device included in the GCCS Design Plan that completely passes through the landfill cover into waste and is located within an area of the landfill where waste has been placed and a gas collection system is required. Examples of what is not a penetration for purposes of this subpart include, but are not limited to: Survey stakes, fencing including litter fences; flags; signage, utility posts, manholes, barriers, , trees, grass, and weeds.

This recommended definition is consistent with Preamble discussion at 80 Fed Reg Page 52124 and proposed rule language at 60.34f(d). Republic also asks EPA to remove or clarify the term "openings" in the Preamble and proposed rule text, *see* 80 Fed. Reg. at 52102, 52111, 52124, and 52150, because it is an ambiguous and all-encompassing term that is inconsistent with the comments provided above. Continued use of that undefined term will only cause confusion.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 48, under comment code 13a.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 13

**Sort Order:** 605

**Comment Excerpt:**

If EPA maintains the requirement to monitor penetrations, then we request the unique identification label be limited to only the GCCS components.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 comment excerpt 48, under comment code 13a.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 7

**Sort Order:** 606

**Comment Excerpt:**

If EPA maintains the requirement to monitor penetrations, then we request a clear definition and delineation as to what constitutes a penetration or opening. We request that EPA define “penetration” in a way that is meaningful in terms of the potential to be a source of surface emissions. There are many temporary and/or shallow field components (e.g., fence posts, survey stakes, etc.) at landfills that may penetrate into the cover, but not significantly into the waste to be a source of emissions. The definition of “penetration” should make clear that such temporary, shallow, and common components do not require individual monitoring. As such, we request that EPA consider the following definition for “penetration” that would require monitoring under the rule:

- be intended to be a permanent feature
- be man made
- completely pass through the landfill cover

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198 comment excerpt 48, under comment code 13a.

## **13.2 Surface Monitoring General for or against**

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North

America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 13

**Sort Order:** 100

**Comment Excerpt:**

TXSWANA supports the current surface emissions monitoring (SEM) requirements and does not recommend any changes as there does not appear to be any substantial reasons for changing the current requirements. We are unaware of any research that would suggest the current requirements are not adequate or that another method would result in improved emission reductions. In fact, based on our history with SEM over the past 18 years we believe that the current requirements continue to provide accurate evaluations of the operation of a GCCS. In addition, given the variable climates that exist in Texas, we do not support any changes that are based on practices used in only one area of the country. We are aware that some new techniques and methods are being developed; however, we do not support implementing any changes based on methods and techniques that are still in the research and development phase. Until there is data supporting that a revision to the SEM methodology (e.g. tighter spacing, integrated monitoring, remote monitoring, cover penetration monitoring) would result in cost effective verifiable emission reductions, we believe the surface emissions monitoring protocol as it is currently required under Subpart WWW, is the appropriate method to use.

**Comment Response:**

The EPA has retained the 30-meter traverse pattern in the final rule, which is the same traverse pattern in 40 CFR part 60, subpart WWW. In addition, the EPA has not finalized an integrated reading in the final rule. The EPA has finalized several modifications to the surface emission monitoring after considering the public comments received on various improvements to surface emissions approaches and technology advancements including adopting more precise location data and requiring monitoring of all cover penetrations. See response to DCN EPA-HQ-OAR-2003-0215-0088.1, comment excerpt 15, under comment code 13a for monitoring of all cover penetrations. See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 10, under comment code 13i for more precise locational data. The EPA agrees with the commenter that remote monitoring is not yet ready for field use, as discussed under Emerging Measurements Technologies in section VI.B and of the NSPS Final Preamble and section VI.B of the Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 54

**Sort Order:** 101

**Comment Excerpt:**

EPA has requested comments on potential alternative approaches to the surface emission monitoring as proposed under Subpart XXX. Potential alternatives identified included the California Air Resources Board, Final Regulation Order, Methane Emissions from MSW



Landfills (*Article 4, Subarticle 6, sections 95460 to 95476, title 17, California Code of Regulations*) and comments on allowing the use of alternative remote measurement and monitoring techniques for landfills that exceed the surface monitoring concentrations. Republic objects to both approaches.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt 13, under comment code 13x.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 3

**Sort Order:** 102

**Comment Excerpt:**

EPA is considering changes to surface emissions monitoring requirements that will add significant labor, reporting, and costs. However, the new monitoring requirements under consideration will not result in any meaningful environmental benefits. The current system for surface emissions monitoring remains an effective means of ensuring that landfills have a well-designed and well-operated GCCS and an effective cover. The changes that EPA is considering are simply unnecessary.

Republic's more detailed comments on EPA's proposed emission guidelines for existing MSW landfills are provided below.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt 13, under comment code 13x.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 66

**Sort Order:** 103

**Comment Excerpt:**

Republic has previously opposed EPA's proposed alternative SEM procedures, and incorporates those comments by reference here. *See* EPA-HQ-OAR-2014-0451-0061, at 20-24 (ANPRM comments); EPA-HQ-OAR-2003-0215-0111, at 20-24 (Proposed NSPS comments). The proposed rule does not provide any analysis to support reducing the walking pattern, limiting monitoring during windy conditions, or imposing a new integrated methane limit. Since the proposed revisions would increase cost without providing any demonstrated environmental benefit, Republic asks EPA to abandon those more stringent requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt 13, under comment code 13x.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 27

**Sort Order:** 104

**Comment Excerpt:**

DSWA requests that EPA maintain the existing SEM procedures (present in Subpart WWW) when finalizing Subpart XXX.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt 13, under comment code 13x.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 34

**Sort Order:** 105

**Comment Excerpt:**

Advocacy recommends that EPA consider adopting policy recommendation to maintain existing monitoring requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt 13, under comment code 13x.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 40

**Sort Order:** 106

**Comment Excerpt:**

WM opposes adoption of alternative surface emissions monitoring provisions.

EPA's provides no data or analysis to support alternative provisions for performance of quarterly surface emissions monitoring.

We clearly stated our position in our docketed comments (See Docket ID Numbers EPA-HQ-OAR-2014-0451-0037, EPA-HQ-OAR-2003-0215-0100) that we do not support alternative approaches to SEM procedures and we refer EPA to these docketed comments as our positions have not changed. The proposed Subpart Cf rule still does not provide any analysis to support a change in EPA's position on reducing the walking pattern, limiting monitoring during windy conditions or integrated monitoring versus point sampling as the appropriate means to verify system performance. Given the additional burden associated with reducing the walking pattern and integrated monitoring, and the modest results of both, WM opposes adopting this approach under the proposed NSPS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0117.1, excerpt 13, under comment code 13x.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 23

**Sort Order:** 200

**Comment Excerpt:**

As EPA observes in the preamble to the proposed NSPS, surface monitoring is a vital element of the NSPS and EG "intended for landfills to maintain a tight cover that minimizes any emissions of landfill gas through the surface." Underscoring the importance of frequent and careful monitoring, multiple studies of landfill emissions have confirmed that methane emissions are typically localized in "hotspots" associated with defects in the landfill surface.<sup>39</sup> Enhanced monitoring is essential to find and remedy these hotspots. For this reason, the Bay Area and South Coast Air Quality Management Districts have required enhanced monitoring for many years, and California recently adopted these rigorous monitoring provisions state-wide as part of its Landfill Methane Rule (LMR).<sup>40</sup>

[Footnotes]

(39) See, e.g., I.M. Rachor et al., *Variability of Methane Emissions From an Old Landfill Over Different Time-Scales*, 64 *European Journal of Soil Science* 16 (2013) ("...surface emissions are not uniform across the entire landfill but follow paths of least resistance, creating high-emitting areas or hotspots . . . gas emissions occurred almost exclusively at these restricted areas and no elevated surface methane concentrations were observed on other parts of the landfill."); Di Trapani et al., *Uncontrolled Methane Emissions From a MSW Landfill Surface: Influence of Landfill Features and Side Slopes*, 33 *Waste Management* 2108, 2109 (2013); Abichou et al., *Methane Flux and Oxidation at Two Types of Intermediate Landfill Covers*, 26 *Waste Management* 1305 (2006) (observing that "hotspots" are more likely to dominate emissions from landfills with thicker and more permanent covers); L. Giani, et al., Temporal and spatial variability of the CH<sub>4</sub> dynamics of landfill cover soils. *Journal of Plant Nutrition & Soil Science* **165**, 205–210 (2002); K. Spokas et al., Implications of the spatial variability of landfill emission rates on geospatial analyses. *Waste Management*, **23**, 599–607 (2003).

(40) Landfills Rule ISOR, at IV-5.

**Comment Response:**

In the final rules, the EPA has addressed concerns with defects in the landfill surface. Specifically, landfill owners or operators must conduct surface monitoring on a quarterly basis at the specified intervals and where visual observations indicate elevated concentrations of LFG, such as distressed vegetation and cracks or seeps in the cover and all cover penetrations. Based on the data and comments received, the EPA believes focusing on these areas instead of requiring tighter traverse patterns or integrated readings will yield the most environmental benefit.

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**Commenter Name:** Becky Tooley, Mayor, Office of City Commission

**Commenter Affiliation:** Coconut Creek, Florida

**Document Control Number:** EPA-HQ-OAR-2014-0451-0161

**Comment Excerpt Number:** 2

**Sort Order:** 201

**Comment Excerpt:**

As our nation's population increases and many more of our communities become urbanized, it is critical to consider not only the harsh environmental impacts of MSW landfills, but also the localized negative impacts such facilities have on the surrounding population. Our residents suffer daily from the presence of the landfill, its odors often traveling up to four miles away. Methane, combined with sulfur and rotting trash, are the main sources of the landfill odors that have plagued our community for too long. The odors affect not only the quality of life of our residents, but also the economy of our City. We have received many comments regarding residents and businesses who were considering moving into the City, but refrained from doing so after they experienced the odors.

We urge EPA to consider the strictest surface monitoring protocols proposed for MSW landfills. We have found that resident complaints, rather than the landfill's current monitoring equipment, provides a greater assessment of the emission situation. For instance, the large number of complaints prompted an official inspection in 2013, resulting in additional gas collection wells at the Monarch Hill facility. The requirement that landfill owners or operators must conduct surface monitoring on a quarterly basis is appreciated, but additional surface monitoring should also be triggered by community complaints.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt 23, under comment code 13x.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 12

**Comment Excerpt:**

The DEP believes the proposed enhancements to surface emission monitoring (SEM) and wellhead standards are effective and will minimize surface emissions of landfill gas. The DEP also recommends that the final Guidelines for MSW landfills include provisions requiring a landfill owner or operator to provide notice to state and local agencies at least seven working days prior to commencing SEM monitoring activities.

**Comment Response:**

The final rule requires a notification 30 days prior to conducting SEM activities for the purpose of Tier 4 emission monitoring. The EPA believes this notification is appropriate in the context of Tier 4 since Tier 4 can determine the timing of GCCS installation. See section VI.B and VI.A.5 of the NSPS Final Preamble and section VI.B and VI.A.5 of the Emission Guidelines Final Preamble. Once a GCCS is installed, the EPA is not requiring a notification for quarterly SEM activities, as a result of implementation concerns, including the weather-dependent nature of scheduling quarterly SEM. Instead of requiring notifications, the EPA has finalized more robust recordkeeping requirements of SEM, including more precise locational data in order to allow agencies to use data to assess trends in SEM exceedances over time. but it notes that delegated authorities are authorized to conduct inspections at the landfill at any time.

Regarding enhancements to quarterly SEM, see response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt 23, under comment code 13x.

### **13.3 Enhanced Surface Monitoring-Correcting Exceedances**

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 24

**Sort Order:** 100

**Comment Excerpt:**

The LMR allows for a reduction in the frequency of monitoring if an operator demonstrates no exceedances of the surface concentration limits over a period of one year, which provides operators with an incentive to minimize leaks and helps reduce the overall cost of monitoring.

**Comment Response:**

The EPA agrees with the commenter. However, the change in frequency is limited to closed landfills to be environmentally protective, since emissions from closed landfills are on the downward side of their gas curves. The final rule at 60.766(f) provides the following: Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator

**Commenter Affiliation:** Californians Against Waste, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0191

**Comment Excerpt Number:** 13

**Sort Order:** 101

**Comment Excerpt:**

As proposed, landfill operators will be required to conduct quarterly surface emissions monitoring initially, but the frequency decreases to semi-annual monitoring after four consecutive periods in which no measurement above 500 ppm is obtained. This reduction in monitoring frequency creates a perverse incentive for operators to avoid finding leaks. Instead, we urge the EPA to maintain a quarterly monitoring requirement, regardless of whether leaks have been detected or not. This is also important because when and where landfill gas may break through the cover is not predictable. Consequently, a landfill that has not detected high surface methane concentrations for one year will not necessarily find the same is true at the next reading.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0095.1, excerpt number 24, under comment code 13b.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 22

**Sort Order:** 200

**Comment Excerpt:**

The proposed rule is unclear about the surface emission exceedance reporting requirements (60.757(f)(5)). The proposed rule appears to be asking for a one month final reading after a surface emissions correction. Typically, most facilities simply provide the complete SEM report. This language should be changed to more clearly state what is required so that facilities can provide that summary in the report rather than creating additional paperwork.

**Comment Response:**

The EPA believes the rule is clear as written. The final rule at 60.767(g)(5) provides the following: [The owner or operator must report] The location of each exceedance of the 500 parts per million methane concentration as provided in § 60.763(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month.

This reporting follows the corrective action procedures for quarterly surface emissions monitoring, wherein the owner or operator must take corrective action for a surface emissions exceedance, then check the same location again one month later (§ 60.765(c)(4)(iv)). In the annual report, the owner or operator may continue to provide complete SEM data, however, in the annual report, the owner or operator must clearly show the location and concentration of an

exceedance, as well as the methane concentration at that same location as read and recorded one month after the exceedance.

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**Commenter Name:** Comment submitted by Curt Publow  
**Commenter Affiliation:** Decatur Hills Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1  
**Comment Excerpt Number:** 6  
**Sort Order:** 201

**Comment Excerpt:**

*Also, the proposed rule is unclear about the surface emission exceedance reporting requirements (60.757(f)(5)). The proposed rule appears to be asking for a one month final reading after a surface emissions correction. Typically, most facilities simply provide the complete SEM report. This language should be changed to more clearly state what is required so that facilities can provide that summary in the report rather than creating additional paperwork.*

**Comment Response:**

See response to EPA-HQ-OAR-2014-0451-0180, excerpt number 22, under comment code 13b.

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**Commenter Name:** Comment submitted by Paul Aud, Environmental Engineering Manager  
**Commenter Affiliation:** Louisville Metro Air Pollution Control District (APCD)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0091.1  
**Comment Excerpt Number:** 8

**Comment Excerpt:**

APCD recommends that the EPA consider adding a provision for repairs that are required by SEM to be checked again after the area stabilizes, i.e., within a week or 10 days, to allow the soil to become saturated with LFG. This will ensure that the repair is actually working.

**Comment Response:**

The final rule provides corrective action procedures for surface monitoring exceedances in § 60.765(c)(4)(iv). For each exceedance and corresponding corrective action, the owner or operator must remonitor at 10 days, 20 days, and 30 days, depending on how many subsequent exceedances are found at that location.

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## 13.4 Enhanced Surface Monitoring-Traversal Pattern

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 160

**Sort Order:** 100

**Comment Excerpt:**

Reducing the walking pattern interval for instantaneous monitoring from 30 meters (98 ft) to 25 (ft) does not deliver commensurate benefits. In the preamble to the proposed NSPS, "EPA recognizes that these provisions could reduce emissions, and these surface emissions are difficult to quantify." We agree, as we found that the vast majority of identified exceedances were easily remedied with repairs to cover materials, and did not require installation or expansion of GCCS. Under both the NSPS and the CA LMR, the requirement and timing to expand the GCCS system (or obtain approval for an alternative remedy) is the same. In the two years "before LMR," only one landfill triggered and was subsequently required to expand its GCCS. In the 30 months "after LMR," five landfills triggered, and three (7.1%) were required to expand. What this analysis cannot tell us, however, is whether these exceedances would have been identified under the NSPS procedures, or whether the CA LMR regime was solely responsible for their identification. Furthermore, we do not know if the fundamental decision to expand the GCCS was driven solely by the CA LMR, or whether these were planned expansions. While CARB promulgated the rule believing that it would result in more frequent and earlier LFG collection system installations and expansions the analysis does not support this conclusion. Even with a much more intensive (and costly) walking pattern, only two additional landfills were required to expand their GCCS under the CA LMR.

**Comment Response:**

In the final rule, the EPA is retaining a traverse pattern of 30 meters. The EPA agrees with commenters that the additional level of effort to complete quarterly surface monitoring at a 25-ft traverse pattern does not yield commensurate environmental benefits. In addition, commenters did not submit data or information to demonstrate that emission reductions would result from conducting surface monitoring at a 25-ft traverse pattern.

Two commenters (EPA-HQ-OAR-2003-0215-0099.1, EPA-HQ-OAR-2003-0215-0100.1) commissioned a study to compare the level of effort and monitoring results of the CA LMR to the SEM requirements under the current NSPS (A Comparison of Monitoring Results for California Landfills Under the New Source Performance Standards and the California Landfill Methane Rule, October 2014). The EPA examined the data supporting the study as provided by one of the commenters (Analysis of Surface Monitoring Exceedances from California Landfills Under the New Source Performance Standards and the California Landfill Methane Rule, Docket EPA-HQ-OAR-2014-0451). The data allowed for direct comparison of exceedance data from 29 landfills, although for different time periods. The study and supporting data provide evidence of greater exceedances identified under the California approach (which includes a 25-ft traverse pattern and an integrated reading) than the current approach. However, the EPA was unable to determine the magnitude of emission reductions that might result from the greater exceedances under the California approach. See the docketed memorandum entitled "Analysis of Surface Exceedances from California Landfills under the New Source Performance Standards and the California Landfill Methane Rule" (EPA-HQ-OAR-2014-0451-0140).



**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 161

**Sort Order:** 101

**Comment Excerpt:**

The increased density of the CA LMR monitoring requirements resulted in detection of more exceedances during the surface walking. The available monitoring reports for the "before LMR" period documented exceedances at 1.6% of the acres monitored, while the "after LMR" results of the same landfills recorded exceedances at 4.4% of the acres monitored.<sup>14</sup> EPA's cost analysis (see Table 5, 79 Fed. Reg. 41823) indicates that adopting the CA LMR approach in the proposed NSPS would increase monitoring costs by more than seven times (from a total annual cost of \$50,000 to \$362,900) for using a walking pattern that is four times more dense. This is an extraordinary amount of money to spend detecting exceedances at merely an additional 2.8% of acres monitored, while increasing gas collection at only one landfill, at most, based on the SCS analysis. For these reasons, WM does not support the CA LMR approach to instantaneous monitoring using a walking pattern with 25-foot intervals.

[Footnote]

(14) Note that we refer to the "percent of acres monitored" rather than the absolute number of exceedances detected because there were more monitoring reports available for the "after LMR" dataset.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 55

**Sort Order:** 102

**Comment Excerpt:**

*Reducing the Walking Pattern Interval for Instantaneous Monitoring from 30 meters (98 ft) to 25 ft Does Not Deliver Commensurate Benefits.* In the preamble to the proposed NSPS, "EPA recognizes that these provisions could reduce emissions, and these surface emissions are difficult to quantify." We agree, as we found that the vast majority of identified exceedances were easily remedied with repairs to cover materials, and did not require installation or expansion of GCCS. Under both the NSPS and the CA LMR, the requirement and timing to expand the GCCS system (or obtain approval for an alternative remedy) is the same. In the two years "before LMR," only one landfill triggered and was subsequently required to expand its GCCS. In the 30 months "after LMR," five landfills triggered, and three (7.5%) were required to expand. However, this analysis does not indicate whether these exceedances would have been identified under the NSPS

procedures, or whether the CA LMR regime was solely responsible for their identification. Furthermore, we do not know if the fundamental decision to expand the GCCS was driven solely by the CA LMR, or whether these were planned expansions. While CARB promulgated the rule believing that it would result in more frequent and earlier LFG collection system installations and expansions the analysis does not support this conclusion. Even with a much more intensive (and costly) walking pattern, only two additional landfills were required to expand their GCCS under the CA LMR.

As expected, the increased density of the CA LMR monitoring requirements resulted in detection of more exceedances during the surface walking. The available monitoring reports for the “before LMR” period documented exceedances at 1.6% of the acres monitored, while the “after LMR” results of the same landfills recorded exceedances at 4.4% of the acres monitored. EPA’s cost analysis (see Table 5, 79 Fed. Reg. 41823) indicates that adopting the CA LMR approach in the proposed NSPS would increase monitoring costs by more than seven times (from a total annual cost of \$50,000 to \$362,900) for using a walking pattern that is four times more dense. This is an extraordinary amount of money to spend detecting exceedances at merely an additional 2.8% of acres monitored, while increasing gas collection at only one landfill, at most, based on the SCS analysis. For these reasons, Republic does not support the CA LMR approach to instantaneous monitoring using a walking pattern with 25-foot intervals.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 16

**Sort Order:** 103

**Comment Excerpt:**

DEQ believes reducing the walking pattern interval for traversing the landfill during surface monitoring from 30 meters to 25 feet may not be worth the additional expense. The existing traverse pattern interval, in combination with visual inspection for areas suspect for leaking emissions (distressed vegetation, cracks in the cap, seepage), provides adequate assessment of GCCS function when combined with wellhead data. When estimating the cost, EPA concluded that surface monitoring using the tighter traverse pattern increased cost, but could not quantify the corresponding emissions reduction.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Comment submitted by Sheila Holman, Director, Division of Air Quality  
**Commenter Affiliation:** North Carolina Department of Environment and Natural Resources (NCDENR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0089.1

**Comment Excerpt Number:** 4

**Sort Order:** 104

**Comment Excerpt:**

For subpart XXX, we are requesting comment on reducing the interval for the walking pattern that traverses the landfill from 30 meters (98 ft.) to 25 ft.

Based on the EPA's analysis, this enhanced surface monitoring would cost \$29,100 per landfill per year under the proposed option (2.5/40). Even though this would be a significant cost increase for a landfill, no emissions improvement analysis by implementing the proposed method was provided by EPA. DAQ suggests further study analyzing environmental effects before implementing the enhanced surface monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1

**Comment Excerpt Number:** 4

**Sort Order:** 105

**Comment Excerpt:**

Foth and the BOW Group do not support reducing the interval for the walking pattern from 30 meters (98 feet) to 25 feet. Our experience has shown that the vast majority of exceedances observed during SEM events occur at cover penetrations. Now that EPA is clarifying that SEM must include testing at all cover penetrations, a reduction in the interval for the walking pattern would provide little benefit in reducing methane emissions through the landfill cover, while increasing the time and cost to perform SEM events by as much as four times.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 9

**Sort Order:** 106

**Comment Excerpt:**

We do not feel that a reduction from 30 meters (98 ft.) to 25 ft. in the interval for the walking pattern that traverses the landfill is necessary. Nor is integrated surface emissions monitoring required to minimize surface emissions. Both of these proposals would take four (4) times as long to complete.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Comment submitted by Charlie Sedlock, Director

**Commenter Affiliation:** Hamm, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0084.1

**Comment Excerpt Number:** 4

**Sort Order:** 107

**Comment Excerpt:**

Current surface emissions monitoring adequately ensures the proper operation of a landfill gas collection system. This monitoring highlights problem areas and shows where collection is inadequate. We do not believe that it needs to be changed. A longer traverse or penetration monitoring will add significant expense without emissions benefit.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 24

**Sort Order:** 108

**Comment Excerpt:**

Performing the SEM monitoring as currently required is already a time consuming effort. DSWA believes that SEM is a powerful tool that enhances operation of the GCCS; however we are not convinced that the tighter spacing is justified. The requirements of the current SEM procedure, to test, "where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover" (40 CFR 60.753 (d)), ensure that the 30 meter spacing is all inclusive of potential sources of emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 33

**Sort Order:** 109

**Comment Excerpt:**

The docket for the proposed rule has no data or technical support showing any emissions reductions. Given the significant costs associated with a tighter traverse and no measurable emissions reductions to justify the added expense, we recommend maintaining the existing SEM from Subpart WWW.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Matt Lamb, Scientist, Smith Gardner, Inc.

**Commenter Affiliation:** Smith Gardner, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0190

**Comment Excerpt Number:** 5

**Sort Order:** 110

**Comment Excerpt:**

Requiring SEM along the landfill perimeter and a traversing path across the landfill at 25 foot intervals effectively adds 12 additional monitored points, and three (3) additional walked paths per square 30 meter area. This effectively triples the cost of SEM, especially at larger landfills. If a large landfill currently takes one (1) day to monitor, the increased coverage will require four (4) days to monitor the same facility. Estimated costs related to the current 30-meter SEM coverage may average \$1,000 per day for labor and expenses, with additional \$150 for SEM equipment rental. Increasing SEM coverage to 25-foot intervals will quadruple these costs, for a total of \$4,000 for labor and expenses, and \$600 for equipment rental. Given that the proposed rule increases monitoring coverage along the existing 30-meter path by requiring monitoring at wells and other cap penetrations, the additional increase from 25-foot coverage is not likely to result in a significant increase in monitored exceedences.

Due to the increased cost with no significant expected increase in monitored exceedances, S+G recommends the current SEM coverage of 30 meters be maintained, with the addition of monitoring at well casings and other cap penetrations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills

**Document Control Number:** EPA-HQ-OAR-2014-0451-0145

**Comment Excerpt Number:** 3

**Sort Order:** 111

**Comment Excerpt:**

Foth and the BOW Group support the proposal to maintain the interval for the walking pattern of 30 meters. We do not support discussion of reducing the interval for the walking pattern from 30 meters (98 feet) to 25 feet. Our experience has shown that many exceedances observed during SEM events occur at cover penetrations. Now that EPA is clarifying that SEM must include monitoring at all cover penetrations, a reduction in the interval for the walking pattern would provide little benefit in reducing methane emissions through the landfill cover, while increasing the time and cost to perform SEM events by as much as four times.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch

**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0156

**Comment Excerpt Number:** 13

**Sort Order:** 112

**Comment Excerpt:**

Georgia EPD does not believe that the benefits in measurement accuracy at the smaller grid size are commensurate with the additional effort.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 31  
**Sort Order:** 113

**Comment Excerpt:**

*In the proposed rules, USEPA requested comment on reducing the SEM walking pattern from 30 meters (98 feet) to 25 feet.*

We do not support this change which will increase the time to complete an SEM almost 4-fold. At large sites, this would make one SEM event span across many days without considering any remonitoring which could be necessary to resolve any exceedances. Rather than require a narrower walking path, we would support varying the walking path each quarter to monitor in different locations. However, we would be very concerned with any rule language requiring such process. Depending upon the approach, this type of approach could make the SEM process even more tedious and time consuming.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator  
**Commenter Affiliation:** Californians Against Waste, et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0191  
**Comment Excerpt Number:** 16  
**Sort Order:** 200

**Comment Excerpt:**

The Proposed Rule requests comment regarding the walking pattern used for surface emissions monitoring. We strongly urge the EPA to reduce the measurement intervals from the current 30 m grid to a 25 foot grid.<sup>23</sup> We note that California currently requires surface monitoring at 25-foot intervals, and this has not posed a barrier to efficient and economical operations of landfills in that state.<sup>24</sup> Likewise, we firmly support the continued requirement of surface monitoring at any point where visual inspection indicates elevated landfill gas (distressed vegetation, cover cracks and seeps and all cover penetrations). These areas are the highest probability areas for fugitive emissions and accordingly must be monitored closely.

Footnotes:

23 Proposed Rule at 52,111.

24 17 California Code of Regulations § 95471(c)(1).

**Comment Response:**

In the final rule, the EPA is retaining a traverse pattern of 30 meters. The EPA notes that the additional level of effort to complete quarterly surface monitoring at a 25-ft traverse pattern does not yield commensurate environmental benefits. In addition, commenters did not submit data or information to demonstrate that emission reductions would result from conducting surface monitoring at a 25-ft traverse pattern.

Two commenters commissioned a study to compare the level of effort and monitoring results of the CA LMR to the SEM requirements under the current NSPS. The EPA examined the data supporting the study as provided by one of the commenters. The data allowed for direct comparison of exceedance data from 29 landfills, although for different time periods. The study and supporting data provide evidence of greater exceedances under the California approach (which includes a 25-ft traverse pattern and an integrated reading) than the current approach. However, the EPA was unable to determine the magnitude of emission reductions that might result from the greater exceedances under the California approach. See the docketed memorandum entitled “Analysis of Surface Exceedances from California Landfills under the New Source Performance Standards and the California Landfill Methane Rule” (EPA-HQ-OAR-2014-0451-0140).

The EPA appreciates the commenter’s desire for additional monitoring at any point where visual inspection indicates elevated landfill gas (distressed vegetation, cover cracks and seeps and all cover penetrations). To help monitor such areas of the landfill surface that are between the 30-meter monitoring traverses, the EPA is requiring that all cover penetrations be monitored. This includes all cover penetrations and openings within the area of the landfill where waste has been placed and a gas collection system is required, as well as where visual observations indicate elevated concentrations of landfill gas, including cracks or seeps in the cover.

For additional information on monitoring every cover penetration, see response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1  
**Comment Excerpt Number:** 20  
**Sort Order:** 201

**Comment Excerpt:**

EDF supports a tighter walking pattern, such as the 25 feet between intervals suggested in the proposed NSPS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 16, under comment code 13c.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director  
**Commenter Affiliation:** NC Conservation Network



**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 9

**Sort Order:** 202

**Comment Excerpt:**

EPA has requested public comment on alternative approaches to surface monitoring. We support the agency's proposal to tighten the walking grid from 98 feet to 25 feet.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 16, under comment code 13c.

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**Commenter Name:** Comment submitted by Paul Aud, Environmental Engineering Manager

**Commenter Affiliation:** Louisville Metro Air Pollution Control District (APCD)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0091.1

**Comment Excerpt Number:** 5

**Sort Order:** 203

**Comment Excerpt:**

Intervals for SEM should be decreased from 30 meters to 50 foot intervals.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 16, under comment code 13c.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 21

**Sort Order:** 204

**Comment Excerpt:**

We recommend a tighter walking pattern, such as the 25 feet between intervals suggested in EPA's alternative monitoring approach.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 16, under comment code 13c.

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**Commenter Name:** S. Woodson

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0148

**Comment Excerpt Number:** 4  
**Sort Order:** 205

**Comment Excerpt:**

Existing landfill surface emission monitoring procedures utilize a walking pattern technique that navigates the landfill in a gridlock pattern at 98 feet. EPA's projected changes include operating to a reduced 25 ft. traverse, as well as adding a methane concentration limit of 25 ppm. The updated methane concentration limit is in addition to current landfill threshold limits of 500 ppm (EPA, 2015). Adapting techniques and control measures to more easily and readily identify effluxed gas is extremely beneficial in achieving reduction of landfill gas emission.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 16, under comment code 13c.

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**Commenter Name:** William C. Allison V, Director, Air pollution Control Division  
**Commenter Affiliation:** Colorado Department of Public Health and Environment  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0163  
**Comment Excerpt Number:** 2  
**Sort Order:** 206

**Comment Excerpt:**

The Division supports a tighter surface monitoring walking pattern, walking pattern offset, and integrated surface emissions monitoring (i.e., average surface emission concentration across a specified area).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 16, under comment code 13c.

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**Commenter Name:** Lynn Fieder, Division Chief, Air Quality Division  
**Commenter Affiliation:** State of Michigan Department of Environmental Quality (MDEQ)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0183  
**Comment Excerpt Number:** 6  
**Sort Order:** 207

**Comment Excerpt:**

The surface emission monitoring traverse path interval should be reduced from 30 meters to 25 meters. This will provide additional monitoring points necessary to evaluate the extent of surface emissions from the landfill.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 16, under comment code 13c.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 13

**Sort Order:** 208

**Comment Excerpt:**

SEM is performed using a flame ionization detector (FID) either alone, or housed in a toxic vapor analyzer (TVA). The monitor samples continuously while it is on. It is not turned off between samples due to the warm up time required. TVA units are capable of logging on a timed basis. Additional readings can also be logged by pressing a button on the unit's wand. The unit can be set to alarm at the exceedance level (500 ppm) or any level preferred by the technician. If the existing procedure is performed correctly then Delaware does not think it is necessary to reduce the grid size. However, reducing the size of the grid does not represent a significant additional burden.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 16, under comment code 13c.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

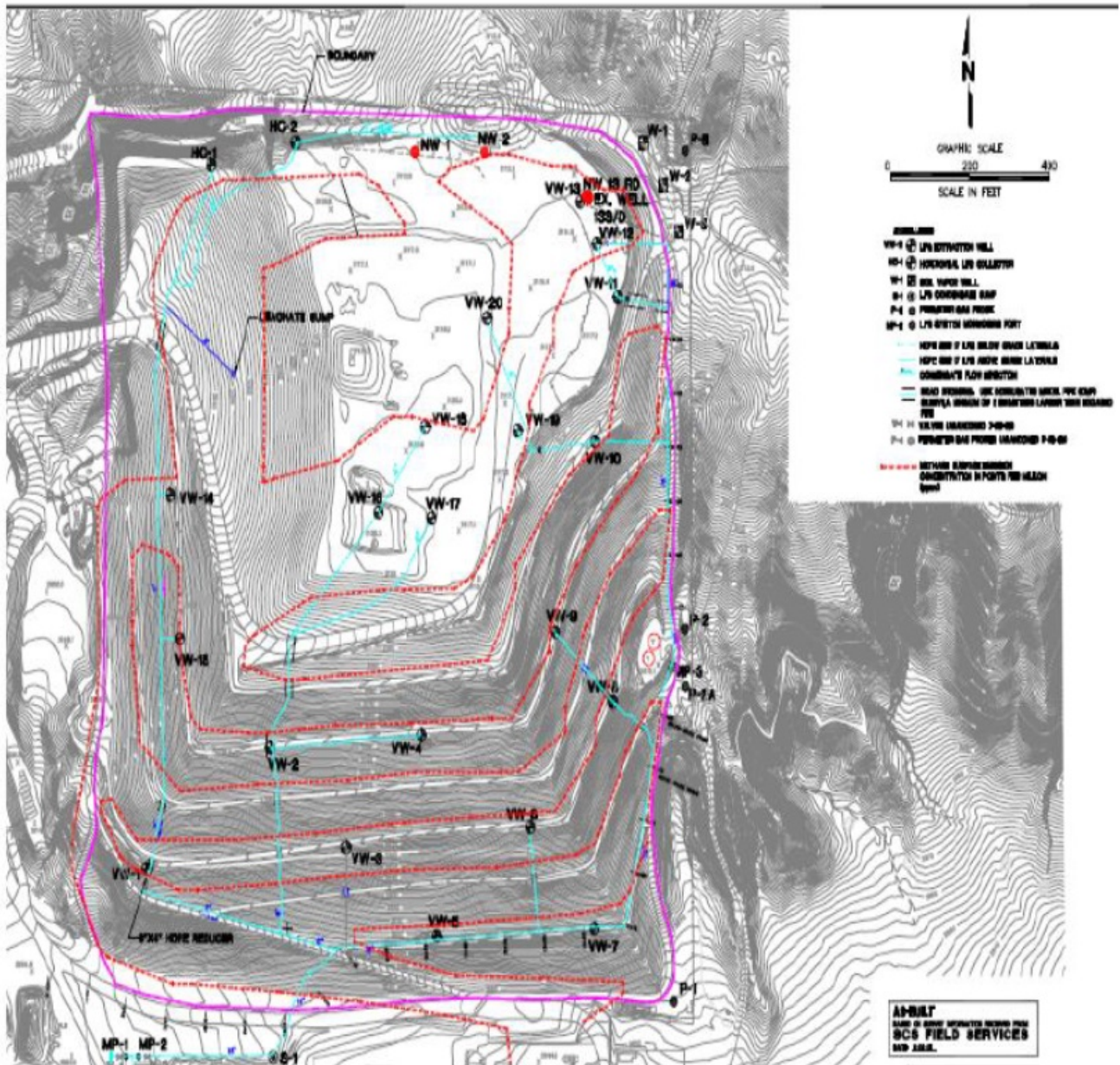
**Comment Excerpt Number:** 42

**Sort Order:** 400

**Comment Excerpt:**

EPA's current regulations are much less protective than the California LMR, requiring quarterly monitoring with a handheld analyzer using walking intervals spaced as much as 30 meters apart (almost 100 feet). As the sample landfill diagram in Figure 1 below indicates, this walking pattern leaves most areas of the landfill unmonitored. Given the possibility of high emissions from localized cover defects, EDF believes it is essential that the revised NSPS and EG require comprehensive monitoring of the landfill surface similar to that provided in the California LMR.

Figure 1. Typical monitoring pathway on landfill surface.<sup>41</sup>



**Comment Response:**

In the final rule, the EPA is retaining a traverse pattern of 30 meters. The EPA believes that the additional level of effort to complete quarterly surface monitoring at a 25-ft traverse pattern does not yield commensurate environmental benefits. In addition, commenters did not submit data or information to demonstrate that emission reductions would result from conducting surface monitoring at a 25-ft traverse pattern.

Two commenters (EPA-HQ-OAR-2003-0215-0099.1, EPA-HQ-OAR-2003-0215-0100.1) commissioned a study to compare the level of effort and monitoring results of the CA LMR to the SEM requirements under the current NSPS (A Comparison of Monitoring Results for California Landfills Under the New Source Performance Standards and the California Landfill Methane Rule, October 2014). The EPA examined the data supporting the study as provided by one of the commenters. The data allowed for direct comparison of exceedance data from 29 landfills, although for different time periods. The study and supporting data provide evidence of greater exceedances under the California approach (which includes a 25-ft traverse pattern and an integrated reading) than the current approach. However, the EPA was unable to determine the magnitude of emission reductions that might result from the greater exceedances under the California approach. See the docketed memorandum entitled “Analysis of Surface Exceedances from California Landfills under the New Source Performance Standards and the California Landfill Methane Rule” (EPA-HQ-OAR-2014-0451-0140).

Nonetheless, the EPA appreciates the commenters’ desire for additional monitoring, given the possibility of high emissions from points between the traverses. To help monitor areas of the landfill surface that are between the 30-meter monitoring traverses, the EPA is requiring that all cover penetrations be monitored. This includes all cover penetrations and openings within the area of the landfill where waste has been placed and a gas collection system is required, as well as where visual observations indicate elevated concentrations of landfill gas, including cracks or seeps in the cover.

For additional information on monitoring every cover penetration, see response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 17  
**Sort Order:** 401

**Comment Excerpt:**

The proposed rule does not require rigorous monitoring to ensure that landfills are properly maintained and operated. The current NSPS requires only a small portion of the landfill surface to be monitored each quarter, potentially allowing many leaks to go undetected and unrepaired. California requires approximately four times as much monitoring as the current NSPS and provides for a rigorous average limit on methane emissions in addition to a limit on individual detection readings. We urge EPA to strengthen NSPS in these and other respects.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 42, under comment code 13c.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 18

**Sort Order:** 402

**Comment Excerpt:**

To monitor surface emissions, EPA currently relies on the so-called air quality “sniff test,” which requires quarterly sampling in about 100 feet grids to determine whether there are surface concentrations above background of methane greater than 500 parts per million (ppm).<sup>46</sup> These test parameters, however, are inadequate to serve as a performance check on gas collection. Measurements taken at 100 feet intervals are too far apart because fugitive releases from landfills with final covers are not defused, but rather occur in localized high fluxes through occasional breaks and tears more likely to be missed under current test conditions. As an example, assuming one hot spot per acre, and 10 hot spots across a 100 acre landfill, the probability of detecting just one of those 10 hot spots per year using EPA’s protocols would be 0.0522%, or one in 2,000. The probability of detecting all 10 of them would be  $2.4 \times 10^{-38}$ .

Essentially, statistics tells us that the current protocols are not adequate for detecting methane concentrations once a geomembrane is laid down, even without gaming the system, something that is not difficult to do. The test can be gamed by, for example, by performing it during periods of high barometric pressure, which suppresses gas releases. The agency itself noted that wind conditions can also significantly skew results. Finally, the 500 ppm methane level may be far too high to detect significant problems. This level may have been adopted some 30 years ago when the California South Coast Air Management District observed that, in the prior generation of landfills that lacked geomembranes, surface measurements greater than 500 ppm of methane were associated with odor complaints among neighbors a mile away. EPA should begin a study to determine a methane emission detection level of scientific and technical significance in measuring LFG from landfills.

For these reasons, we urge EPA to require more stringent and continuous monitoring. At a minimum, EPA should adopt California’s landfill methane test spacing requirements, but should not allow increased spacing above 25 feet under certain conditions, as California currently does.<sup>47</sup> Testing and monitoring should occur only when wind and barometric pressures are at certain points, as EPA suggests.

[Footnotes]

<sup>46</sup> 40 CFR §60.755(c).

<sup>47</sup> 17 Cal. Code of Reg. 95471(c).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 42, under comment code 13c for the traverse pattern. See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 18, under comment code 13e for the wind speed.

See response to DCN EPA-HQ-OAR-2003-0215-0079.1, excerpt number 13, under comment code 13z for barometric pressure.

Regarding the threshold level of 500 ppm methane, the EPA is retaining a level of 500 ppm consistent with 40 CFR part 60, subpart WWW. A level of 500 ppm is consistent with the level the EPA determined to be appropriate to demonstrate that a GCCS is well-designed and well-operated.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 58

**Sort Order:** 403

**Comment Excerpt:**

EPA currently relies on the so-called air quality “sniff test,” which requires quarterly sampling in about 100 feet grids to determine whether there are surface concentrations above background of methane greater than 500 parts per million (ppm).<sup>65</sup> These test parameters, however, are inadequate to serve as a performance check on gas collection. As pointed out above, measurements taken at 100 feet intervals are too far apart, because fugitive releases from landfills with final covers are not diffuse, but rather occur in localized high fluxes through occasional breaks and tears more likely to be missed under current test conditions.

In statistics, the so-called Poisson distribution is used to compute the probability of locating even one hot spot across a large surface area of 100 acres or more. Poisson describes a situation where the probability of any one event is very small relative to the size of any reasonable sample. The formula for the Poisson distribution is:

$$p(x;m) = ((e^{-m}) \times (m^x))/x!$$

where p is the probability and m is the intensity.

If there were one hot spot per acre, and 10 hot spots across a 100 acre landfill, the probability of detecting just one of those 10 hot spots per year using EPA’s protocols would be 0.0522%, or one in 2,000. The probability of detecting all 10 of them would be  $2.4 \times 10^{-38}$ .

Essentially, statistics tells us that the current protocols are not adequate for detecting methane concentrations, even without gaming the system, something that is not difficult to do. The test can be gamed by, for example, by performing it during periods of high barometric pressure, which suppresses gas releases.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 42, under comment code 13c.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 22

**Sort Order:** 500

**Comment Excerpt:**

**SEM Monitoring Intervals Should Not be Changed.**

We also noted that in 60.34f, EPA proposes a broad "catch all" standard of "no more than 30-meter intervals." The EPA proposes to clarify that surface emissions monitoring can be conducted at an interval less than specified in the rule text. Thus, EPA proposes to add "no more than" in front of the specified interval in proposed 40 C.F.R. part 60, subpart Cf (*i.e.*, at no more than 30-meter intervals) in 60.34f(d) and 60.35f(a)(6). This could allow states to be more stringent than both the Emission Guidelines and the NSPS in its state plans. Such ambiguity and compliance uncertainty does not meet practical enforceability standards. It is unclear what the increased cost would be for such a broad standard that could literally range from a zero to 30 meter interval. These increased costs are not factored into the regulatory impact analysis relied on in this rulemaking, although EPA did estimate costs for reduced monitoring intervals as part of its enhanced monitoring alternative. Accordingly, EPA should maintain its current approach to SEM under Subpart WWW, which provides that SEM must be conducted "at 30-meter intervals (or a site-specific established spacing)" 40 C.F.R. §60.755(c)(1).

**Comment Response:**

In the final rules, the EPA is retaining the phrase "no more than" regarding the 30-meter intervals to provide flexibility. The EPA's intent is to accommodate site-specific conditions that may warrant a smaller traverse pattern, recognizing that walking the surface of a landfill is not always feasible at exactly 30-meters. Further some state regulations, such as the California Landfill Methane Rule, specifically require shorter traverse patterns and the EPA believes submission of the results of these tighter traverse patterns would be acceptable under subparts XXX and Cf. The EPA's intent is to provide flexibility.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 17

**Sort Order:** 501

**Comment Excerpt:**

EPA proposes to change the 30-meter surface monitoring interval to "no more than" 30-meters (§ 60.34f, 60.35f and 60.36f). We believe that this change does not address any problem brought forth by either the industry or by regulators. Instead, we believe that this change will only add confusion and lead to compliance issues. Therefore, we request that EPA remove the proposed language.

**Comment Response:**



See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 22, under comment code 13c.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 18

**Sort Order:** 502

**Comment Excerpt:**

EPA should retain definite monitoring intervals.

EPA has proposed to revise the surface emissions monitoring provision in a way that could cause confusion by adding the phrase “no more than” in front of the specified interval in proposed Subpart Cf (*i.e.*, at “no more than” 30-meter intervals). EPA may have intended that revision to increase the flexibility of its monitoring requirements, by allowing landfills to monitor at narrower intervals if desired. However, Republic is concerned that the flexibility afforded by that phrase might also result in uncertainty, by allowing state regulatory authorities to demand narrower intervals on a site-specific basis without notice. Certainly, if a state wishes to require narrower intervals in its State Plan, it is authorized to do so, but describing the interval in such an indeterminate way—in either the federal regulations or any State or Federal Plan—could complicate efforts to ensure full compliance. As such, Republic asks EPA to be clearer regarding the maximum interval for SEM and confirm that monitoring at narrower intervals would be voluntary at the discretion of the landfill.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 22, under comment code 13c.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 16

**Comment Excerpt:**

A reduction in the traverse spacing of surface emission monitoring from 30 meters to 25 feet would be a good way to check for defects in a composite cap. However, once cap repairs have been done for defects and seeps, it seems unreasonable to keep doing surface surveys of the capped area on the same frequency without visible evidence of cap disruption.

Surveys on the capped areas of landfills should be required twice annually, in spring and fall, and with potential for reduction to annually once a record of lack of detectable emissions is established for the capped area. Spring and fall monitoring would avoid some of the worst effects

of winter, due to snow cover, ice, and cold weather effects on equipment and technicians, and summer, due to heat, ticks (Lyme disease potential, etc.), and tall grass as well as other growth that may interfere with instrument use.

**Comment Response:**

Regarding the final decision on traverse pattern, see response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c.

In the final rule, the EPA is maintaining a quarterly frequency for surface emissions monitoring unless the entire landfill is closed. However, the change in frequency is limited to closed landfills to be environmentally protective, since emissions from closed landfills are on the downward side of their gas curves. The final rule at 60.766(f) provides the following: Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

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**Commenter Name:** Comment submitted by Paul Aud, Environmental Engineering Manager  
**Commenter Affiliation:** Louisville Metro Air Pollution Control District (APCD)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0091.1  
**Comment Excerpt Number:** 4

**Comment Excerpt:**

The EPA should establish some requirements for maintaining intervals during enhanced surface monitoring (SEM). As an alternative, the EPA should require that the GCCS plan submitted for approval should include a SEM plan, which uses GPS equipment, survey stakes at equal intervals, perimeter landmarks, etc., to maintain intervals, not just human judgment. In either case, the landfill operator should be required to notify agency in advance of when the SEM will be performed to allow the agency to have the opportunity to be present to witness.

**Comment Response:**

In the final rule, owners or operators must submit a surface emissions monitoring plan, consistent with 40 CFR part 60, subpart WWW. Specifically, a surface monitoring design plan must be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30-meter intervals. Because GPS technology is readily available, landfills commonly use GPS when conducting surface emissions monitoring. The EPA and delegated authorities have general authority under the CAA to observe performance testing and monitoring such as surface emissions monitoring, as well as to request and inspect associated records. In addition, the location of each exceedance of the SEM must be recorded using an instrument with accuracy of at least 4 meters, to at least five decimal places.

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**Commenter Name:** Ali Mirzakhali, Director  
**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 14

**Comment Excerpt:**

Explicitly state that walking is required when performing SEM. Many facilities perform this monitoring from all-terrain vehicles. Doing so reduces the effectiveness of the monitoring by:

- a. Increasing the air turbulence as readings are taken;
- b. Reducing the time that the monitoring equipment is present at any given location to take a sample; and
- c. Limiting the ability of the technician to be cognizant of the surrounding as he/she is working.

**Comment Response:**

The final rule at 60.765(c)(3) that surface emission monitoring must be performed in accordance with section 8.3.1 of Method 21 of appendix A of this part, except that the probe inlet must be placed within 5 to 10 centimeters of the ground. The quarterly surface monitoring is not intended to be conducted from any type of moving vehicle. The EPA agrees with the points made by the commenter. Among other concerns, the EPA believes that it would be impossible to hold the probe at a steady 5 to 10 centimeters at the response time necessary to get an accurate reading above the surface of the landfill while in a moving vehicle. For that and other reasons, the EPA is clarifying that the quarterly surface monitoring must be conducted on foot.

### **13.5 Enhanced Surface Monitoring-Integrated Reading**

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 56

**Sort Order:** 100

**Comment Excerpt:**

*Adding Integrated Monitoring Does Not Deliver Significant Benefits Over Instantaneous Monitoring.* In addition to the surface walking required to detect instantaneous methane exceedances above 500 ppmv, the CA LMR also requires landfills to conduct integrated surface monitoring. To implement this requirement, every landfill must divide its surface area into 50,000 foot grids and integrate the surface monitoring results across each grid. Any integrated grid-level methane concentration of 25 ppmv or more is an exceedance.

Because the current NSPS/EG does not require integrated monitoring, it is not possible to conduct a before- and after-LMR comparison. The available data, however, indicate that integrated exceedances were detected in 2.1% of the grids monitored, and 0.6% of grids monitored were required to expand. In all, six landfills triggered the 120-day expansion requirement, and five of these landfills expanded. Three of these five landfills had previously been identified through instantaneous monitoring, however, which implies that the incremental benefit of integrated monitoring was expansion at two additional landfills.

We cannot know, however, whether the fundamental reason for expansion was solely the CA LMR integrated monitoring results, or whether the GCCS expansions were already planned. In the preamble of the proposed NSPS, EPA explains that it “does not expect that requiring an integrated methane concentration would add significant cost because landfills could use the same instrument that they currently use for the instantaneous readings and these instruments can be programmed to provide an integrated value as well as an instantaneous value.” 79 Fed. Reg. 41823 In fact, it is our experience that many landfill owner/operators conduct integrated monitoring during a second pass of the landfill, and thus are incurring significant additional expense.

Furthermore, EPA reviewed and rejected integrated surface monitoring in developing the 1996 NSPS for landfills, and there appears to be no reason to alter that conclusion. In the November 1998 Questions and Answers prepared by EPA for NSPS MSW Landfills, EPA specifically explained that based on its regulatory analysis integrated surface monitoring was not appropriate:

“The rule is based on point sampling because the purpose of the testing is to determine where the landfill gas collection system is insufficiently designed or operated. With point sampling the location of the landfill gas emissions is pin-pointed so that the adjacent well vacuum can be adjusted, cover maintenance can be performed, or additional wells can be installed. Integrated sampling provides an average value over an area. This averaging could mask areas of poor system performance by dilution. In addition, integrated sampling has a much lower action level and is more an indicator of emission rate than system performance. Since the purpose of the testing is to identify locations of poor system performance, integrated testing is not indicated.”

Neither the proposed rule nor the ANPRM provides any analysis to support a change in EPA’s position on integrated monitoring versus point sampling as the appropriate means to verify system performance.

We were unable to find any data or technical analysis in the docket that supports a conclusion that the California LMR monitoring regime is reducing emissions. Given the additional burden associated with integrated monitoring, and the modest results, Republic opposes adopting this approach under the proposed NSPS.

#### **Comment Response:**

In the final rule, the EPA is not adding an integrated reading of 25 ppm for surface emissions monitoring. The EPA agrees with commenters obtaining an integrated reading does not result in significant benefits over the instantaneous monitoring already required by the rules. The available data suggest that adding an integrated reading to the exceedance criteria (at or above 25 ppm) identified minimal additional exceedances. For these additional exceedances, the EPA was not able to determine the magnitude of emission reductions that might result from enhanced surface emissions monitoring (i.e., an integrated reading). In addition, commenters did not submit data or information to demonstrate that emission reductions would result from conducting surface monitoring at a 25-ft traverse pattern.

Two commenters (EPA-HQ-OAR-2003-0215-0099.1, EPA-HQ-OAR-2003-0215-0100.1) commissioned a study to compare the level of effort and monitoring results of the CA LMR to the SEM requirements under the current NSPS (A Comparison of Monitoring Results for California Landfills Under the New Source Performance Standards and the California Landfill

Methane Rule, October 2014). The EPA examined the data supporting the study as provided by one of the commenters (Analysis of Surface Monitoring Exceedances from California Landfills Under the New Source Performance Standards and the California Landfill Methane Rule, Docket EPA-HQ-OAR-2014-0451). The data allowed for direct comparison of exceedance data from 29 landfills, although for different time periods. The study and supporting data provide evidence of greater exceedances identified under the California approach (which includes a 25-ft traverse pattern and an integrated reading) than the current approach. However, the EPA was unable to determine the magnitude of emission reductions that might result from the greater exceedances under the California approach. See the docketed memorandum entitled “Analysis of Surface Exceedances from California Landfills under the New Source Performance Standards and the California Landfill Methane Rule” (EPA-HQ-OAR-2014-0451-0140).

The EPA acknowledges that point sampling is more effective approach for surface emissions monitoring, as described in the 1998 Questions and Answers document. Obtaining an instantaneous reading (point sampling) is more effective in determining where the landfill gas collection system is not designed or operated to minimize surface emissions of landfill gas. By identifying a specific location of surface emissions, point sampling enables the owner or operator to adjust adjacent wells, install additional wells, or perform cover maintenance where the surface emissions are occurring. The EPA agrees with commenters that some additional cost would be incurred by owners and operators, in the form of handling additional data handling at a minimum. Given the potential additional cost burden and the small number of exceedances identified in the data submitted by commenters, the EPA is not finalizing an integrated reading in the landfills rules.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 162

**Sort Order:** 101

**Comment Excerpt:**

Adding integrated monitoring does not deliver significant benefits over instantaneous monitoring. In addition to the surface walking required to detect instantaneous methane exceedances above 500 ppmv, the CA LMR also requires landfills to conduct integrated surface monitoring. To implement this requirement, every landfill must divide its surface area into 50,000 foot grids and integrate the surface monitoring results across each grid. Any integrated grid-level methane concentration of 25 ppmv or more is an exceedance.

Because the current NSPS/EG does not require integrated monitoring, it is not possible to conduct a before- and after-LMR comparison. The available data, however, indicate that integrated exceedances were detected in 2.1% of the grids monitored, and 0.6% of grids monitored were required to expand. In all, six landfills triggered the 120-day expansion requirement, and five of these landfills expanded. Three of these five landfills had previously been identified through instantaneous monitoring, however, which implies that the incremental benefit of integrated monitoring was expansion at two additional landfills. We cannot know,

however, whether the fundamental reason for expansion was solely the CA LMR integrated monitoring results, or whether the GCCS expansions were already planned.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 164

**Sort Order:** 102

**Comment Excerpt:**

Furthermore, EPA reviewed and rejected integrated surface monitoring in developing the 1996 NSPS for landfills, and there appears to be no reason to alter that conclusion. In the November 1998 Questions and Answers prepared by EPA for NSPS MSW Landfills, EPA specifically explained that based on its regulatory analysis integrated surface monitoring was not appropriate:

"The rule is based on point sampling because the purpose of the testing is to determine where the landfill gas collection system is insufficiently designed or operated. With point sampling the location of the landfill gas emissions is pin-pointed so that the adjacent well vacuum can be adjusted, cover maintenance can be performed, or additional wells can be installed. Integrated sampling provides an average value over an area. This averaging could mask areas of poor system performance by dilution. In addition, integrated sampling has a much lower action level and is more an indicator of emission rate than system performance. Since the purpose of the testing is to identify locations of poor system performance, integrated testing is not indicated."

Neither the proposed rule nor the ANPRM provides any analysis to support a change in EPA's position on integrated monitoring versus point sampling as the appropriate means to verify system performance. Given the additional burden associated with integrated monitoring, and the modest results, WM opposes adopting this approach under the proposed NSPS.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 31

**Sort Order:** 103

**Comment Excerpt:**

EPA responded to commenters on the issue of integrated methane concentration in November 1998 in its *Municipal Solid Waste Landfill New Source Performance Standards (NSPS) and Emission Guidelines (EG) – Questions and Answers* by stating that point sampling is used to determine where the GCCS is insufficiently designed or operated. Integrated sampling could mask areas of poor performance by dilution and is also more an indicator of emission rate than system performance. We agree with EPA's original assessment that point sampling provides a direct method of pin-pointed areas that need attention and therefore, we recommend maintaining the SEM criteria utilized in Subpart WWW.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter—DCN-EPA-HQ-OAR-2003-0215-0196, page 7. See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Curt Publow  
**Commenter Affiliation:** Decatur Hills Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1  
**Comment Excerpt Number:** 5  
**Sort Order:** 104

**Comment Excerpt:**

*USEPA has requested comments on potential modifications to two other aspects of surface emission monitoring: 1) reducing the spacing of the traverse pattern from 30 meters to 25 feet; and 2) measuring integrated concentrations of methane in discrete sections of the landfill. In previous documents USEPA has considered surface emission monitoring to be an indicator of the adequacy of GCCS design and performance and has said that the use of integrated measurements could inhibit the detection of poorly performing areas within the GCCS. All of the suggested modifications to the current criteria will significantly increase the time to complete surface scans without providing any significant reduction in emissions.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems  
**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1  
**Comment Excerpt Number:** 25  
**Sort Order:** 105

**Comment Excerpt:**

The rule is based on point sampling because the purpose of the testing is to determine where the landfill gas collection system is insufficiently designed or operated. With point sampling the location of the landfill gas emissions is pin-pointed so that the adjacent well vacuum can be adjusted, cover maintenance can be performed, or additional wells can be installed. Integrated sampling provides an average value over an area. This averaging could mask areas of poor system performance by dilution. In addition, integrated sampling has a much lower action level and is more an indicator of emission rate than system performance. Since the purpose of the testing is to identify locations of poor system performance, integrated testing is not indicated. Regarding the second suggested option, a consistent extraction rate would not work because landfill gas production is a dynamic process that is not consistent in all areas. Also, cracks and fissures can occur at any time and would result in emissions that would not be detected or corrected by maintaining a constant extraction rate. (p. 36)

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 18

**Sort Order:** 106

**Comment Excerpt:**

The State of Delaware has not seen any data to demonstrate the usefulness of integrated SEM. Additionally, we are concerned about the ability for facilities to adequately demonstrate compliance with this monitoring requirement. The strength of SEM lies in its ability to "pinpoint" locations of excess emissions. Integrated monitoring runs counter to this.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 9

**Sort Order:** 107

**Comment Excerpt:**



EPA requests additional comments on a tighter walking pattern for SEM (25-foot spacing) and the addition of integrated monitoring of methane concentrations, similar to those contained within the California LMR. EPA responded to commenters on the issue of integrated methane monitoring in November 1998 in its *Municipal Solid Waste Landfill New Source Performance Standards (NSPS) and Emission Guidelines (EG) – Questions and Answers* by stating that point sampling is used to determine where the GCCS is insufficiently designed or operated. Integrated sampling could mask areas of poor performance by dilution and is also more an indicator of emission rate than system performance. We agree with EPA's 1998 assessment that point sampling provides a direct method of pin-pointing areas that need attention and therefore, we recommend maintaining the SEM criteria utilized in Subpart WWW and contained within the proposed Subpart Cf rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 7

**Sort Order:** 108

**Comment Excerpt:**

NACAA does not support the addition of integrated SEM to the rule. We have not seen data to indicate the usefulness of this monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Sheila Holman, Director, Division of Air Quality

**Commenter Affiliation:** North Carolina Department of Environment and Natural Resources (NCDENR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0089.1

**Comment Excerpt Number:** 6

**Sort Order:** 109

**Comment Excerpt:**

EPA is requesting comment on the addition of a methane concentration limit of 25 ppm as determined by integrated surface emissions monitoring.

DAQ believes this would be an ineffective way to prevent excess emissions from landfill. Typically, excess emissions occur from a small crack of landfill cover, and this emission may not be detected at the surrounding monitoring locations. If the concentration values are averaged by

all the monitoring points in the 50,000 square foot grids, the average concentration may still be under 25 ppm even if there were one location where abnormal methane concentration was measured.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 50

**Sort Order:** 110

**Comment Excerpt:**

**Integrated surface monitoring should not be used.** As discussed, air measurements are presently taken about every 100 feet across the landfill surface (except that measurements are usually not taken at all on the working face, where fugitive emissions are substantially greater) to determine whether methane measurements exceed 500 ppm. EPA seeks comment on whether it should lower this level to an integrated, average rate for methane of 25 ppm.

Pollution regulators have long opposed attempts to make the thresholds for violations and corrective actions dependent on averaging local air measurements because averaging can obscure localized peak emissions that independently pose threats to public health.<sup>62</sup> In the case of carbon emissions in landfills, most of the landfill's total methane emissions will come from hot spots correlated to tears in the cover. Because there are far fewer hot spots than total air tests along the grid, the integrated rate will, by definition, grossly understate the aggregate GHG emissions.

[Footnote]

<sup>62</sup> See generally, California Environmental Protection Agency, *Air Toxics Hot Spots Program Risk Assessment Guidelines Part I The Determination of Acute Reference Exposure Levels for Airborne Toxicants* (March 1999) (attached).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1

**Comment Excerpt Number:** 5

**Sort Order:** 111

**Comment Excerpt:**

Foth and the BOW Group also do not support a methane limitation of 25 ppm as determined by integrated SEM. The vast majority of exceedances occur at cover penetrations which are point sources, and integrated SEM would provide little benefit in reducing methane emissions from the landfill cover.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0089.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills

**Document Control Number:** EPA-HQ-OAR-2014-0451-0145

**Comment Excerpt Number:** 4

**Sort Order:** 112

**Comment Excerpt:**

Foth and the BOW Group do not support discussion of a methane limitation of 25 ppm as determined by integrated SEM. As discussed previously, many exceedances occur at cover penetrations which are point sources, and integrated SEM would provide little benefit in reducing methane emissions from the landfill cover.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 21

**Sort Order:** 113

**Comment Excerpt:**

USEPA has requested comments on potential modifications to two other aspects of surface emission monitoring: 1) reducing the spacing of the traverse pattern from 30 meters to 25 feet; and 2) measuring integrated concentrations of methane in discrete sections of the landfill. In previous documents USEPA has considered surface emission monitoring to be an indicator of the adequacy of GCCS design and performance and has said that the use of integrated measurements could inhibit the detection of poorly performing areas within the GCCS. All of the suggested modifications to the current criteria will significantly increase the time to complete surface scans without providing any significant reduction in emissions. A well operated facility GCCS will exhibit vast areas of the landfill with negligible methane concentration, this is logical

and is the reason why background is determined upstream and downstream of the landfill. The typical surface scan on a facility with a standard GCCS results in vast areas of the landfill exhibiting nearly negligible methane concentrations and an occasional "leak" which can be quickly tagged and corrected.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 15

**Sort Order:** 114

**Comment Excerpt:**

DEQ questions the value of adding an integrated surface emissions monitoring criteria of an average methane emission rate of 25 ppm over background over a 50,000 square foot grid in addition to the 500 ppm methane instantaneous measure currently used. 25 ppm seems very low. In areas where windy conditions prevail, such as Oklahoma, instruments may have difficulty consistently detecting low level surface emissions and therefore, the additional monitoring cost will provide little to no additional value over existing methods.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Paul Aud, Environmental Engineering Manager

**Commenter Affiliation:** Louisville Metro Air Pollution Control District (APCD)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0091.1

**Comment Excerpt Number:** 7

**Sort Order:** 115

**Comment Excerpt:**

APCD commends the EPA's proposal to reduce the methane limit to 25 ppm as determined by integrated surface emissions monitoring in addition to the 500 ppm limit determined by instantaneous surface emission monitoring for SEM. This proposed limit will significantly reduce fugitive emissions and will hopefully be finalized.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 10

**Sort Order:** 116

**Comment Excerpt:**

We support the addition of a methane concentration limit of 25 parts per million (ppm) integrated over each 50,000 foot square grid, in addition to the existing 500 ppm limit for concentrations at any given point. If landfill covers do not keep levels of escaping methane below 25 ppm, the rule will not achieve its major objective of significantly curbing greenhouse gas emissions. Ideally, landfill owners will find the revenue from generating electricity attractive enough to make close monitoring a priority rather than a mere duty. But in any event, marginal incremental cost should not be a deterrent to tightening the monitoring requirement, as it is key to the rule's effectiveness

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099, excerpt number 56, under comment code 13d.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 3

**Sort Order:** 117

**Comment Excerpt:**

KDAQ agrees that an integrated methane concentration measurement at the surface is needed in addition to the 500 ppm standard currently in place. KDAQ requests that when surface concentration readings are below the detection limit of the scanning equipment, that the readings be assumed to be at the detection limit when calculating the integrated concentration. This assumption will encourage accuracy when evaluating compliance with the newly emphasized surface concentration standard.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 25

**Sort Order:** 200

**Comment Excerpt:**

EPA's current regulations do not include an integrated surface concentration limit. Integrated surface concentration readings have been shown to correlate with landfill gas capture efficiencies, and are considered a far better indicator of gas capture system performance than instantaneous concentration readings alone.<sup>42</sup> Moreover, EPA notes in the proposed NSPS that an integrated surface concentration reading would entail no additional monitoring costs, because the portable vapor analyzers used for surface monitoring are typically equipped with data loggers that enable integrated readings. Accordingly, EDF believes that the NSPS and emission guidelines revisions should include an integrated surface concentration limit similar to the California LMR.

[Footnotes]

(42) See Jeffrey L. Pierce and Alex Stege, *Measurement and Characterization of Landfill Gas Surface Emissions at Landfills With Soil Covers* (WASTECON 2002), available at [http://www.scsengineers.com/Papers/WasteCon%20\(10-02\)%20Surface%20Emissions-Soil%20Covers.doc](http://www.scsengineers.com/Papers/WasteCon%20(10-02)%20Surface%20Emissions-Soil%20Covers.doc).

**Comment Response:**

The link to the reference provided by the commenter is no longer available at the website; however, additional, and more recent, research, as noted in the response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d on integrated readings has been published since the 2002 paper referenced by the commenter.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 22

**Sort Order:** 201

**Comment Excerpt:**

EDF supports an integrated surface concentration limit that will ensure *average* emissions are minimized across the landfill surface.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 25, under comment code 13d.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 25

**Sort Order:** 202

**Comment Excerpt:**

Per our previous comments, we also strongly support the adoption of the integrated surface concentration limit described in EPA's alternative surface monitoring approach. Integrated surface concentration readings have been shown to correlate well with landfill gas capture efficiencies, and are considered a far better indicator of gas capture system performance than instantaneous concentration readings alone.<sup>71</sup> Moreover, EPA notes in the proposed EG that an integrated surface concentration reading would entail no additional monitoring costs, because the portable vapor analyzers used for surface monitoring are typically equipped with data loggers that enable integrated readings.<sup>72</sup>

[Footnote 71] See Jeffrey L. Pierce and Alex Stege, *Measurement and Characterization of Landfill Gas Surface Emissions at Landfills With Soil Covers* (WASTECON 2002), available at [http://www.scsengineers.com/Papers/WasteCon%20\(10-02\)%20Surface%20Emissions-Soil%20Covers.doc](http://www.scsengineers.com/Papers/WasteCon%20(10-02)%20Surface%20Emissions-Soil%20Covers.doc).

[Footnote 72] 80 Fed. Reg. at 52,137.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 25, under comment code 13d.

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## 13.6 Enhanced Surface Monitoring- Wind Speeds

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 18

**Sort Order:** 100

**Comment Excerpt:**

We understand the need to obtain valid surface emissions measurements, but we caution that the proposed wind speed limitation of less than 5 mph may not be practical. In Wisconsin, most landfill surface emissions monitoring is conducted by dedicated sampling crews or technicians from engineering consulting firms. They visit their client landfills on scheduled dates and for specific time frames. Requiring technicians to wait until onsite wind speeds are less than 5 mph would be highly objectionable, particularly if the wait resulted in increased fees. If a crew was working and wind speed changes, they would be reluctant to stop. Wind can change quickly due to passing fronts, can vary on one side versus an opposite side of a landfill, and usually there will be higher wind speeds at higher elevations on a landfill. Guidance will be needed on how to address these situations if the decision by operators or consultants to do the survey has to comply

with wind speed limits. If there are ways to mitigate the effects of wind on the accuracy of surface measurements, these should be taken into account in setting a wind speed limitation.

**Comment Response:**

For quarterly surface emissions monitoring, which are required at hundreds of landfills subject to control requirements in the final rules, the EPA is not promulgating specific wind speed restrictions and instead is requiring monitoring to be conducted during “typical meteorological conditions.” The EPA appreciates and recognizes the commenters noting the typical average wind speeds in various parts of country that exceed the proposed average wind speed restriction (5 mph) for larger parts of the year. The EPA also recognizes the practical limitations and potential costs associated with scheduling and rescheduling sampling crews. Therefore, the EPA is requiring quarterly surface emissions monitoring to be conducted during typical meteorological conditions, consistent with 40 CFR part 60, subpart WWW.

However, despite public comments concerned with wind speed restrictions and implementation of the Tier 4 surface emissions demonstration, the EPA is retaining a wind speed limitation for Tier 4. See Section VI.B of the NSPS Final Preamble. See Section VI.B of the 2016 EG Final Preamble.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 23

**Sort Order:** 101

**Comment Excerpt:**

DSWA is very concerned that incorporating the wind restriction will severely limit the ability of landfill owners to complete the required monitoring. DSWA understands that most facilities in California have requested a waiver for the wind restriction. Delaware, along with most of the United States of America, experiences weather patterns that are much more variable than those in California. The existing rule directs landfill owners to perform SEM during "typical meteorological conditions." This is the best way to handle the varied weather experienced by facilities Nationwide. The purpose of the SEM is to gauge system performance therefore the testing should be performed in conditions that are typical.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1



**Comment Excerpt Number:** 8

**Sort Order:** 102

**Comment Excerpt:**

The Division supports EPA's continued use of surface emissions monitoring but is concerned that the alternative wind requirement will be difficult for certain areas of the country, such as Colorado, to meet. The Division requests that EPA consider regional wind patterns before establishing a wind limitation for surface monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 17

**Sort Order:** 103

**Comment Excerpt:**

DEQ is not in favor of creating a prohibition against conducting surface monitoring during conditions in which the average wind speed is 5 mph with instantaneous wind speeds of 10 mph. Oklahoma weather conditions would make acceptable monitoring conditions rare under these criteria. DEQ believes it would be difficult for Oklahoma landfills to comply with the required monitoring frequency if these criteria were established.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 167

**Sort Order:** 104

**Comment Excerpt:**

Adding meteorological requirements to the national monitoring regime is costly and impractical. The CA LMR also includes a prescription against sampling when there has been measurable precipitation in the last 72 hours, although EPA does not mention this in its request for comments. Our experience indicates these requirements are very difficult to meet in California. Since major monitoring events are usually planned weeks in advance, the prescriptive requirements are costly in terms of mobilizing and demobilizing sampling technicians, and hinder implementation of needed monitoring. We are very concerned with the notion that EPA

might apply these one-size-fits-all meteorological requirements to all 50 states. Climate conditions across the U.S. are simply too variable to support these sampling prescriptions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 57

**Sort Order:** 105

**Comment Excerpt:**

*Adding Meteorological Requirements to the National Monitoring Regime is Costly and Impractical.* The prescriptive wind speed requirement presents a similar concern in the mid-west, where a wind speed requirement would be a severe hindrance to our routine monitoring. We strongly oppose these prescriptive requirements and urge EPA not to adopt them at the federal level. They are unworkable in California and the situation would be worse if they were applied nationwide. The current language in the NSPS to sample during normal meteorological conditions works well.

Nearly 73 percent of the sites evaluated in the SCS analysis required a permanent variance from the wind speed requirement, and this for only one state.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by Matt Lamb

**Commenter Affiliation:** Smith Gardner, Inc

**Document Control Number:** EPA-HQ-OAR-2003-0215-0083

**Comment Excerpt Number:** 7

**Sort Order:** 106

**Comment Excerpt:**

The proposed rule would limit the ability to monitor on days when the average wind speed is above 5 miles per hour. There is typically a fair amount of coordination associated with surface emissions monitoring involving rental equipment and consultant/technicians. If monitoring is unable to be performed as planned additional equipment and personnel cost related to the lost day may be incurred.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch  
**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1  
**Comment Excerpt Number:** 6  
**Sort Order:** 107

**Comment Excerpt:**

Foth and the BOW Group also do not support limiting SEM events to when average wind speed is below 5 miles per hour or the instantaneous wind speed exceeds 10 miles per hour. Given that landfills are often high points topographically in a given area, these wind speed requirements would extremely limit the potential days that SEM events could take place. In particular, 10-day and 1-month re-monitoring events could be missed due to wind speed limitations. Also, many exceedances take place at point sources like cover penetrations, where measurements are not significantly affected by higher wind speeds.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Jeffrey Vandebusch  
**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0145  
**Comment Excerpt Number:** 5  
**Sort Order:** 107

**Comment Excerpt:**

Foth and the BOW Group do not support discussion of limiting SEM events to when average wind speed is below 5 miles per hour or the instantaneous wind speed exceeds 10 miles per hour. Given that landfills are often high points topographically in a given area, these wind speed requirements would extremely limit the potential days that SEM events could take place. In particular, 10-day and 1-month re-monitoring events could be missed due to wind speed limitations. Also, many exceedances take place at point sources like cover penetrations, where measurements are not significantly affected by higher wind speeds.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity  
**Commenter Affiliation:** Friends of the Earth  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 59

**Sort Order:** 108

**Comment Excerpt:**

The agency itself noted that wind conditions also can significantly skew results.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by Sheila Holman, Director, Division of Air Quality

**Commenter Affiliation:** North Carolina Department of Environment and Natural Resources (NCDENR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0089.1

**Comment Excerpt Number:** 7

**Sort Order:** 109

**Comment Excerpt:**

DAQ is concerned with additional monitoring and recordkeeping requirements of wind speed associated with this proposal. To ensure compliance with this rule, the facility must monitor and record wind speed every time they measure methane surface concentrations. In addition, the landfills could experience additional costs when the wind speed exceeds the limit which interrupts the completion of the monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 18

**Sort Order:** 110

**Comment Excerpt:**

EPA requested comments on establishing a maximum wind speed for SEM. According to the SCS study on the LMR, nearly 73% of sites following the LMR required permanent variances for wind speed. This shows that the wind speed limitations are not reasonable. We have included additional comments on wind speed under the Tier 4 discussion. Those comments apply to this section as well, so the EPA should not consider wind speed requirements under the standard quarterly SEM under the rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 44

**Sort Order:** 111

**Comment Excerpt:**

We do not recommend utilizing wind criteria for SEM. In response to EPA's request for comments on prohibiting SEM when wind speeds exceed 5 mph, and instantaneous wind speeds exceed 10 mph, we refer EPA to the comments included under Tier 4 for installation. In addition, we would like to clarify that 5 mph average wind speed would not be considered "windy" – according to the Beaufort wind scale, it is considered a light breeze. Further, EPA has provided no evidence whether such a light breeze would affect SEM results and by how much.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Marc C. Bruner, Chief Administrative Officer

**Commenter Affiliation:** Solid Waste Authority of Palm Beach County Florida (SWA)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0149

**Comment Excerpt Number:** 1

**Sort Order:** 112

**Comment Excerpt:**

We believe that not allowing surface monitoring when the average wind speed exceeds 5 miles per hour (mph) or the instantaneous wind speed exceeds 10 mph will create significant operational and compliance burdens for the SWA.

Based on 70 years of location-specific data from the Southeast Regional Climate Center (<https://www.sercc.com/climateinfo/historical/avgwind.html>), the average wind speed in West Palm Beach Florida exceeds 10 mph for 7 months of the year (January, February, March, April, October, November, December), and is 9.9 mph in the month of May. In no month is the average wind speed 5 mph or less. Our landfill is located in West Palm Beach, approximately six miles from the Atlantic Ocean, and is considerably higher in elevation than the surrounding landscape. For that reason, the landfill is significantly exposed to the prevailing south and southeast winds.

Our concern with this provision is that we may not be able to complete surface monitoring on a timely and effective basis if the wind speed limitations are imposed. The logistical challenges of having to delay monitoring until wind speeds are less than 5 mph, and to start and stop

monitoring activities when speeds exceed 10 mph could mean that landfill sweeps which now take hours to accomplish could take days, if they can be accomplished at all.

In many months it is possible that wind speeds may exceed 5 mph for the entire month. Wind speeds could exceed 5 mph for an entire quarter. There is no indication of what the regulatory or compliance consequences to a landfill operator would be if a quarterly sweep could not be accomplished due to high winds.

Operationally, crews may have to be mobilized on an on-call basis, required to be on standby if winds exceeded 5 mph, but responding immediately on a day when winds are forecast to be below that speed. Depending on the quarter and the circumstances, we may be sweeping up to 196 acres of landfill, and delaying the start of a sweep until the wind is below 5 mph, and suspending the sweep when the speed exceeds 10 mph could be challenging, or impossible. The costs of sweeping would be dramatically increased.

It is true that winds often decrease at night, but the safety risks of trying to conduct landfill sweeps at night when winds are calmer would be unacceptable to us. The logistics of conducting the sweeps at night could be extremely challenging, to the point of being hazardous.

The SWA believe that if this provision were adopted, we would be at risk for being unable to comply, or that the effort to comply would greatly increase our costs and potentially compromise worker safety.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 32

**Sort Order:** 113

**Comment Excerpt:**

***In the proposed rule, USEPA discussed whether it would be advantageous to add a wind restriction to the SEM requirements.***

We do not support the addition of a wind restriction to SEM requirements. This would be an unnecessary burden on planning of required monitoring, especially at closed landfills where operations personnel are not on site all day, every day. Site personnel schedule SEM events at typical conditions where excessive winds are not present. A wind restriction could result in many instances where personnel cannot complete parts of a scan and the facility could incur huge costs unnecessarily, this will make it more difficult for facilities to meet the quarterly SEM requirements if they have to wait for the weather to cooperate. This is yet another location where the USEPA almost appears to believe the industry is gaming the systems. USEPA must realize that the industry is merely trying to keep up with all the requirements. There are so many other variables that must be controlled that such an approach would gain them nothing.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 12

**Sort Order:** 114

**Comment Excerpt:**

The numerical limitations on wind speed included in the State of California's Landfill Methane Rule should not be included in the NSPS/EG. The requirement to perform monitoring during "typical meteorological conditions" is at once strong and flexible. It allows facilities to judge what types of weather events are "normal". Facilities typically make adjustments to wellfield operations daily. This is necessary because LFG collection systems are affected by changes in the weather. It is important for monitoring to be performed during normal conditions so that the monitoring is reflective of normal operations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 5

**Sort Order:** 115

**Comment Excerpt:**

SEM should occur during "typical meteorological conditions." NACAA does not support the inclusion of numerical limits on wind speed in the rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 38

**Sort Order:** 116

**Comment Excerpt:**

Wind – We recommend eliminating the limitation regarding conducting SEM based on wind criteria. Instead, the criteria should be the same as SEM monitoring on a landfill with a GCCS. That is, monitoring should be performed during “typical meteorological conditions.” This eliminates concerns about performing SEM during extreme weather events. In order to evaluate the data, EPA wind data could be included with the SEM results.

The wind criteria is problematic for several reasons. First, some sites may never meet the wind criteria due to local wind conditions. In reviewing average wind speeds in the state of Texas, most all the landfills are in areas that have average winds speeds above 10 mph. The problem goes beyond Texas. According to SCS Engineers’ report “A Comparison of Monitoring Results for California Landfills under the New Source Performance Standards and the California Landfill Methane Rule,” the CA LMR includes specific wind and precipitation limits for conducting SEM monitoring. However, review of the data set indicates that these requirements have been difficult to meet. Of the sites evaluated, almost three out of four (72.6%) required a permanent alternative for wind speed due to specific site conditions.

Second, even at sites where conditions are not consistently windy, it is difficult to schedule and reschedule sampling crews for acceptable wind conditions. If notification to the regulators is required to allow for their participation, scheduling complications are further exacerbated.

Furthermore, it is unclear from the docket information if EPA evaluated the cost to install and maintain a meteorological (met) station, whether data from met stations are representative of ground level conditions (i.e., 5 to 10 centimeters from the landfill surface), and whether winds at these levels actually affect SEM results and, if so, by how much.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** William C. Allison V, Director, Air pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2014-0451-0163

**Comment Excerpt Number:** 8

**Sort Order:** 117

**Comment Excerpt:**

The Division requests that EPA establish a wind speed that is appropriate, considering the physical limits of the monitoring technique, during windy conditions, as defined in the proposed alternative, rather than require a case-by-case wind-alternative approval from EPA or the State Air Pollution Control Agency. Colorado, along with other western states, often have windy conditions in excess of 5 mph for extended periods of time and defining an appropriate, alterantive wind speed is a difficult decision considering the cost of a GCCS. The Division suggests EPA consider setting a wind speed limit that is the same as the wind speed limit allowed under Method 21 or as specified for the use of a portable monitor, or retain the "typical meterological conditions" standard.



**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 58

**Sort Order:** 118

**Comment Excerpt:**

The CA LMR also includes a prescription against sampling when there has been measurable precipitation in the last 72 hours, although EPA does not mention this in its request for comments. Our experience indicates these requirements are very difficult to meet in California. Since major monitoring events are usually planned weeks in advance, the prescriptive requirements are costly in terms of mobilizing and demobilizing sampling technicians, and hinder implementation of needed monitoring. We are very concerned with the notion that EPA might apply these one-size-fits-all meteorological requirements to all 50 states. Climate conditions across the U.S. are simply too variable to support these sampling prescriptions.

Due to drought conditions, the precipitation requirement did not prompt variance requests in California. Nonetheless, a “no precipitation” requirement would make routine SEM in the Southeast extremely difficult, where it can often rain nearly every day in the warmer months.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 168

**Sort Order:** 119

**Comment Excerpt:**

Nearly 73 percent of the Sites evaluated in the SCS analysis required a permanent variance from the wind speed requirement, and this for only one state. Due to drought conditions, the precipitation requirement did not prompt variance requests in California. Nonetheless, we can only imagine how difficult routine SEM would be in the Southeastern portion of the country if a requirement of no measurable precipitation were to be applied. It rains nearly every day in the warmer months. We have the same concern for the prescriptive wind speed requirement. We have a significant number of landfills in the mid-west and the wind speed requirement would be a severe hindrance to the conduct of our routine monitoring. We strongly oppose these prescriptive requirements and urge EPA not to adopt them at the federal level. They are

unworkable in California and the situation would be worse if they were applied nationwide. The current language in the NSPS to sample during normal meteorological conditions works well.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 32

**Sort Order:** 120

**Comment Excerpt:**

EPA requested comments on establishing a maximum wind speed for SEM. According to SCS, nearly 73% of sites following the LMR required permanent variances for wind speed. This shows that the wind speed limitations are not reasonable.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 43

**Sort Order:** 121

**Comment Excerpt:**

**We reiterate and provide additional information that limiting monitoring of surface emissions** only when the average wind speed is five miles per hour or lower, or the instantaneous wind speed is below 10 miles per hour is not technically feasible for most sites. We again are very concerned that EPA might apply these one-size-fits-all meteorological requirements to all sites. Climate conditions across the U.S. are simply too variable to support these sampling prescriptions. As we previously stated, almost 75 percent of the sites evaluated in the SCS LMR comparison report required a permanent variance from the wind speed requirement, and this for only one state. California and other states have challenges with these requirements, as reflected in their respective comment letters.<sup>13</sup> We strongly oppose these prescriptive meteorological requirements and urge EPA not to adopt them at the federal level. They are unworkable in California and the situation would be worse if they were applied nationwide, as reflected in the various state agency and waste authority comment letters. The current language in the NSPS to sample during normal meteorological conditions works well.

[Footnote 13] See Docket ID Numbers EPA-HQ-OAR-2014-0451-0033, EPA-HQ-OAR-2014-0451-0149, EPA-HQ-OAR-2003-0215-0125.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 42

**Sort Order:** 122

**Comment Excerpt:**

Wind – We recommend eliminating the limitation regarding conducting SEM based on wind criteria. Instead, the criteria should be the same as SEM monitoring on a landfill with a GCCS. That is, monitoring should be performed during "typical meteorological conditions." This eliminates concerns about performing SEM during extreme weather events. In order to evaluate the data, EPA wind data could be included with the SEM results.

As we previously commented, it is difficult to schedule and reschedule sampling crews for acceptable wind conditions and some sites may never meet such criteria due to local wind conditions. If notification to the regulators is required to allow for their participation, scheduling complications are even further exacerbated. Many similar comments were expressed last year and this year from both regulators and the regulated community, including: Colorado, North Carolina, Oklahoma, Wisconsin and Palm Beach Solid Waste Authority. They too, express the impracticalities of this requirement.

According to SCS Engineers report "A Comparison of Monitoring Results for California Landfills under the New Source Performance Standards and the California Landfill Methane Rule," the CA LMR includes specific wind and precipitation limits for conducting SEM monitoring. However, review of the data set indicates that these requirements have been difficult to meet. Of the sites evaluated, nearly three out of four (72.6%) required a permanent alternative for wind speed due to specific site conditions. When more than half the facilities are unable to comply with the rule as written, it seems that changes to the rule are not warranted. As such, the wind speed criteria seem misplaced if nearly three-fourths of the sites need alternatives from it. And without an allowance for an alternative, the proposed rule is much more restrictive than the CA LMR.

Further, the inlet to the instrument is required to be held at 0.04-0.10 meters above ground where wind speed is typically low. In the paper, "Modeling the Variation of Wind Speed with Height for Agricultural Source Pollution Control," wind speed data was acquired at elevations varying from 0.1 meters to 10 meters on six separate occasions. The results showed that wind speed increases with height. Winds at the lowest height, 0.1 meters were lowest, ranging from 11% to 32% of the wind speed at 10 meters. Weather station anemometers are generally located 10

meters above the ground; therefore, they are not actually representative of wind conditions where SEM is occurring.

Last, it is unclear from the docket information if EPA evaluated the cost to install and maintain a meteorological station, the accuracy of data from one as being representative of ground level conditions (i.e., 5 to 10 centimeters from the landfill surface), and whether winds at these levels actually affect SEM results and if so, by how much.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt 18, under comment code 13e.

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### **13.7 Enhanced Surface Monitoring-Reductions-Surface Monitoring**

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 26

**Sort Order:** 100

**Comment Excerpt:**

DSWA is not aware of any reports or other information that indicate that the additions to the SEM procedure result in increased LFG collection or reduction of emissions.

**Comment Response:**

The EPA is not aware of any reports or data that quantify emission reductions from enhanced monitoring (25 ft traverse, integrated reading, wind speed restrictions). Nonetheless, some environmental benefit would be realized through corrective action (surface repairs and adjustments to the GCCS), for any additional exceedances identified. See the docketed memorandum entitled “Analysis of Surface Exceedances from California Landfills under the New Source Performance Standards and the California Landfill Methane Rule” (EPA-HQ-OAR-2014-0451-0140).

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 165

**Sort Order:** 101

**Comment Excerpt:**

We were unable to find any data or technical analysis in the docket that supports a conclusion that the California LMR monitoring regime is reducing emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 26, under comment code 13g.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 35  
**Sort Order:** 102

**Comment Excerpt:**

All of the suggested [SEM] modifications to the current criteria will significantly increase the time to complete surface scans without providing any significant reduction in emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 26, under comment code 13g.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO  
**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0196  
**Comment Excerpt Number:** 15  
**Sort Order:** 103

**Comment Excerpt:**

The docket for the proposed rule has no data or technical documentation showing any emissions reductions that could be achieved through this enhanced monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 26, under comment code 13g.

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**13h. Surface Monitoring: Costs**

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney  
**Commenter Affiliation:** Environmental Defense Fund (EDF)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1  
**Comment Excerpt Number:** 26  
**Sort Order:** 100

**Comment Excerpt:**

*Options for Reducing Monitoring Costs.* EPA indicates in the preamble to the proposed NSPS that quarterly application of enhanced monitoring would entail additional annual costs of approximately \$29,100 to \$33,800 per landfill, almost all due to increased labor associated with a tighter walking pattern. Although EPA did not estimate enhanced monitoring costs for existing landfills, we expect those costs would be of similar magnitude. Such costs would represent only a 2% increase in the total emission control costs for landfills subject to the proposed NSPS,<sup>45</sup> and would not be unreasonable.

However, EPA could significantly reduce the cost of enhanced monitoring by alternating it with the current monitoring requirements. For example, EPA could consider requiring an enhanced monitoring campaign twice per year, in lieu of the ordinary monitoring required under the NSPS. This would capture some of the benefits of enhanced monitoring while substantially reducing the cost. EPA could also consider allowing less-frequent monitoring at landfills that establish a consistent record of no exceedances (similar to the California LMR), both as an incentive for effective operation of the landfill gas collection system and as a cost reduction measure.

[Footnote]

(45) This calculation assumes that enhanced monitoring would be applied at all 17 landfills that would be subject to the proposed NSPS, at a cost of \$30,000 per year. The total cost of monitoring at these landfills would be \$510,000 per year, which represents 2% of the total estimated cost of approximately \$27.2 million for emission controls at the affected landfills. *See* 79 Fed. Reg. at 41,826.

**Comment Response:**

In the final rule, the EPA is retaining a traverse pattern of 30 meters. As noted in the response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c, the additional level of effort to complete surface monitoring at a 25-ft traverse pattern does not yield commensurate environmental benefits. In addition, commenters did not submit data or information to demonstrate that emission reductions would result from conducting surface monitoring at a 25-ft traverse pattern.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 27

**Sort Order:** 101

**Comment Excerpt:**

*Options for Reducing Monitoring Costs.* EPA indicates in the preamble to the proposed EG that quarterly application of the alternative surface monitoring approach would entail additional annual costs of approximately \$62,800 per landfill under Proposed Option 2, largely due to increased labor associated with a tighter walking pattern.<sup>76</sup> Such costs would represent an approximately 14% increase in the total emission control costs for the proposed EG,<sup>77</sup> which are already quite modest in light of capital expenditures, revenues, and the significant emission reductions associated with these proposals.

However, EPA could significantly reduce the cost of the alternative surface monitoring approach by alternating it with the current monitoring requirements. For example, EPA could consider requiring an enhanced monitoring campaign twice per year, in lieu of the ordinary monitoring required under the NSPS. This would capture some of the benefits of enhanced monitoring while cutting the cost approximately in half. EDF strongly encourages EPA to consider such an approach for the final rule.

[Footnote 76] 80 Fed. Reg. 52,137.

[Footnote 77] The costs of the proposed revisions to the EG, when added to the baseline costs of the current EG, are estimated to be approximately \$346 million spread across 785 landfills. *See* 80 Fed. Reg. at 52,143. The alternative surface monitoring approach would represent an additional \$42.7 million in costs, equivalent to approximately 14% of the total emission control costs associated with the proposal. *See id.* at 52,137.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt 26, under comment code 13h.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 163

**Comment Excerpt:**

In the preamble of the proposed NSPS, EPA explains that it "does not expect that requiring an integrated methane concentration would add significant cost because landfills could use the same instrument that they currently use for the instantaneous readings and these instruments can be programmed to provide an integrated value as well as an instantaneous value." (FR 41823) In fact, it is our experience that many landfill owner/operators conduct integrated monitoring during a second pass of the landfill, and thus are incurring significant additional expense.

**Comment Response:**

In the final rule, the EPA is not adding an integrated reading of 25 ppm for surface emissions monitoring. As noted in the response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d, integrated reading does not result in significant benefits over the instantaneous monitoring already required by the rules.

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**Commenter Name:** Kelly Dixon, Director  
**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0195  
**Comment Excerpt Number:** 4

**Comment Excerpt:**

The Tier 2 testing process requires conducting expensive on-site testing to establish site specific variables of  $L_0$  and  $k$  to replace the Tier 1 default factors and will require the MSW landfill to either employ an outside testing company or rent or buy equipment to perform EPA Method 18, 25 or 25C tests. A commercial laboratory must be employed to analyze the collected samples. Additional costs for modeling the results for the next 5 years and reporting the data to DEQ will be incurred. All of these costs will be a burden for small municipally and independently owned landfills.

Tier 4 testing requires the MSW landfill to employ personnel to use equipment to detect methane at 500 ppm above background by traversing the landfill in a serpentine pattern. DEQ currently requires MSW landfills measure methane with a lower explosive limit (LEL) meter. Tier 4 would require an organic vapor analyzer, flame ionization detector or other portable monitor to measure methane in ppm. A GPS meter to report the latitude and longitude coordinates of each exceedence using an instrument with an accuracy of at least 3 meters is required. In addition, the average wind speed must be determined using an onsite anemometer with a continuous recorder during the monitoring event. The additional equipment to perform the required monitoring must be purchased by the MSW landfill.

**Comment Response:**

Because Tier 2 is prominently used by landfills to evaluate NMOC emission thresholds under subpart WWW, the EPA has included the costs to conduct Tier 2 in the final rule analysis and ICR burden estimates. The EPA assumed that 50 percent of landfills not yet controlling emissions would use Tier 1 and the other 50 percent would use Tier 2. The EPA agrees that a GPS and on-site anemometer would be required to conduct Tier 4 emission measurements. The Tier 4 is a voluntary emission tier and it is unknown how many landfills would opt to use this higher Tier to demonstrate whether surface emissions indicate the need for a GCCS installation under subpart XXX. As a result, the EPA did not estimate the costs to purchase this voluntary equipment in the final rule analysis.

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**Commenter Name:** S. Woodson

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0148

**Comment Excerpt Number:** 7

**Comment Excerpt:**

Nonetheless, not all landfill operators may be in support of the revised changes, as they will bear additional expenses on the plant operator. When implementing automatic monitoring, land operators will be held responsible for the upkeep and operations of their SEM systems. Upon implementing these systems, this will require training, education and increased work hours for individual landfill operations. In the event of increasing manual surface emission monitoring, supplementary funds must be used for third party contractors.

According to cost and labor estimates calculated in EPA's proposed plan, updating SEM requirements will demand each landfill to obligate an extra 500 work hours, per year (EPA, 2015). While commenters have argued that increasing manual surface emission monitoring would be ineffective and extremely unaffordable, research has shown that the implementation of



proposed changes, along with advancements in technology have proved to be advantageous for the environment and beneficial to landfill owner time and finances.

**Comment Response:**

The EPA thanks the commenter for their observation and notes that it has updated the burden estimates associated with SEM in the ICR estimates for each final rule.

### **13.8 Surface Monitoring: Costs**

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 26

**Sort Order:** 100

**Comment Excerpt:**

*Options for Reducing Monitoring Costs.* EPA indicates in the preamble to the proposed NSPS that quarterly application of enhanced monitoring would entail additional annual costs of approximately \$29,100 to \$33,800 per landfill, almost all due to increased labor associated with a tighter walking pattern. Although EPA did not estimate enhanced monitoring costs for existing landfills, we expect those costs would be of similar magnitude. Such costs would represent only a 2% increase in the total emission control costs for landfills subject to the proposed NSPS,<sup>45</sup> and would not be unreasonable.

However, EPA could significantly reduce the cost of enhanced monitoring by alternating it with the current monitoring requirements. For example, EPA could consider requiring an enhanced monitoring campaign twice per year, in lieu of the ordinary monitoring required under the NSPS. This would capture some of the benefits of enhanced monitoring while substantially reducing the cost. EPA could also consider allowing less-frequent monitoring at landfills that establish a consistent record of no exceedances (similar to the California LMR), both as an incentive for effective operation of the landfill gas collection system and as a cost reduction measure.

[Footnote]

(45) This calculation assumes that enhanced monitoring would be applied at all 17 landfills that would be subject to the proposed NSPS, at a cost of \$30,000 per year. The total cost of monitoring at these landfills would be \$510,000 per year, which represents 2% of the total estimated cost of approximately \$27.2 million for emission controls at the affected landfills. *See* 79 Fed. Reg. at 41,826.

**Comment Response:**

In the final rule, the EPA is retaining a traverse pattern of 30 meters. As noted in the response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c, the additional level of effort to complete surface monitoring at a 25-ft traverse pattern does not yield commensurate environmental benefits. In addition, commenters did not submit data or information to demonstrate that emission reductions would result from conducting surface monitoring at a 25-ft traverse pattern.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 27

**Sort Order:** 101

**Comment Excerpt:**

*Options for Reducing Monitoring Costs.* EPA indicates in the preamble to the proposed EG that quarterly application of the alternative surface monitoring approach would entail additional annual costs of approximately \$62,800 per landfill under Proposed Option 2, largely due to increased labor associated with a tighter walking pattern.<sup>76</sup> Such costs would represent an approximately 14% increase in the total emission control costs for the proposed EG,<sup>77</sup> which are already quite modest in light of capital expenditures, revenues, and the significant emission reductions associated with these proposals.

However, EPA could significantly reduce the cost of the alternative surface monitoring approach by alternating it with the current monitoring requirements. For example, EPA could consider requiring an enhanced monitoring campaign twice per year, in lieu of the ordinary monitoring required under the NSPS. This would capture some of the benefits of enhanced monitoring while cutting the cost approximately in half. EDF strongly encourages EPA to consider such an approach for the final rule.

[Footnote 76] 80 Fed. Reg. 52,137.

[Footnote 77] The costs of the proposed revisions to the EG, when added to the baseline costs of the current EG, are estimated to be approximately \$346 million spread across 785 landfills. *See* 80 Fed. Reg. at 52,143. The alternative surface monitoring approach would represent an additional \$42.7 million in costs, equivalent to approximately 14% of the total emission control costs associated with the proposal. *See id.* at 52,137.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt 26, under comment code 13h.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 163

**Comment Excerpt:**

In the preamble of the proposed NSPS, EPA explains that it "does not expect that requiring an integrated methane concentration would add significant cost because landfills could use the same instrument that they currently use for the instantaneous readings and these instruments can be programmed to provide an integrated value as well as an instantaneous value." (FR 41823) In

fact, it is our experience that many landfill owner/operators conduct integrated monitoring during a second pass of the landfill, and thus are incurring significant additional expense.

**Comment Response:**

In the final rule, the EPA is not adding an integrated reading of 25 ppm for surface emissions monitoring. As noted in the response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 56, under comment code 13d, integrated reading does not result in significant benefits over the instantaneous monitoring already required by the rules.

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**Commenter Name:** Kelly Dixon, Director

**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0195

**Comment Excerpt Number:** 4

**Comment Excerpt:**

The Tier 2 testing process requires conducting expensive on-site testing to establish site specific variables of  $L_0$  and  $k$  to replace the Tier 1 default factors and will require the MSW landfill to either employ an outside testing company or rent or buy equipment to perform EPA Method 18, 25 or 25C tests. A commercial laboratory must be employed to analyze the collected samples. Additional costs for modeling the results for the next 5 years and reporting the data to DEQ will be incurred. All of these costs will be a burden for small municipally and independently owned landfills.

Tier 4 testing requires the MSW landfill to employ personnel to use equipment to detect methane at 500 ppm above background by traversing the landfill in a serpentine pattern. DEQ currently requires MSW landfills measure methane with a lower explosive limit (LEL) meter. Tier 4 would require an organic vapor analyzer, flame ionization detector or other portable monitor to measure methane in ppm. A GPS meter to report the latitude and longitude coordinates of each exceedence using an instrument with an accuracy of at least 3 meters is required. In addition, the average wind speed must be determined using an onsite anemometer with a continuous recorder during the monitoring event. The additional equipment to perform the required monitoring must be purchased by the MSW landfill.

**Comment Response:**

Because Tier 2 is prominently used by landfills to evaluate NMOC emission thresholds under subpart WWW, the EPA has included the costs to conduct Tier 2 in the final rule analysis and ICR burden estimates. The EPA assumed that 50 percent of landfills not yet controlling emissions would use Tier 1 and the other 50 percent would use Tier 2. The EPA agrees that a GPS and on-site anemometer would be required to conduct Tier 4 emission measurements. The Tier 4 is a voluntary emission tier and it is unknown how many landfills would opt to use this higher Tier to demonstrate whether surface emissions indicate the need for a GCCS installation under subpart XXX. As a result, the EPA did not estimate the costs to purchase this voluntary equipment in the final rule analysis.

**Commenter Name:** S. Woodson

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0148

**Comment Excerpt Number:** 7

**Comment Excerpt:**

Nonetheless, not all landfill operators may be in support of the revised changes, as they will bear additional expenses on the plant operator. When implementing automatic monitoring, land operators will be held responsible for the upkeep and operations of their SEM systems. Upon implementing these systems, this will require training, education and increased work hours for individual landfill operations. In the event of increasing manual surface emission monitoring, supplementary funds must be used for third party contractors.

According to cost and labor estimates calculated in EPA's proposed plan, updating SEM requirements will demand each landfill to obligate an extra 500 work hours, per year (EPA, 2015). While commenters have argued that increasing manual surface emission monitoring would be ineffective and extremely unaffordable, research has shown that the implementation of proposed changes, along with advancements in technology have proved to be advantageous for the environment and beneficial to landfill owner time and finances.

**Comment Response:**

The EPA thanks the commenter for their observation and notes that it has updated the burden estimates associated with SEM in the ICR estimates for each final rule.

### **13.9 More Precise Locational Data**

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 10

**Sort Order:** 100

**Comment Excerpt:**

The use of global positioning system (GPS) data correlated with SEM readings would be an invaluable addition to the monitoring procedure. The NSPS and EG have historically only required retention of exceedance data. This can make it challenging for regulators to confirm that the required monitoring has been performed. Additionally, when SEM data is not associated with a location, the retention of all data is less meaningful. By correlating the SEM readings directly with the location of the reading, facilities and their regulators can easily gain a clear picture of how the LFG collection system is functioning and even anticipate problems before they arise by tracking trends in the data. Delaware supports the use of GPS coordinates with SEM data and the retention of all SEM data.

**Comment Response:**

For quarterly SEM at landfills already required to control emissions, the EPA is finalizing a requirement for landfills to report the latitude and longitude coordinates of each surface emissions exceedance using an instrument with an accuracy of at least four meters. Global positioning system technology is readily available and is included in hand-held GPS devices and newer portable analyzers, and these have the ability to identify latitude and longitude coordinates in decimal degrees with at least five decimal places. This level of accuracy and precision is consistent with the requirements proposed in Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards (79 FR 36880). Because GPS technology is readily available, landfills commonly use GPS when conducting surface emissions monitoring and the data can be stored electronically to assess trends in surface emissions over time. The EPA and delegated authorities have general authority under the CAA to observe performance testing and monitoring such as surface emissions monitoring, as well as to request and inspect associated records such as electronic data management systems that may store SEM.

For Tier 4 SEM, the EPA has finalized a requirement to maintain records of latitude and longitude coordinates of each surface emission reading, using the same accuracy and precision noted above, instead of just requiring this detail for exceedances. The EPA has finalized a more conservative recordkeeping approach for Tier 4 SEM because Tier 4 can determine the timing of GCCS installation and it believes it is appropriate to require more robust records of all readings for this voluntary tier.

See section VI.B and VI.A.5 of the NSPS Final Preamble and section VI.B and VI.A.5 of the Emission Guidelines Final Preamble for a detailed discussion of Tier 4 and more precise location data.

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs  
**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0197  
**Comment Excerpt Number:** 6  
**Sort Order:** 101

**Comment Excerpt:**

The coordination of GPS data with SEM data will increase the usefulness of the SEM monitoring. This section of the proposal seems to indicate that all SEM data should be recorded, which is a change to the rule that NACAA supports. Recording all SEM data (rather than only exceedances) is necessary to show compliance with the monitoring requirement. By linking the methane readings with positioning data, the time required to process the data will be reduced. Additionally, retention of all of the data will allow facilities and regulatory agencies to observe trends in surface methane levels and address issues before they become problems.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 10, under comment code 13i.

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**Commenter Name:** Peter Zalzal  
**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 29

**Sort Order:** 102

**Comment Excerpt:**

EPA also proposes enhanced reporting requirements of monitored exceedances. Specifically, "EPA is proposing to require landfills to report the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 3 meters."<sup>80</sup> This level of detail will assist owners and operators in determining the location and timing of exceedances relative to the GCCS components and also assist in inspections and enforcement. We support these enhanced recordkeeping requirements as they provide important compliance monitoring assurances as well as important information to landfill owners and operators regarding their GCCS effectiveness.

[Footnote 80] 80 Fed. Reg. at 52124.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 10, under comment code 13i.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 19

**Sort Order:** 103

**Comment Excerpt:**

The current rule proposes to require all SEM exceedances to be marked using a GPS device that has an error of +/- 3 meters. We are not clear on why EPA believes that GPS measurements of SEM exceedance locations are necessary and why a landfill cannot simply mark the exceedance with a marker flag for return corrective action and monitoring. We believe both options should still be allowed in the rule.

With this requirement, we are concerned that +/- 3 meters is too much of an error range that the use of GPS alone may not allow the operator to return to the exact spot of the exceedance. Therefore, the added expense to purchase a GPS device, use that device in the field, and then plot the GPS data on a map, may provide no additional value to the operator compared to flagging exceedances, and may still necessitate the use of both methods. It is unclear from the docket materials if EPA has evaluated GPS equipment that can achieve this level of accuracy, its cost, and its size/weight in terms of requiring a technician to carry yet another field monitoring instrument.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 10, under comment code 13i. The EPA is not prohibiting the use of flag markers in the final rule, but the flag would be in addition to a more permanent record of GPS coordinates.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 19

**Sort Order:** 104

**Comment Excerpt:**

EPA should not require GPS equipment for SEM.

The proposed emission guidelines require GPS measurements with an accuracy of +/- 3 meters for any measured methane surface emissions of greater than 500 parts per million above background. EPA's only rationale for requiring GPS technology is that the equipment is relatively inexpensive and can more precisely identify the location of any exceedances. However, EPA's RIA fails to provide any data on the cost of available technology to support its reasoning.

In Republic's experience, GPS equipment is not typically employed for SEM monitoring at landfills. As a result, this new requirement will require either the purchase or rental of a GPS device. Because GPS equipment is not typically integrated into other monitoring devices, monitoring technicians will be required to carry another piece of equipment, which could be difficult and present a safety concern. EPA has not demonstrated that the current practice of flagging exceedances is ineffective. Republic believes that the existing approach of marking exceedances at the exact physical location of them with a marker flag is actually more accurate because it does not rely on a technology with accuracy limitations. Because EPA's GPS requirement would impose costs without any commiserate benefits, Republic asks EPA to remove it from the proposed emission guidelines.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 10, under comment code 13i.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 44

**Sort Order:** 105

**Comment Excerpt:**

The EPA is proposing to require landfills to report the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 3 meters. Coordinates must be in decimal degrees with at least five decimal places. 80 Fed. Reg. at 52124.

We are concerned that the added expense of purchasing a GPS device, using that device in the field, and plotting the GPS data on a map will provide no additional value to the operator tasked with identifying exceedances. Further, duplicative methods may still be required. It is unclear from the docket materials if EPA evaluated GPS equipment that can achieve this level of accuracy, its cost, and its size/weight in terms of requiring a technician to carry yet another field monitoring instrument. It is also unclear why coordinate information must be reported, given that it merely adds burden for sites to collect and report as well as for agencies to review. It seems excessive to require both the collection and reporting of such information when the current system of identifying exceedances for correction is sufficient.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 10, under comment code 13i.

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**Commenter Name:** Jeffrey Vandebusch

**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills

**Document Control Number:** EPA-HQ-OAR-2014-0451-0145

**Comment Excerpt Number:** 6

**Sort Order:** 106

**Comment Excerpt:**

We do not support the proposal to add a requirement to determine latitude and longitude coordinates of SEM exceedances using an instrument with an accuracy of at least three meters (decimal degrees to at least five decimal places). This requirement may result in additional cost to entities in the purchase of new monitoring equipment, and would not reduce emissions beyond the current rules.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 10, under comment code 13i.

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**Commenter Name:** Lynn Fieder, Division Chief, Air Quality Division

**Commenter Affiliation:** State of Michigan Department of Environmental Quality (MDEQ)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0183

**Comment Excerpt Number:** 8

**Sort Order:** 107

**Comment Excerpt:**

All locations and readings for surface emission monitoring should be recorded and not just those above the 500 part per million (ppm) action level. The current standard only requires readings be recorded above the action level of 500 ppm. The lack of data could imply there are no gas leaks



or seeps that need to be addressed (either with cover modification or gas collection measures). However, as seen in Michigan these gas leaks below 500 ppm can create significant odor problems and can indicate poor performance of individual gas wells.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 10, under comment code 13i.

### 13.10 CA/SCS Study

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 78

**Sort Order:** 100

**Comment Excerpt:**

To assess the lessons learned from implementing the CA LMR monitoring requirements at both private and public landfills, and to compare the level of effort and monitoring results of the CA LMR to the SEM requirements under the NSPS (subpart WWW), Republic and Waste Management commissioned SCS Engineers to conduct a comparative analysis. We believe the findings from the study are useful in evaluating the comparative merits of both SEM programs.

SCS analyzed data from 72 California landfills regulated under the CA LMR, which took effect in mid- 2011. Because CA LMR requirements are more stringent than the NSPS, after mid-2011, the NSPS landfills (42) in the dataset followed LMR requirements and reported the relevant data to the State of California and EPA, as appropriate. SCS obtained the aggregate NSPS monitoring results by reviewing quarterly monitoring reports developed from up to two years (8 quarters) prior to implementation of the CA LMR (3rd quarter 2009 through mid-2011).

The CA LMR monitoring results were compiled from the date of implementation (mid-2011) through the end of 2013. Thus, SCS obtained aggregate CA LMR monitoring results from quarterly monitoring reports developed from July 2011 through December 2013. **Table 2** through **Table 6** provides descriptive information on the landfills in the dataset.

**Table 2 - Landfills Categorized by Applicable Regulation**

No. of Landfills	NSPS & CA LMR	CA LMR Only
	42	30

**Table 3 - Landfills Categorized by Climate Type**

No. of Landfills	Arid* (< 25 inches precipitation/year)	Non-Arid* (>25 inches precipitation/year)
	60	12

(\*Definition of "arid" taken from CA LMR and 40 CFR Part 98)

**Table 4 - Landfills Categorized by Operational Status**

No. of Landfills	Closed	Active
	27	45

**Table 5 - Landfills Categorized by Type of Ownership**

No. of Landfills	Public	Private
	41	31

**Table 6 - Landfills Categorized by Waste-In-Place**

No. of Landfills	0-450,000 tons	450,000-2.5 million tons	>2.5 million tons
	0	26	46

We present the results of the SCS analysis for the 42 NSPS landfills in the dataset. Focusing only on the NSPS landfills enables us to highlight differences in the two monitoring regimes (NSPS and LMR) as applied to the same set of landfills. This approach is also conservative; comparing the results of pre-LMR NSPS monitoring at 40 landfills to the results of full LMR monitoring at the 72 LMR sites in the dataset) results a smaller percentage of exceedances in all aspects and lower cost-effectiveness.

**Comment Response:**

The EPA has reviewed the report cited by the commenters and also conducted its own analysis of the underlying data on which the referenced report was based (See: Analysis of Surface Monitoring Exceedances from California Landfills Under the New Source Performance Standards and the California Landfill Methane Rule, Docket EPA-HQ-OAR-2014-0451). Based on a review of the data, the EPA is retaining a traverse pattern of 30 meters. The EPA agrees

with commenters that the additional level of effort to complete quarterly surface monitoring at a 25-ft traverse pattern does not yield commensurate environmental benefits.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 159

**Sort Order:** 101

**Comment Excerpt:**

To assess the lessons learned from implementing the CA LMR monitoring requirements at both private and public landfills, and to compare the level of effort and monitoring results of the CA LMR to the SEM requirements under the NSPS (subpart WWW), Waste Management and Republic commissioned SCS Engineers to conduct a comparative analysis. We believe the findings from the study are useful in evaluating the comparative merits of both SEM programs.

Description of the Analysis. SCS analyzed data from 72 California landfills regulated under the CA LMR, which took effect in mid-2011. Because CA LMR requirements are more stringent than the NSPS, after mid-2011, the NSPS landfills (42) in the dataset followed LMR requirements and reported the relevant data to the State of California and EPA, as appropriate. SCS obtained the aggregate NSPS monitoring results by reviewing quarterly monitoring reports developed from up to two years (8 quarters) prior to implementation of the CA LMR (3rd quarter 2009 through mid-2011).

The CA LMR monitoring results were compiled from the date of implementation (mid-2011) through the end of 2013. Thus, SCS obtained aggregate CA LMR monitoring results from quarterly monitoring reports developed from July 2011 through December 2013.

Tables 2 through Table 6 provide descriptive information on the landfills in the dataset.

**Table 2. Landfills Categorized by Applicable Regulation**

No. of Landfills	NSPS & CA LMR	CA LMR Only
	42	30

**Table 3. Landfills Categorized by Climate Type**

No. of Landfills	Arid* (< 25 inches precipitation/year)	Non-Arid* (>25 inches precipitation/year)
	60	12

(\*Definition of "arid" taken from CA LMR and 40 CFR Part 98)

**Table 4. Landfills Categorized by Operational Status**

No. of Landfills	Closed	Active
	27	45

**Table 5. Landfills Categorized by Type of Ownership**

No. of Landfills	Public	Private
	41	31

**Table 6. Landfills Categorized by Waste-In-Place**

No. of Landfills	0-450,000 tons	450,000-2.5 million tons	>2.5 million tons
	0	26	46

We present the results of the SCS analysis for the 42 NSPS landfills in the dataset. Focusing only on the NSPS landfills enables us to highlight differences in the two monitoring regimes (NSPS and LRM) as applied to the same set of landfills. This approach is also conservative; comparing the results of pre-LMR NSPS monitoring at 42 landfills to the results of full LMR monitoring at 72 sites results in a small percentage of exceedances and lower costeffectiveness.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 78, under comment code 13j.

**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 16

**Sort Order:** 102

**Comment Excerpt:**

The docket does contain the previous report submitted to EPA comparing SEM under the California LMR and Subpart WWW. We continue to stand by the conclusions in this report. Given the significant costs associated with a tighter traverse/integrated monitoring and no measurable emissions reductions to justify the added expense, we recommend maintaining the existing 30-meter interval for SEM monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 78, under comment code 13j.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 26

**Comment Excerpt:**

Enhanced surface monitoring is also adequately demonstrated. California's LMR has been in effect for over five years and as of today, 123 landfills are complying with its enhanced surface monitoring requirements.<sup>73</sup> There is no indication that California's requirements have imposed exorbitant costs on these landfills. Moreover, EPA's analysis of California surface monitoring data indicates that landfills subject to the LMR detected leaks over nearly three times as many acres as the same landfills did when they were subject only to the less stringent NSPS and EG requirements.<sup>74</sup> Among landfills that reported greater exceedances under the LMR than under the NSPS/EG requirements, the total number of leaks reported under the LMR was on average 180% higher than under the NSPS/EG.<sup>75</sup> Although the data provided to EPA did not allow for quantification of emission reductions, it does suggest that the LMR significantly increased the quantity of leaks detected and remediated.

[Footnote 73] Email correspondence with Renaldo Crooks, xx CARB.

[Footnote 74] See Memo from Eastern Research Group to Hillary Ward, EPA, Analysis of Surface Exceedances from California Landfills Under the New Source Performance Standards and the California Landfill Methane Rule 2-3 (July 2015), Docket ID No. EPA-HQ-OAR-2014-0451-0140.

[Footnote 75] Id.

**Comment Response:**

The EPA thanks the commenter for their observations. While the average number of exceedances was 180% higher in EPA's analysis of the CA LMR dataset, the EPA notes that there was a large variability around this average and this average was only for the landfills where the tighter traverse pattern showed a greater number of exceedances. The same analysis shows that there were also cases at four landfills where there were less exceedances found with the tighter traverse pattern as compared to the 30-meter traverse pattern. As a result, the EPA does not interpret the data as being conclusive that the CA LMR can find more exceedances. Due to the lack of data or information available to demonstrate that emission reductions would result from conducting surface monitoring at a 25-ft traverse pattern, the EPA has not finalized a tighter traverse pattern in the final rules.

**13.11 Varying the Walking Pattern**

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 15

**Sort Order:** 100

**Comment Excerpt:**

Encourage the use of a "meandering" or "serpentine" path for monitoring or require a quarterly off-set to ensure full coverage of the landfill surface.

**Comment Response:**

The EPA is not mandating a varied or offset of the traverse pattern in the final rules. The EPA understands that the topography of each landfill is different and that prescriptive variations in the pattern may not be appropriate for all cases. In addition, it may be difficult to enforce a prescriptive variation in the traverse path. Although we are not mandating a varied path in the final rule, the EPA agrees with the commenter that variation in the pattern from quarter to quarter could be beneficial, and as long as the varied path follows the 30-meter traverse pattern a varied path the landfill owner/operated is allowed to vary the monitoring path, as deemed appropriate, under the final rule provisions.

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**Commenter Name:** Lynn Fieder, Division Chief, Air Quality Division

**Commenter Affiliation:** State of Michigan Department of Environmental Quality (MDEQ)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0183

**Comment Excerpt Number:** 7

**Sort Order:** 101

**Comment Excerpt:**

The proposed rule should also require a 10 meter offset of the traverse path for each quarterly surface emission monitoring event. This will insure that over time all areas of the landfill will be monitored for surface emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 15, under comment code 13k.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 24

**Sort Order:** 102

**Comment Excerpt:**

We continue to believe that these enhanced monitoring requirements represent best practice for the industry, and should be required for new and existing landfills. In our prior submissions, we explained that the current surface monitoring requirements – which do not require variation in the walking pattern and allow for walking intervals spaced as much as 30 meters apart – leave large areas of a typical landfill uninspected for potentially long periods of time. Moreover, we noted multiple studies of landfill emissions confirming that methane emissions are typically localized in "hotspots" associated with defects in the landfill surface.<sup>70</sup> These empirical findings underscore the importance of comprehensive surface monitoring.

[Footnote 70] See, e.g., I.M. Rachor et al., *Variability of Methane Emissions From an Old Landfill Over Different Time-Scales*, 64 *European Journal of Soil Science* 16 (2013) ("...surface emissions are not uniform across the entire landfill but follow paths of least resistance, creating high-emitting areas or hotspots . . . . gas emissions occurred almost exclusively at these restricted areas and no elevated surface methane concentrations were observed on other parts of the landfill."); Di Trapani et al., *Uncontrolled Methane Emissions From a MSW Landfill Surface: Influence of Landfill Features and Side Slopes*, 33 *Waste Management* 2108, 2109 (2013); Abichou et al., *Methane Flux and Oxidation at Two Types of Intermediate Landfill Covers*, 26 *Waste Management* 1305 (2006) (observing that "hotspots" are more likely to dominate emissions from landfills with thicker and more permanent covers); L. Giani, et al., Temporal and spatial variability of the CH<sub>4</sub> dynamics of landfill cover soils. *Journal of Plant Nutrition & Soil Science* **165**, 205–210 (2002); K. Spokas et al., Implications of the spatial variability of landfill emission rates on geospatial analyses. *Waste Management*, **23**, 599–607 (2003).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 15, under comment code 13k.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 11

**Sort Order:** 103

**Comment Excerpt:**

Surface Scan Traverse Interval, Paragraph (d). Decreasing the traverse interval to 25 feet would increase the chance of detecting an exceedance. Therefore, Ohio EPA is in agreement with reducing the traverse interval. Ohio EPA suggests two other alternatives we believe will also increase the chance of detecting an exceedance:

The path taken from quarter to quarter could be off-set, for example by 10 meters. Thus in any given year the path will be duplicated once. Another approach would be to set the path in a different direction or pattern, for example if a predominant N-S pattern was used initially the next quarter could use an E-W pattern or a spiral pattern or a diagonal pattern.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 15, under comment code 13k.

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**Commenter Name:** Comment submitted by Peter Zalzal and Tomás Carbonell, Senior Attorney

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0095.1

**Comment Excerpt Number:** 21

**Sort Order:** 104

**Comment Excerpt:**

EDF supports requirement that the walking pattern be varied with each quarterly survey, to ensure that a larger percentage of the landfill's surface is monitored over time.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt 15, under comment code 13k.

### **13.12 Surface Monitoring-Other**

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 2

**Sort Order:** 100

**Comment Excerpt:**

The present regulatory approach prescribes measurements of only concentrations in the near-surface atmosphere above landfills. However, as discussed in Section 4.0, the concentration measurement approach and the emission rate measurement approach are incompatible from a regulatory standard perspective; *i.e.* emission rates from an area source are not a function of only near-surface atmospheric concentrations.



**Comment Response:**

The EPA agrees with the commenter that emission rates are not a function of only near-surface atmospheric conditions. As discussed in the docketed memorandum, Establishing a Site-Specific Emission Threshold Alternative for MSW Landfills, docket ID: EPA-HQ-OAR-2014-0451-0084, the EPA acknowledges that SEM methane concentration and an NMOC emission rate are two different types of emission limits that are not directly comparable due to their inherent differences in measurement and estimation. Despite these differences, the EPA continues to believe that a quarterly SEM-based monitoring regime can ensure a GCCS remains well operated over time and can identify deficiencies in the landfill cover that could otherwise allow gas to escape to the atmosphere. Once exceedances are identified, the final rules require prompt repair and re-measurement of the leaks in order to ensure a robust cover over time.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 4

**Sort Order:** 101

**Comment Excerpt:**

Emission rates to the atmosphere from a landfill are not only a function of concentrations in the atmosphere above an area emission source. Emission area size, shape and location, wind speed and direction, height and density of vegetation, and precipitation can all affect the measured concentrations such that a single atmospheric concentration measurement may be associated with a range of emission rates.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 2, under comment code 13z.

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**Commenter Name:** Comment submitted by Paul Sgriccia and Colin L. Y. Wong, Principal

**Commenter Affiliation:** Golder Associates Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0101.1

**Comment Excerpt Number:** 5

**Sort Order:** 102

**Comment Excerpt:**

Model results indicate that a single concentration measurement of 500 ppm may be associated with more than one order of magnitude (more than 10 times) difference of actual emission rates depending on the source dimension, source location relative to the measurement, and atmospheric conditions. Additional variability would be introduced by different heights and densities of vegetation, which affects the concentration measurements. Higher or denser vegetation allows methane to accumulate to a higher concentration at the same height above ground surface, compared with an arid site where there may be little vegetation, even though

methane emission rates are the same at both sites. Another variable is precipitation, which can temporarily cause saturation of soils, thus blocking some pathways through cover soil to the atmosphere, while concentrating methane release through other pathways.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0101.1, excerpt number 4, under comment code 13z.

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator

**Commenter Affiliation:** Californians Against Waste, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0191

**Comment Excerpt Number:** 14

**Sort Order:** 200

**Comment Excerpt:**

We also note that a threshold of 500 ppm methane is unreasonably high. There is good reason to believe that a threshold of 200 ppm is both feasible<sup>21</sup> and much more likely to protect public health and welfare.

Footnote:

21 See 17 California Code of Regulations § 95643(b)(2).

**Comment Response:**

The 500 ppm methane level was selected in the original 1996 rule based on EPA's evaluation of available information, including commenter feedback, to indicate proper operation of the GCCS. See Section 1.2.2.6 of Background Information Document at 1-43. Air Emissions from Municipal Solid Waste Landfills-Background Information for Final Standards and Guidelines, U.S. EPA (EPA-453/R-94- 021), accessed at <http://www.epa.gov/ttn/atw/landfill/bidfl.pdf>.

The commenter did not provide data to support that a 200 ppm threshold is feasible. Further, the EPA notes that the California LMR retains the 500 ppm level as an appropriate level for instantaneous SEM readings for areas already controlled by a GCCS. California ARB initially proposed a 200 ppm SEM threshold for both GCCS installation and for GCCS operation in its regulation, but finalized 500 ppm for GCCS operation because a lower threshold could cause an operator to overdraw the vacuum on the GCCS (to avoid a surface exceedance), which in turn could draw in too much oxygen and possibly cause fire. As a result, the EPA is retaining the 500 ppm level in the final rules.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 60

**Sort Order:** 201

**Comment Excerpt:**

Finally, the 500 ppm methane level may be far too high to detect significant problems. This level may have been adopted some 30 years ago when the California South Coast Air Management District observed that, in the prior generation of landfills that lacked geomembranes, surface measurements greater than 500 ppm of methane were associated with odor complaints among neighbors a mile away. EPA should begin a study to determine a methane level of scientific and technical significance in measuring LFG from landfills.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, excerpt number 14, under comment code 13z.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 19

**Sort Order:** 300

**Comment Excerpt:**

LFG monitoring wells are required through solid waste regulations. There are several references to LFG migration monitoring in the proposed rule, however this monitoring is not required by the rule itself. The NSPS and EG should adopt by reference the solid waste migration monitoring requirements and require reporting of this data to the Air Regulators (as well as the Solid Waste regulators).

**Comment Response:**

Consistent with the current 40 CFR part 60, subpart WWW, the final rules require that the active GCCS be designed to minimize off-site migration of subsurface gas. In addition, 40 CFR 60.765(a)(6) requires owners or operators that use an a GCCS not conforming to the specifications for active collection systems to demonstrate that off-site migration is being controlled. In addition, the quarterly SEM requires monitoring around the perimeter of the GCCS collection area to ensure offsite migration is controlled. The EPA did not incorporate monitoring requirements for gas migration wells into the final rules in order to avoid duplicate reporting efforts to two separate programs. The EPA notes that the monitoring results of perimeter or migration wells under RCRA would be available on-site to inspectors or available through a request from the air regulators to the solid waste regulators.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 19

**Sort Order:** 301

**Comment Excerpt:**

There are several references to LFG migration in the rule; however migration monitoring is only prescribed through the solid waste regulations. This connection between the rules should be made. Migration monitoring should be included by reference in the NSPS and monitoring reports should be submitted to air as well as waste regulators.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0191, excerpt number 19, under comment code 13z.

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 4

**Sort Order:** 400

**Comment Excerpt:**

EPA should clarify the requirements of the rule with respect to surface emissions monitoring (SEM). Due to the removal of wellhead exceedance levels, the SEM is the primary method for demonstrating compliance. Thus, it is imperative that thorough monitoring take place. We request that EPA clarify in the rule whether the use of allterrain vehicles is allowed.

Additionally, the technician should maintain the sampling wand position near the surface of the landfill to the extent possible throughout the monitoring event. The method should specify a serpentine path (or require quarterly offsets) and should clarify that technicians are required to investigate odors as they monitor. The list of suspect areas should be expanded to include leachate seeps and leachate collection structures that are under vacuum for LFG collection.

**Comment Response:**

Regarding the use of vehicles, see response to DCN EPA-HQ-OAR-2003-0215-0095.1, excerpt number 42, under comment code 13c. Regarding the positioning of the wand relative to the surface of the landfills, the final rule at 40 CFR 60.765(c)(3) requires that surface emission monitoring must be performed in accordance with section 8.3.1 of Method 21 of appendix A of this part, except that the probe inlet must be placed within 5 to 10 centimeters of the ground. Regarding the traverse, the final rule has adopted a serpentine path at a 30-meter interval in addition to monitoring the perimeter of the entire gas collection area, see response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 160, under comment code 13c. Regarding the monitoring of seeps and leachate collection structures, the EPA has finalized requirements to evaluate these areas, see response to DCN EPA-HQ-OAR-2003-0215-0088.1, excerpt number 15, under comment code 13a.

**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 16

**Sort Order:** 401

**Comment Excerpt:**

Require that the technician keep the wand in position with respect to the ground as much as practicable during monitoring.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0197, excerpt number 4, under comment code 13z.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 14

**Comment Excerpt:**

Surface Scan Speed. The equipment used to conduct a surface scan is calibrated and operated with a response time of 5 to 10 seconds. Although US EPA is considering not allowing surface monitoring when wind speeds can affect whether the monitor is accurately reading the methane concentration, the equipment response time should also be accounted for. A speedy traverse of the landfill surface will reduce the accuracy of the readings, thus missing highs and lows. A traverse speed related to instrument response time is recommended.

**Comment Response:**

The final rule requires that surface emissions monitoring be conducted in accordance with Section 8.3.1 of Method 21 of appendix A of part 60 (see 40 CFR 60.765(c)(1)). Specifically, Section 8.3.1 of Method 21 includes guidelines on the length of time the probe should be held in place relative to the instrument response time.

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

The Division requests that EPA clarify whether the proposed reduced surface monitoring applies to (1) closed portions of landfills, (2) entirely closed landfills, or (3) closed portions that are physically separated from other areas of the landfill.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0095.1, excerpt number 24, under comment code 13b.

The reduced surface monitoring frequency is limited to closed landfills to be environmentally protective, since emissions from closed landfills are on the downward side of their gas curves. The final rule at 40 CFR 60.766(f) provides the following: Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 13

**Comment Excerpt:**

Surface Scan in Dangerous Areas, Paragraph (d). Areas with steep slopes or other dangerous areas may be excluded from the surface testing. Unfortunately, these are areas where landfill gas is more likely to escape due to poorer quality of cover likely to be present due to the steep slope. Ohio EPA suggests considering use of alternative remote measurement and monitoring techniques in these areas instead of simply excluding areas with steep slopes or other dangerous areas from surface testing. Even though US EPA is seeking information on these alternative techniques to determine whether to allow their use for landfills that exceed the surface monitoring concentrations, it is preferred to allow their use in this case where the alternative is no monitoring whatsoever.

Surface Scan and Barometric Pressure. Ohio EPA recommends US EPA consider barometric pressure influence on surface scan results. When barometric pressure is falling, emissions are likely to increase, thus representing a worst case for methane emissions. When barometric pressure is rising, emissions are likely to decrease, thus representing a best case. The methane emission threshold, currently 500 ppm, could be adjusted to account for such variation.

**Comment Response:**

Regarding advanced techniques, the remote monitoring is not yet ready for field use, as discussed under Emerging Measurements Technologies in Section VI.B of the NSPS Final Preamble and Section VI.B of the Emission Guidelines Final Preamble. The EPA has retained the exemption for steep slopes and dangerous areas from surface testing to protect the health and safety of individuals conducting the SEM.

Regarding barometric pressure adjustments, the EPA has finalized a threshold level of 500 ppm, without adjustments for barometric pressure. While the EPA is aware that barometric pressure can affect the results, the SEM must be conducted during typical meteorological conditions, which would limit monitoring days with extreme barometric pressure fluctuations. Additionally, the SEM must be repeated quarterly, and when exceedances are found the SEM must be re-monitored at the appropriate 10 and 30 days. The repetition of the monitoring activity will also provide opportunities to monitor and track exceedances under different pressure conditions over time.

## 14.0 START-UP, SHUTDOWN, AND MALFUNCTION

### 14.1 SSM-General

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 44

#### Comment Excerpt:

EPA's proposed approach to startup, shutdown and malfunction ("SSM") events in Subpart XXX, as explained in the preamble to the proposed rule, is unlawful, arbitrary, ambiguous and technically infeasible.

#### Comment Response:

The EPA has revised its approach to SSM to include an alternative standard for SSM periods. See Section VI.D of the final NSPS Preamble for additional discussion related to SSM.

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)  
**Commenter Affiliation:** Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1  
**Comment Excerpt Number:** 43

#### Comment Excerpt:

As noted in EPA's preamble, as area sources, landfills are unique. Unlike other sources, owners/operators cannot simply "turn off" LFG-generating activity when control systems go off-

line. Further, because of the environment in which the GCCS operates (e.g., exposed to weather, landfill settlement, variable gas composition and quantity, unpredictable biological activity, etc.), downtime of all or part of the GCCS are inevitable. As the downtime is part of normal operations, we do not believe that these should be considered instances of excess emissions. In fact, landfills can act like sponges to retain landfill gas for long periods rather than an immediate leakage of landfill gas when a system goes down. Landfills must be afforded more flexibility than other source categories to address SSM provisions. For this reason, we believe that landfill NSPS contained its own SSM provision under 40 CFR Part 60, Subpart WWW, §60.755 (e).

**Comment Response:**

The Landfill NSPS contained SSM provisions that are no longer permissible due to *Sierra Club v. EPA* 551 F. 3d 1019 (DC Cir. 2008) the United States Court of Appeals for the District of Columbia. The decision mandates that standards apply at all times. The EPA has establish an alternative standard for SSM periods.

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 41

**Comment Excerpt:**

EPA's proposal does not consider the complexity of GCCS, which according to EPA are subject to a "*wide variety*" of design and operational standards set forth in SSM and GCCS design plans. Some of the common reasons for SSM experienced include: power outages and surges, maintenance activities such as changing oil, automated shutdown by protective systems, expansions, cleaning condensate sumps, fixing sagging headers, UV sensor replacement, testing, fixing insulation, thermocouple malfunction/replacement, burner cleaning, flame arrestor cleaning, and bringing beneficial use projects online. The last is the cause of many shutdowns during startup testing periods to bring equipment online. Because of the nature of landfills, EPA's standard for compliance at all times would be impossible to meet.

EPA's proposed approach is not appropriate for landfills, which are unlike other industrial sources in that landfills are area sources and that LFG is produced by a biological process that cannot be stopped or restarted. However, instead of addressing the unique operational issues for landfills in SSM, EPA proposes to eliminate the SSM downtime criteria. This is inconsistent with the existing provisions under Subpart WWW. Additionally, EPA appears to be deviating



from its approach in other recent rulemakings where it considered unique aspects of industrial sources to provide clarity with respect to compliance obligations during SSM events.

These changes are a major departure from the way landfills and GCCSs are currently regulated and from the way they have been regulated since the original NSPS rule was promulgated in 1996. Over 18 years of precedent under the existing NSPS rule would be negated with this rulemaking action. Moreover, these changes could significantly increase the level and severity of enforcement action that landfills will face for GCCS downtime events that are inherent to the way GCCS operate at landfills.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division  
**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1  
**Comment Excerpt Number:** 6

**Comment Excerpt:**

DEQ is concerned that making emission limits apply at all times, including periods of SSM, and the requirement to estimate emissions during SSM periods may require additional reporting and administrative coordination beyond that which is currently required to document emissions and certify compliance. These requirements may be unnecessary and add cost and burden to the delegated authority.

**Comment Response:**

Under the 2008 Sierra Club v EPA decision, EPA must promulgate standards that are continuous, and cannot exempt SSM periods. In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D. Finally, the final rule does not contain the proposed requirement to estimate emissions during SSM period. See Final Rule Preamble at xxx.

## **14.2 SSM-1hr/5day Provision is Appropriate**

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

## Comment Excerpt Number: 31

### Comment Excerpt:

EPA's proposal to eliminate the startup, shutdown and malfunction (SSM) exemption represents a significant concern and a major shift from the existing NSPS, for which EPA provides no reasonable justification. As recently confirmed by the D.C. Circuit, EPA's general SSM policy is flawed and in need of significant revision. In addition, EPA's attempt to impose its general SSM policy on landfills is particularly inappropriate, given the unique nature of landfill emissions. Republic therefore asks EPA to abandon its proposal to impose new SSM requirements for landfills and retain the existing SSM provision.

EPA's general SSM policy, which it now seeks to impose on landfills, is unreasonable because it seeks to apply emission standards in circumstances that those standards were not designed to cover. For malfunctions, EPA's preamble to the proposed landfill NSPS revisions admits that "CAA section 111 does not require that emissions that occur during periods of malfunction be factored into development of CAA section 111 standards." 79 Fed. Reg. 41815 The reason EPA provides for failing to consider malfunctions in setting the NSPS emission limits is that "accounting for malfunctions in setting emission standards would be difficult, if not impossible, given the myriad different types of malfunctions that can occur across all sources in the category and given the difficulties associated with predicting or accounting for the frequency, degree, and duration of various malfunctions that might occur." *Id.* Accordingly, EPA did not take malfunctions into account in developing the landfill standards, and thus the standards were never intended to apply to malfunctions.

With regard to startup and shutdown emissions, EPA's preamble skirts the issue entirely by simply noting that landfill emissions "are produced by a continuous biological process that cannot be stopped or restarted." *Id.* EPA is correct that the biological degradation process is continuous, but landfill emissions are not continuous—the shutdown of a control system involves closing the valve to the landfill gas collection system, thus resulting in zero emissions to the atmosphere for as long as the landfill gas remains contained within the collection system. Nevertheless, EPA's other statements in the preamble confirm that EPA also did not take startup and shutdown periods into account in establishing its emission standards for landfills. *Id.* ("For landfills, the primary SSM concern is with malfunction of the landfill GCCS and associated monitoring equipment, not with the startup or shutdown of the entire source.") That understanding is also consistent with EPA's original NSPS provisions, which did not even require landfills to report a shutdown of the collection system if the shutdown lasted less than five days. 40 C.F.R. § 60.767(f)(4). As a result, startup or shutdown emissions—like malfunctions—were excluded from the standards because the standards were never designed to apply during those periods.

Since the standards were not designed to cover startups, shutdowns, and malfunctions, they also should not apply during those periods. However, EPA's proposed revision to the NSPS regarding SSM seeks to impose EPA's general SSM policy on landfills; *i.e.*, that all excess emissions—even if occurring during SSM for which the standards were never intended to apply—constitute a "violation" of that standard.

EPA cites the D.C. Circuit’s decision in *Sierra Club v. EPA* (2008) in support of its general policy that all excess emissions must be “violations,” even for standards not designed to cover those emissions. However, that case is only relevant to MACT standards. The basis of the D.C. Circuit’s decision in *Sierra Club v. EPA* was that EPA failed to show how its SSM policy met the specific level of stringency required by MACT under Section 112, not the level of stringency associated with the NSPS requirements of Section 111. *See Sierra Club v. EPA*, 551 F.3d 1019, 1027 (D.C. Cir. 2008) (“When *sections 112 and 302(k)* are read together, then, Congress has required that there must be continuous *section 112-compliant* standards) (emphasis in original). EPA claims that the D.C. Circuit also held that CAA Section 302(k) requires “continuous” emission standards, but nothing in the court’s decision precludes EPA from establishing work practices that apply during SSM periods, when numeric limits designed for normal operations are not intended to apply. In fact, EPA defended itself against Sierra Club’s challenges in the case by arguing that numeric limits are unnecessary during SSM periods because non-numeric work practices will suffice. *Id.* (“EPA responds that the general duty that applies during SSM events ‘along with the limitations that apply during normal operating conditions, together form an uninterrupted, i.e., continuous, limitation because there is no period of time during which one or the other standard does not apply’ ...).

This understanding—that numeric standards should not apply at times for which those standards were not designed—is particularly important and relevant for landfills because *landfills are not subject to any continuous numeric emission limits at all*. Under the current landfill NSPS provisions (which EPA does not propose to revise), actual emission rates need only be demonstrated once with an initial performance test, in order to establish the design and operational standards that actually comprise the enforceable requirements of the NSPS. To demonstrate ongoing compliance, landfills need only operate their collection and control systems properly and take specific corrective actions if surface monitoring indicates methane concentrations have exceeded 500 ppm above background. *See* 40 C.F.R. § 60.755 and proposed 40 C.F.R. § 60.765. So long as those actions are completed in a timely fashion, the current NSPS confirms that the “exceedance is not a violation.” *Id.* Therefore, EPA’s policy that exceedances during SSM events *must* be a “violation” is not only flawed, but completely inconsistent with the landfill NSPS.

#### **Comment Response:**

The EPA disagrees with the commenter’s statements concerning the agency’s SSM approach in this rule and in general, and the EPA’s interpretation and application of the D.C. Circuit’s decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008). That said, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill’s gas collection and control system and associated monitoring equipment are not operating. *See*, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 34

**Comment Excerpt:**

The more appropriate response to the D.C. Circuit’s decision in *NRDC v. EPA*, which Republic urges EPA to consider, would be to simply withdraw the unreasonable policy of demanding that all excess emissions during malfunctions must be treated as “violations.” As noted above, Section 111 was never intended to apply to malfunctions, and the standards that EPA has developed under Section 111 do not take malfunctions into account. In addition, nothing in the Clean Air Act requires numeric emission limits to apply during times and operating scenarios that they were not designed to address, EPA’s misinterpretation of *Sierra Club v. EPA* notwithstanding. On the contrary, a more sound policy approach for addressing excess emissions during SSM periods would be to impose work practice standards that require sources to minimize emissions to the greatest extent practicable—the very type of non-numeric corrective actions that EPA has considered prerequisites to its “affirmative defense” policy in the past. With those work practices in place, the emission standards in effect remain “continuous” and minimize emissions without unnecessarily placing sources at risk for lawsuits over events they cannot control. Under this more reasonable SSM policy, no revisions to the landfill NSPS would be needed with respect to SSM emissions, and Republic asks EPA to adopt that approach.

**Comment Response:**

See response to comment excerpt above for DCN: EPA-HQ-OAR-2003-0215-0099.1, excerpt 31, under comment code 14b.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 45

**Will be summarized and responded to in the preamble:**

**Sort Order:** 0

**Response Status:** Draft in development

**Comment Excerpt:**

EPA's proposed approach is not appropriate for municipal solid waste landfill facilities, which EPA readily acknowledges are unlike many other types of industrial sources in that landfill emissions are produced by a biological process that cannot be stopped or restarted. 79 Fed. Reg. at 41815. EPA notes that the primary SSM concern is with the gas collection and control system, rather than with the landfill itself. *Id.* However, instead of directly addressing this unique operational issue in the context of SSM, EPA merely applies a one-size-fits-all prohibition on SSM allowances. EPA's proposal is inconsistent with existing provisions governing landfills under Subpart WWW, fails to account for the operational realities of gas collection and control systems, erroneously interprets judicial holdings governing SSM standards, and fails to provide adequate notice to landfill owners and operators of their compliance obligations under the proposed rule. Additionally, against a backdrop of changing policies regarding EPA's regulation of SSM events across many source categories, EPA appears to deviate from its recent approach

in other rulemakings in which EPA has endeavored to specifically consider the unique aspects of routine and anticipated source operating conditions in order to provide clarity with respect to compliance obligations during SSM events.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Dave Heitz  
**Commenter Affiliation:** Geosyntec Consultants  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0102.1  
**Comment Excerpt Number:** 5  
**Will be summarized and responded to in the preamble:**  
**Sort Order:** 0  
**Response Status:** Draft in development

**Comment Excerpt:**

EPA should maintain the Start-up, Shutdown and Malfunction (SSM) requirements as written in Subpart WWW.

**Comment Response:**

The EPA has concluded that maintaining the SSM requirements as requested by this commenter would not be consistent with the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008).

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity  
**Commenter Affiliation:** Friends of the Earth  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0121  
**Comment Excerpt Number:** 22

**Comment Excerpt:**

*Startup, shutdown and malfunction.* We fully support EPA's proposal that BSER standards apply at all times, including periods of startup or shutdown and periods of malfunction.

**Comment Response:**

The final rule establishes standards that apply at all times.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 10

**Comment Excerpt:**

We are very concerned with EPA's proposed change to the rule language that would eliminate the current provision afforded to landfills during times of startup, shutdown, and malfunction (SSM). This change is a major departure from the way landfills and GCCSs are currently regulated and have been regulated for the past 18 years. These changes could significantly increase the level and severity of enforcement action that landfills will face for GCCS downtime events that are inherent to the way GCCS operate at landfills.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 15

**Comment Excerpt:**

With the removal of the 1-hour/5-day SSM exemption, landfills need an alternative allowance for downtime of all or portions of the GCCS without the SSM becoming a rule deviation. This is most critical for low-producing areas of landfills, or closed landfills with declining gas flows; however, at any given time, any landfill or area of the landfill could need this flexibility.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 25

**Comment Excerpt:**

With the removal of the 1-hour/5-day SSM exemption, landfills need an alternative allowance for downtime of all or portions of the GCCS without the SSM becoming a rule deviation. This is most critical for low-producing areas of the landfills, or closed landfills with declining gas flows. However, at a given time, any landfill or area of the landfill could need this flexibility. Many jurisdictions have interpreted the continuous operation requirement in the NSPS/EG rules as applying to the entire GCCS, as well as to individual components (e.g., wells) of it. The current SSM exemption has been used to prevent these downtime events from becoming deviations. In the absence of it, we would need other explicit allowances in the rule to allow non-SSM downtime of the entire GCCS (e.g., during maintenance, due to weather, power outages, etc.) or individual wells (e.g., to prevent or extinguish a fire, due to low production, to repair the well, etc.).

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 86

**Comment Excerpt:**

EPA's proposed approach to SSM in Subpart Cf generally consists of four parts: (1) EPA's determination to exclude from Subpart Cf the existing 5-day / 1-hour SSM provision contained in Subpart WWW (*see* 40 C.F.R. §60.755(e)); (2) the inclusion within Subpart Cf of a new provision specifying that "the provisions of this subpart shall apply at all times, including periods of startup, shutdown or malfunction" (*see* proposed 40 C.F.R. §60.36f(e) and 80 Fed. Reg. at 52133); (3) a requirement to shut down the gas mover system and close all valves in the collection and control system contributing to venting of the gas to atmosphere within one hour if the control system is not operating (*see* 40 C.F.R. §60.34f(e) and 80 Fed. Reg. at 52134); and (4) a requirement that affected facilities estimate emissions of non-methane organic compounds

("NMOC") during periods when the landfill gas collection system or control device is not operating (*see* proposed 40 C.F.R. §60.39(f)(c)(5) and 80 Fed. Reg. at 52134). (EPA's Subpart XXX proposal contains these same components.) Together, and without further clarification, these aspects of EPA's proposal create confusion with respect to landfill owners' and operators' compliance obligations. As an example, EPA's decision to exclude the existing 5-day / 1-hour SSM provision, together with proposed language that "the provisions of this subpart shall apply at all times..." could be interpreted to require continuous operation of landfill gas collection systems under all circumstances. Likewise, the requirement to estimate NMOC emissions during periods of collection or control system downtime could be understood to imply that excess emissions would occur during such periods. These interpretations are inconsistent with both landfill operations and the basic regulatory framework first established under Subpart WWW and now reaffirmed by EPA in both its Subpart XXX and Cf proposals.

**Comment Response:**

The EPA does not agree that the proposed rule would have created the confusion that commenter describes. That said, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 90

**Comment Excerpt:**

The *Sierra Club* decision does not require or justify EPA's abandonment of the 5-day / 1-hour provision in proposed Subpart Cf. The 5-day / 1-hour provision is not a "*blanket exemption*" from compliance with an emission limit. Instead, EPA carefully examined a range of possible operating circumstances that may result in the startup, shutdown or malfunction of a gas collection and control system and determined not only that 5 days (for downtime of collection systems) and 1 hour (to accomplish the startup and shutdown of treatment or control systems) were appropriate limitations on the duration of SSM, but also determined that there may be a range of specific work practices followed during such circumstances, and that such work practices would be determined on a site-specific basis.

**Comment Response:**

EPA does not agree that a work practice standard for SSM periods should be determined on a site-specific basis. That said, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods



when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 96

**Comment Excerpt:**

WM is concerned that EPA's proposed approach to SSM in Subparts Cf and XXX is potentially inconsistent with its BSER determination for landfills and will tend to promote confusion in implementing the standards. WM offers two alternative approaches for EPA's consideration in revising its SSM proposal to promote clarity and consistency with the underlying standards.

Retain the Subpart WWW approach to SSM.

EPA should maintain its current approach to SSM for municipal solid waste landfills established in Subpart WWW, which was carefully considered in the context of operational and technical determinations that are re-affirmed in the current proposal. WM's observations of gas collection and control system performance, gathered over many years at many landfills, support EPA's 5-day / 1-hour allowance for startup, shutdown and malfunction conditions *that by the very nature of the source category are anticipated operational conditions that do not result in excess emissions*. The 5-day / 1-hour provision works in concert with the requirement (which would be retained in Subparts Cf and XXX), to ensure that the gas mover system is shut down and all valves contributing the venting of landfill gas to atmosphere are closed within one hour if the collection or control system is not operating. In this manner, the 5-day / 1-hour allowance is very consistent with determinations that EPA has made in other recent rulemakings with the establishment of work practices and alternative compliance demonstration obligations during startup and shutdown periods. The 5-day / 1-hour allowance does not constitute an exemption from an emission limitation and therefore it does not run afoul of *Sierra Club* and instead is an extension of the CAA Section 111(h) determination that has underpinned the BSER standard since its inception.

Active gas collection systems may experience any number of startups, shutdowns or malfunctions during the course of normal operation, and these events may affect either all or a part of the gas collection system. At WM's larger landfills, for example, an active gas collection system may be comprised of miles of piping, hundreds of collection wells, and one or more gas collection headers. These systems are expanded frequently and adjusted at least monthly per the rule to ensure that the gas collection system collects gas at a sufficient extraction rate, and minimizes the subsurface migration of landfill gas. There is no active landfill gas collection system that does not experience complete or partial startup or shutdown as the result of both planned and unplanned events in the course of its operation. And because collection and control systems are integrated, an operating condition in one facet of the system may affect other facets

of the system. For example, where an operational circumstance requires partial or complete shutdown of the gas collection system, the control device cannot operate. Conversely, a control device shutdown may affect all or a portion of the gas collection system. In most cases, WM is able to either restore partial operation and/or employ backup devices in short order, such that a complete system shutdowns are rare. In all cases, WM endeavors to restore full operation as quickly as possible. Moreover, during periods of partial or complete collection or control system downtime, WM has observed that the landfill has significant capacity to contain landfill gas. Based on WM's observations, the Subpart WWW 5-day provision is appropriate both to allow the operational adjustments and repairs that may be required to restore collection system operation, and to ensure that the landfill's capacity to hold landfill gas is maintained during collection system downtime.<sup>33</sup> In addition, WM's SSM and gas collection and control system design plans have been developed to comply with the 5-day provision. These procedures are adequate to demonstrate compliance during the myriad of operational conditions that may require startup, shutdown or downtime of a landfill gas collection system. Operational standards such as surface emissions and wellhead pressure provide indicators of system performance and help to ensure that potential emissions and off-site odors are minimized. In addition, at WM's many sites that beneficially use collected landfill gas as fuel for the generation of energy, WM and its operating partners have a practical incentive to ensure that gas collection systems are both well-designed and well-operated, and that downtime periods are minimized to the extent possible.

The 1-hour limitation on startup and shutdown of landfill gas control systems also continues to be appropriate and represents an alternative work practice standard that is similar to the standards EPA has established for other source categories. WM's most often-used control devices, open and enclosed flares, are designed to startup and shutdown in a manner that maximizes efficiency and minimizes the potential for emissions. Startup procedures are precisely tailored to achieve operating temperature as quickly as possible while ensuring that steady-state operation is achieved. Enclosed flares are equipped with temperature alarms, while open flares are equipped with presence of flame indicators, that trigger emergency shutoff switches that are programmed to alert personnel and shutdown flare and blower systems in the event that minimum operating temperature cannot be maintained. In all cases flare systems are designed to complete startups and shutdowns, including those occasioned by malfunction events, within one hour, consistent with EPA's determination under Subpart WWW. WM is confident that startup and shutdown of both open and enclosed flares, when conducted in accordance with manufacturer's design specifications, ensure that no excess emissions occur. Furthermore, startup and shutdowns are typically completed much faster than one hour, but may vary within that requirement based on landfill operating conditions, ambient temperature and other factors. Startup and shutdown procedures and operating conditions are well documented in both SSM plans and in gas collection and control design plans, and therefore following these procedures during SSM events is adequately protective. Thus, in planned startups and shutdowns, and even in circumstances where startups and shutdowns are unplanned, proper operation of the flare design and controls ensures minimization of emissions in a manner consistent with the Subpart WWW 1-hour provision.

[Footnote 33] In proposing to exclude the 5-day / 1-hour provision from Subpart Cf, EPA offers as a justification that "some malfunctions cannot be corrected within these timeframes." 80 Fed. Reg. at 52134. This rationale is not supported in fact and curiously, was first offered by EPA in

2006 in the context of its proposal to loosen, rather than tighten, the restriction on SSM events. See 71 Fed. Reg. 53272, 53282 (September 8, 2006).

**Comment Response:**

The EPA does not agree that the options suggested by the commenter are appropriate. Retaining the 5-day/1-hour provisions for SSM is not reasonable because it is not consistent with the court decision in *Sierra Club v. EPA* at 551 F.3d 1019 (D.C. Cir. 2008) and because some malfunctions cannot be corrected within these timeframes. In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 9

**Comment Excerpt:**

KDAQ agrees with the requirement in the proposed rule to shut down the gas mover system and close all valves in the collection and control system contributing to venting of gas to the atmosphere within 1 hour of the start of the event. However, KDAQ finds that the 5-day and 1-hour time limitations currently in 40 CFR 60, Subpart WWW are appropriate for most situations. For those situations that cannot be corrected within the limited timeframes, the rule could provide a mechanism for the facility to apply to the Administrator for an extension of those timeframes in the event of extraordinary circumstances.

**Comment Response:**

In the final rule, EPA has not maintained the 5-day provision that was in Subpart WWW. However, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 3

**Comment Excerpt:**

The Department also supports EPA's proposal to require that the LFG emission standards apply at all times including start-up, shutdown and malfunction (SSM) periods.

**Comment Response:**

The final rule establishes standards that apply at all times.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 16

**Comment Excerpt:**

Regarding removal of the 5-day/1-hour exemption periods for collection systems, we are concerned with how this would impact the normal operations of a landfill. The facility's GCCS exists outdoors at a facility that is in a constant state of change, waste is constantly decomposing causing settlement and other physical changes that affect the GCCS. Areas of the landfill are being impacted by operational equipment each and every day, presenting the risk of physical damage to the GCCS. Typically, a facility's GCCS relies on commercial utility for power, so operation of the GCCS is further affected by weather and utility outages that are outside the control of the facility. In addition to these malfunction events, there are a large number of planned but unavoidable outages that may occur. For example, lateral expansions that impact existing solid waste facility design components like leachate vaults, external berms may be impossible to overcome without periods of shutdown. Time is needed to allow a facility to plan and execute a short term closure of valves to complete the tie-ins safely. The USEPA has clearly stated they do not expect back up control devices to be operated at a landfill. A landfill must use mechanical devices to control emissions and things will happen which will upset the system. The system is closed and all connections are sealed to not only preclude air from coming in, but also to stop collected gas from escaping immediately. The landfill mass and cover (final cap and other covers) prevent emissions from immediately occurring.

**Comment Response:**

In recognition of the unique nature of landfill emissions, and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 17

**Comment Excerpt:**

In the background documentation for the 1996 NSPS Subpart WWW Rule it is stated that, "The 5-day exemption period for collection systems was selected in recognition that a major problem with a collection system will likely take some time to locate and solve but also that the landfill is not going to stop generating LFG." The guidance goes on to say that, "In the design and operational standards of these rules, compliance with the standards is meeting the requirements for the installation and operation of a properly-designed system." Nothing about those statements has changed since 1996. Landfills still have unpredicted downtime events which take time to diagnose and repair. Rightfully so, landfill sources have long been recognized as being different from another emission sources. The enumerable unforeseen circumstances that could exist in the outdoor environment does not have to be overcome by virtually any other emission source. Many facilities are provided scheduled maintenance shutdowns to occur per state SIP plans when shutting down the process is impossible or very expensive. At those times, the facilities are asked to provide a plan that will minimize emissions; landfills should, at a minimum, be provided the same allowance. However, additional administrative processes that take the decision out of the hands of the operators of the facilities are completely contrary to the concepts provided in Title V of the Clean Air Act.

Facilities all over the country have been reporting their downtimes in relation to the current rule (1 hour and 5 day) for 18 years. In each of these reports, the facilities have listed and justified the reasons for these short term events. Leaving the standard, as it is, provides a performance standard and a goal for the facilities. Events greater than 1 hour (of uncontrolled landfill gas) and greater than 5 days (complete shutdown of the GCCS) rarely are reported because the industry can typically overcome the obstacles presented to them during that time period. The 1 hour/5 day allowance is reasonable, it is our position that a reasonable exception to the compliance rules to allow for expected troubleshooting with the collection system and control devices should remain in the performance standards. The industry has long assumed the 1 hour allowance to mean uncontrolled landfill gas escaping directly from the control device. USEPA should make this clear in the future rules, as well.

**Comment Response:**

The EPA disagrees with the commenter's statements that the 5-day allowance is reasonable and should be maintained. However, in recognition of the unique nature of landfill emissions, and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 30

**Comment Excerpt:**

*In the proposed rule, USEPA requested comments on other ways to show compliance with the rules during period of malfunction.*

As stated in the proposed rulemaking, USEPA acknowledges that it is generally not technically feasible to establish an alternative emission standard that would apply during periods of malfunction. We believe it is not necessary to do so. Malfunctions are by definition sudden, infrequent failures of emission control. It is our experience that a brief malfunction results in the quick shutdown of the control device and therefore there are no excess emissions from the control device. We do not believe there should be any changes in how malfunctions are handled.

**Comment Response:**

The EPA disagrees that there should be no changes to how malfunctions are handled. In recognition of the unique nature of landfill emissions, and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 49

**Comment Excerpt:**

EPA's Proposed Approach to SSM in Subpart XXX is Not Technically or Practically Appropriate. EPA's three-part proposal to address SSM in Subpart XXX, by (1) specifying that the provisions of Subpart XXX apply at all times; (2) excluding the 5-day / 1-hour provision; and (3) requiring maintenance of records of NMOC emissions during collection and control system downtime, is both technically and practically improper. First and foremost, a general requirement that Subpart XXX applies at all times is entirely too broad and will lead to significant confusion among the regulated community. EPA fails to explain what "at all times" means in the context of a gas collection and control system. If EPA intends compliance to require continuous operation of the gas collection and control system, such a standard is inconsistent with the operating requirements of Subpart WWW and the Landfill MACT, which would continue in effect under EPA's proposal. For example, in Subpart XXX, EPA proposes to retain the requirement to shutdown the gas mover system and close all valves in the gas collection and control system within one hour in the event that the collection or control system is not operating. See proposed 40 C.F.R. §60.763(e). However, EPA notes in its preamble statements that the practice of shutting down the gas mover equipment and valves under these circumstances "does not

constitute compliance" with the applicable collection and control system standards, and instead satisfies only the general duty to minimize emissions during collection or control system malfunction. *See* 79 Fed. Reg. at 41817. The implication of EPA's statements is that a temporary shutdown of the collection or control system, however brief and for whatever purpose, may constitute a deviation from Subpart XXX requirements, even where the gas mover system is shut down and valves are closed properly. Thus, almost identical regulatory provisions would have two wholly separate meanings under Subpart WWW and Subpart XXX.<sup>24</sup>

[Footnote]

(24) EPA's preamble discussion notes that proposed Section 60.763(e) uses the term "not operating" instead of the word "inoperable" as used in existing Section 60.753, because "there is no allowance for SSM periods." EPA further states "EPA proposes to use the term 'not operating,' which includes periods when the gas collection or control system is not operating for whatever reason, including when the gas collection system is inoperable." 79 Fed. Reg. at 41817. EPA's rationale, and its apparent distinction between the terms "inoperable" and "not operating" is not clear, and in our view does not support EPA's proposed approach.

#### **Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. *See, e.g.,* 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 52

#### **Comment Excerpt:**

EPA Must Address Startup, Shutdown and Malfunction Events in Proposed Subpart XXX. EPA should maintain its current approach to SSM for municipal solid waste landfills in Subpart WWW, which was carefully considered in the context of operational and technical determinations that have not changed in the current proposal. Indeed, WM's observations of gas collection and control system performance, gathered over many years at many landfills, support EPA's S-day / 1-hour provision for startup, shutdown and malfunction.

Active gas collection systems may experience any number of startups, shutdowns or malfunctions during the course of normal operation, and these events may affect either all or a part of the gas collection system. At WM's larger landfills, for example, an active gas collection system may be comprised of miles of piping, hundreds of collection wells, and one or more gas collection headers. These systems are expanded frequently and adjusted at least monthly per the rule to ensure that the gas collection system collects gas at a sufficient extraction rate, and minimizes the subsurface migration of landfill gas. Operational standards such as surface

emissions and wellhead pressure provide indicators of system performance and help to ensure that potential emissions and off-site odors are minimized. In addition, at WM's many sites that beneficially use collected landfill gas as fuel for the generation of energy, WM and its operating partners have a practical incentive to ensure that gas collection systems are both well-designed and well-operated.

However, there isn't any active landfill gas collection system that does not experience complete or partial startup, shutdown or malfunction in the course of its operation under a variety of circumstances. And because collection and control systems are integrated, an operating condition in one facet of the system may affect other facets of the system. For example, where an operational circumstance requires partial or complete shutdown of the gas collection system, the control device cannot operate. Conversely, a control device shutdown may affect all or a portion of the gas collection system. In most cases, WM is able to either restore partial operation and/or employ backup devices in short order, such that a complete system shutdowns are rare. In all cases, WM endeavors to restore full operation as quickly as possible. Moreover, during periods of partial or complete collection or control system downtime, WM has observed that the landfill has significant capacity to contain landfill gas. Occurrences of constant odors would indicate when that capacity has been reached. Based on WM's observations, the Subpart WWW 5-day provision is appropriate both to allow the operational adjustments and repairs that may be required to restore collection system operation, and to ensure that the landfill's capacity to hold landfill gas is maintained during collection system downtime.<sup>25</sup> In addition, WM's SSM and gas collection and control system design plans have been developed to comply with the 5-day provision. These procedures are adequate to demonstrate compliance during the myriad of operational conditions that may require startup, shutdown or downtime of a landfill gas collection system.

Landfill gas control systems, such as enclosed flares, are designed to startup and shutdown in a manner that maximizes efficiency and minimizes the potential for emissions. Startup procedures are precisely tailored to achieve operating temperature as quickly as possible while ensuring that steady-state operation is achieved. Enclosed flares are equipped with temperature alarms, while open flares are equipped with presence of flame indicators, that all trigger emergency shutoff switches that are programmed to alert personnel and shutdown flare and blower systems in the event that minimum operating temperature cannot be maintained. In all cases flare systems are designed to complete startups and shutdowns, including those occasioned by a malfunction event, within one hour, consistent with EPA's determination under Subpart WWW. In most cases, enclosed flare shutdowns do not result in any actual excess emissions and non-enclosed flare startups/shutdowns result in no excess emissions. Furthermore, startup and shutdowns are completed much faster than one hour, but may vary within that requirement based on landfill operating conditions, ambient temperature and other factors. Startup and shutdown procedures and operating conditions are well documented in both SSM plans and in gas collection and control design plans, and therefore following these procedures during SSM events is adequately protective. Thus, in planned startups and shutdowns, and even in circumstances where startups and shutdowns are unplanned, proper operation of the flare design and controls ensures minimization of emissions.

[Footnote]



(25) In proposing to exclude the 5-day / 1-hour provision from Subpart XXX, EPA offers as a justification that "some malfunctions cannot be corrected within these timeframes." 79 Fed. Reg. at 41816. This rationale is not supported in fact and curiously, was first offered by EPA in 2006 in the context of its proposal to loosen, rather than tighten, the restriction on SSM events. See 71 Fed. Reg. 53272, 53282 (September 8, 2006).

**Comment Response:**

The EPA disagrees that there should be no changes to how malfunctions are handled. In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D. The work practices for startup, shutdown and malfunction are consistent with current best practices for startup and shutdown as described by the commenter, and provide more flexibility for malfunctions than the 5-day/1-hour provisions in the previous version of the rules.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

The proposed rule removes the 5-day and 1-hour limitations which were previously allowed during times of startup, shutdown and malfunction. There is a straggling reference to the 1-hour exemption, but there is a requirement to report ALL periods when the collection system was not operating.

*The concern with this proposed change is closely related to the concern discussed in #1 above. The facility's GCCS exists outdoors at a facility that is in a constant state of change, waste is constantly decomposing causing settlement and other physical changes that affect the GCCS. Areas of the LF are being impacted by operational equipment each and every day, presenting the risk of physical damage to the GCCS. Typically, a facility's GCCS relies on commercial utility for power, so operation of the GCCS is further affected by weather and utility outages that are outside the control of the facility. In addition to these malfunction events; there are a large number of planned but unavoidable outages that may occur. For example, lateral expansions that impact existing solid waste facility design components like leachate vaults, external berms may be impossible to overcome without periods of shutdown. Time is needed to allow a facility to plan and execute a short term closure of valves to complete the tie-ins safely. The USEPA has clearly stated they do not expect back up control devices to be operated at a landfill. A landfill must use mechanical devices to control emissions and things will happen which will upset the system. The system is closed and all connections are sealed to not only preclude air from coming in, but also to stop collected gas from escaping immediately. The landfill mass and cover (final cap and other covers) prevent emissions from immediately occurring. In the background*

*documentation for the 1996 NSPS Subpart WWW Rule it is stated that, "The 5-day exemption period for collection systems was selected in recognition that a major problem with a collection system will likely take some time to locate and solve but also that the landfill is not going to stop generating LFG." The guidance goes on to say that, "In the design and operational standards of these rules, compliance with the standards is meeting the requirements for the installation and operation of a properly-designed system." Nothing about those statements has changed since 1996. Landfills still have unpredicted downtime events which take time to diagnose and repair. Rightfully so, landfill sources have long been recognized as being different from another emission sources. The innumerable unforeseen circumstances that could exist in the outdoor environment do not have to be overcome by virtually any other emission source. Many facilities are provided scheduled maintenance shutdowns to occur per state SIP plans when shutting down the process is impossible or very expensive. At those times, the facilities are asked to provide a plan that will minimize emissions; landfills should, at a minimum, be provided the same allowance. However, additional administrative processes that take the decision out of the hands of the operators of the facilities are completely contrary to the concepts provided in Title V of the Clean Air Act. Facilities all over the country have been reporting their downtimes in relation to the current rule (1 hour and 5day) for 18 years. In each of these reports, the facilities have listed and justified the reasons for these short term events. Leaving the standard, as it is, provides a performance standard and a goal for the facilities. Events greater than 1 hour (of uncontrolled landfill gas) and greater than 5 days (complete shutdown of the GCCS} rarely are reported because the industry can typically overcome the obstacles presented to them during that time period. The 1 hour/5 day allowance is reasonable, it is our position that a reasonable exception to the compliance rules to allow for expected troubleshooting with the collection system and control devices should remain in the performance standards. The industry has long assumed the 1 hour allowance to mean uncontrolled landfill gas escaping directly from the control device. USEPA should make this clear in the future rules, as well.*

*There is a straggling reference to the 1-hour exemption. A reference should be included in 765(e) to clearly define what is meant (i.e. less than 1 hour is allowed}. There is a requirement to report ALL periods when the collection system was not operating. For consistency, we request keeping the 1 hour allowed in 765(e).*

**Comment Response:**

In recognition of the unique nature of landfill emissions, and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 34

**Comment Excerpt:**

DSW A is very concerned with the removal of start up, shutdown and malfunction (SSM) provisions from the Proposed NSPS. GCCS have the need for periodic planned downtime. These include performing necessary maintenance activities, making tie-ins new or upgraded parts of the collection system, and fixing problems with parts of the system. Because the GSSC contains explosive gas and is operated under vacuum, certain activities that introduce oxygen into the system have to be done during downtime of all or part of the system. Some tie-ins must be done under partial vacuum to limit employees' exposure to dangerous levels of LFG components. There are also many circumstances when unplanned downtime occurs (such as power failures at the facility or location of beneficial use project, operational problems with GCCS or end user equipment). DSW A takes great effort to minimize down time of the GCCS to less than 1 hour but we have found the 5-day provision helpful.

**Comment Response:**

In recognition of the unique nature of landfill emissions, and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Charlie Sedlock, Director

**Commenter Affiliation:** Hamm, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0084.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

The elimination of the 1-hour and 5-day allowance for the startup, shutdown and malfunction is cause for concern. There are many reasons that the system shuts down – everything from power outages from lightning strikes to tying in the existing landfill header to a new section. Some of these are planned (such as expansions) and others are unplanned (lightning). Regardless, these are frequent occurrences at landfills. We believe that EPA should include an assumption of no emissions for the 5-day rule. In addition, the 1-hour rule for free venting should be maintained.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 5

**Comment Excerpt:**

A second issue that's important to us is the proposed rule on startup, shutdown and malfunction, where the standard would apply during that period. We feel that is an infeasible standard to comply with. Any thermal device has to come up to temperature before it is effective. Any mechanical or thermal device will have a malfunction, and to require that the standard be met during that period of time, is just very unreasonable. Every facility will be out of compliance when they start up their thermal combustion device. And we think the existing rule under WWW which allowed for some period of time to come into compliance, both during the startup and shutdown, and also during the malfunction, is much more reasonable and we suggest that you please revisit that.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

We disagree that a thermal combustion device always would be out of compliance at startup. The rule specifies that a control device must be operated according to the parameters determined to constitute compliance as specified in the rule or as determined during the initial compliance test, whichever applies. For startup, the rule requires that a control device must achieve the required operating conditions before the gas collection system is operated. If this sequence is followed, then the landfill is in compliance.

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 10

**Comment Excerpt:**

We think the current standard in WWW is appropriate. One day five -- one hour five days is the type of de minimis period for both startup shutdown and modification, which would be something that we've complied with all of this time and would be able to comply with in the future. But a zero tolerance during that period of time is just not practical.

**Comment Response:**

The EPA disagrees that there should be no changes to how SSM periods are handled. However, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 40

**Comment Excerpt:**

We are very concerned with EPA's proposed rule language that would eliminate the 1-hour and 5-day downtime criteria contained within the current NSPS rule. We are further concerned with the requirement that the provisions of the NSPS apply at all times, **including** periods of startup, shutdown, and malfunction (SSM). EPA is proposing additional requirements whereby landfills would have to track, calculate, and report excess emissions during any GCCS downtime events, implying that such emissions immediately occur when a GCCS goes off-line.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 50

**Response Status:** Draft in development

**Comment Excerpt:**

EPA's proposal is inconsistent with the very basis for EPA's establishment of the gas collection system requirement as a design standard, rather than a performance standard or emission limitation. EPA fails to explain how compliance with a design standard may be achieved at all times in a system that, by its very nature, requires continual startups, shutdown, expansions and adjustments. EPA's proposed approach fails to account for the complexity of gas collection and control systems, which are multifaceted systems that, in EPA's own regulatory language are

subject to a "wide variety" of potential designs and site -specific operational standards set forth in SSM and gas collection and control system design plans. 40 C.F.R. §60.7S2(b)(i). Because there are circumstances (both routine and unanticipated) where certain parts of the system may be operating when others are not, as acknowledged in the Subpart WWW Background Document, EPA's standard for compliance "at all times" would be impossible to meet.

Although EPA clearly anticipated periods of SSM in its original designation of a well-designed and well-operated collection and control system, EPA provides no guidance or direction with respect to what compliance standard now must be 'met during a collection or control system SSM event. In short, while EPA acknowledges that landfills are unlike conventional sources, EPA has proposed a one-size fits SSM approach in which it would simply strip Subpart XXX of any SSM allowance, and of any provisions that would adequately address compliance obligations, as against a design standard, during SSM periods.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 42

**Comment Excerpt:**

In the preamble, EPA stated that the 1-hour and 5-day SSM duration limits for control device or GCCS, respectively, are being eliminated because the duration is often not sufficient. We agree that the time required is occasionally greater, but disagree with eliminating this standard.

By eliminating the criteria, state agencies are provided with leeway to reduce downtime limits to something less than 1-hour/5 days for enforcement action. With the elimination of the SSM exclusion, any downtime could be justification for enforcement, including notices of violation (NOVs) and fines.

Furthermore, we recommend that EPA clearly define, as it did in the 2006 proposed rulemaking that the 1-hour threshold applies only to free venting of LFG after a control device goes off-line and before the gas mover equipment can be shutdown to prevent untreated gas from passing through the control device. Ever since NSPS was promulgated in 1996, the industry has interpreted the 1-hour threshold to be a free venting standard. This is particularly important to us because, as you know, several enforcement actions have been filed under this 1-hour provision. NW&RA and SWANA, therefore, request that EPA revise the rule language to clarify that the 1-

hour standard was originally meant to be a free venting standard and that any other interpretation is inaccurate.

**Comment Response:**

The final rule does not take the approach suggested by the commenter. However, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

The NSPS requires that at all times, including startup, shutdown, and malfunction; an affected source must be operated in a manner consistent with good air pollution control practice for minimizing emissions. The rule specifies that in the event the collection or control system is not operating, the gas control system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within 1 hour. If the landfill operator acts expeditiously to restrict unnecessary venting to the atmosphere, then no deviation has occurred provided that all valves are closed within 1 hour.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

Operators of GCCS have the ability to shut down the gas mover systems and the main header valves to prevent passive "free" venting of LFG. LFG control devices (flares, engines, treatment vessel, etc.) are designed to protect the integrity of the equipment and to prevent free venting of raw LFG during a malfunction. Therefore, it is unreasonable to assume that there will be excess NMOC emissions during all startup and shutdown periods. We strongly support SWANA's request that EPA revise the rule language to clarify that the 1-hour standard was originally meant to be a "free venting" standard and that any other assumption or interpretation is inaccurate. [See DCN EPA-HQ-OAR-2003-0215-0108.1, Excerpt 42.]

The proposal to remove the 1 hour and 5 day criteria would create an unlimited number of additional deviations, NOV's and fines resulting from enforcement actions especially related to control device temperature deviations during startup and shutdowns.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g.,

60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D. See also response to DCN EPA-HQ-OAR-2003-0215-0108.1, Excerpt 42 regarding free venting.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 48

**Comment Excerpt:**

The proposed removal of the SSM exclusion and 1-hour/5-day criteria would also create an unlimited number of additional deviations, NOV's and fines resulting from enforcement action such as:

Any downtime of the GCCS could be considered a deviation subject to discretionary enforcement action. Landfills can have hundreds of these events each year, which are beyond our reasonable control and that clearly fit the definitions of SSM.

Any enforcement action related to GCCS downtime would be exacerbated based on the assumption of excess emissions (see further discussion below), which under the proposed rulemaking would be calculated and reported. Violations with emissions increases are always met with a more stringent level of enforcement.

The SSM exemption is commonly used to address wellhead issues (e.g., damage to wells, subsurface oxidation events, etc.) that prevent compliance with the wellhead standards in the NSPS. The loss of this exemption would create additional exceedances, which would require remediation. At best, this would result in additional operational activities, paperwork and costs for dealing with the compliance issues associated with these wells. Under the current rules these could be managed as SSM events. At worst, additional violations and subsequent enforcement actions would result.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Mark C. Messics, Senior Business Development Manager

**Commenter Affiliation:** PPL Renewable Energy, LLC

**Document Control Number:** EPA-HQ-OAR-2003-0215-0110.1



**Comment Excerpt Number: 2**

**Comment Excerpt:**

The Proposed Rule eliminates the 1-hour and 5-day downtime criteria and SSM provisions for Gas Collection and Control Systems ("GCCS"). This change is a major departure from the way these systems are currently regulated and will most certainly increase the level and severity of enforcement actions for events (many of which are unavoidable) that are inherent to the operation of the GCCS.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D."

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 44

**Comment Excerpt:**

NW&RA, SWANA and EPA have been working on a common understanding of the 1-hour/5 day and SSM criteria in the current NSPS rule for many years. This effort was disrupted by an October 2009 District of Columbia Court decision that vacated the SSM exemption from Subpart A of the NESHAPs. However, as the 1-hour/5 day and SSM language originated under the current NSPS §60.755 (e), prior to promulgation of the landfill NESHAPS, we do not believe the court decision applies to NSPS §60.755 (e).

On July 22, 2009, EPA issued the Kushner Memorandum that stated the vacatur will immediately and directly affect only those NESHAP/MACT standards that incorporate 63.6(f)(1) and (h)(1) by reference. Since §60.755 (e) is not subject, the 1-hour/5 day exemption, existing language should stand. We do not believe that EPA has provided a good rationale to remove these provisions, and are concerned it may be incorrectly applying the SSM vacatur to the landfill NSPS.

Although EPA has not clarified the impact to landfills, as outlined in the Kushner memo, it is our position that since Subpart WWW contains its own specific SSM language in §60.755 (e), and this language is unaffected by the October 2009 ruling. Therefore, consistent with our 2006 comments, we reiterate our recommendation that the NSPS provisions should not apply during periods of SSM, as limited by the 1-hour and 5-day criteria.

**Comment Response:**

EPA disagrees with the commenter's view on the application of the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008). The EPA's view of the *Sierra Club v. EPA* decision is provided in the final rule preamble (in Sections V.D and VI.D.) and the proposed rule (at 79 FR 41815-41816). That said, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Juene Franklin, P.E.

**Commenter Affiliation:** Franklin Engineers & Consultants, LLC

**Document Control Number:** EPA-HQ-OAR-2003-0215-0122

**Comment Excerpt Number:** 6

**Comment Excerpt:**

a. Cause – 40 CFR 60.763(e) in its current form states the following:

To prevent free venting of landfill gas to the atmosphere during control device malfunctions, we propose to include a requirement in subpart XXX (40 CFR 60.763(e)) that states that in the event the collection or control system is not operating, the gas mover system must be shutdown and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within 1 hour.

We believe the phrase "collection and control system" as stated above could be a barrier to emerging technologies that may be useful in limiting the emissions of GHGs in the future. One example is the Closuresurf technology. This technology allows for the integration of the final cap design and gas collection in one product. Essentially, the geomembrane component serves as a barrier to GHG emissions; while, making use of a Surficial Gas System (SGS) design concept to extract LFG from just beneath the liner and above the waste mass. One of the key components of the Closuresurf technology is that it does not require additional soils on top to grow grass, so if a failure occurs there is no danger of surface slides that could rip the liner. However, as part of the SGS design concept, pressure relief valves may be installed in key locations throughout Closuresurf area to prevent bubbling of the Closuresurf liner system. These pressure relief valves are designed to relieve gas pressure at 1" WC in the event of a GCCS shutdown and are very important in the Closuresurf Design.

b. Recommendation – To make certain that we don't exclude this useful tool to limit GHG emissions into the atmosphere, we recommend that the language associated with 40 CFR 60.763(e) be modified as stated below:

To prevent free venting of landfill gas to the atmosphere during control device malfunctions, we propose to include a requirement in subpart XXX (40 CFR 60.763(e)) that states that in the event

the collection or control system is not operating, the gas mover system must be shutdown and all valves in the control system contributing to venting of the gas to the atmosphere must be closed within 1 hour.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.”

### 14.3 SSM-Estimating Emissions

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 54

**Comment Excerpt:**

EPA's Proposed Requirement to Maintain Records Of Estimated NMOC Emissions During Periods When The Collection and Control System Is Not Operating Is Inappropriate and Infeasible. EPA's proposed Subpart XXX includes requirements to estimate NMOC emissions when the control device or collection system is not operating. 79 Fed. Reg. at 41817. EPA points to proposed sections 60.767(f)(7) and 60.768(c)(S) for these requirements. *Id.* While proposed section 60.768(c)(S) is included in the proposed regulatory text, 60.767(f)(S) is not included and therefore has not been subject to review and comment. *See* 79 Fed. Reg. at 41841.

Proposed section 60.768(c)(S) broadly requires landfill owners and operators to "keep records of estimates of NMOC emissions for periods when the collection system or control device is not operating." 79 Fed. Reg. at 41842. This requirement is vague in that it fails to acknowledge that NMOC emissions may not result from periods of collection or control system downtime, and provides no guidance for estimating such emissions when there is the potential for such occurrence nor describes what emission limit would or could be deviated from during this type of an occurrence. Further, EPA expressly acknowledged in its Subpart WWW Background Documents for the Landfill NSPS, and has confirmed again in its Subpart XXX proposal, that it is technically infeasible to measure the amount of landfill gas available for collection. *See* Subpart WWW Background Document at p. 2-85 and 79 Fed. Reg. at 41802. Likewise, potential emissions of landfill gas during a SSM event cannot be measured or reliably estimated. Potential emissions, if any, would be infeasible to calculate for partial or complete system shutdowns of short duration. Calculations of emissions are based on site-specific variables that estimate landfill gas generation over the life of a landfill, are based on long term collection efficiencies and cannot be reduced to hours or days. likewise, the estimation of emissions, if any, associated with the emission of uncombusted or partially combusted landfill gas to atmosphere from a control device would be very difficult. Further, EPA determined in the background to Subpart

WWW that any such emissions for periods less than one hour would be minimal. *See* Subpart WWW Background Document at p. 2-161.

**Comment Response:**

In the final rule, the EPA is not requiring estimation of NMOC emissions while the GCCS is not operating. The EPA agrees with commenters that it would be difficult to estimate emissions to the atmosphere during SSM periods. When considering whether to set a performance standard for 40 CFR part 60, subpart WWW, the EPA determined that it was not technically feasible to measure the amount of landfill gas for collection (79 FR 41802, July 17, 2014)). Likewise, it would be difficult to estimate the amount of landfill gas (and NMOC) emitted, when the GCCS is not operating. When the GCCS is not operating and gas is not actively collected, operators have no means of measuring emissions.

Estimating emissions would be especially difficult for landfills, considering variations in site-specific conditions such as waste composition and cover type. In addition, during an SSM event, all or part of the GCCS may not be operating and the length of time required for the landfill to generate enough landfill gas that could result in excess fugitive emissions is unknown. The EPA agrees with commenters that there is too much uncertainty in estimating NMOC emissions during downtime events.

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**Commenter Name:** Comment submitted by Matt Lamb  
**Commenter Affiliation:** Smith Gardner, Inc  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0083  
**Comment Excerpt Number:** 4

**Comment Excerpt:**

It is unclear how emissions are to be estimated [during SSM], as many times during equipment failures related to power issues, metering equipment used to monitor data used to calculate emissions may be inoperable as well. Additionally, are fugitive emissions through the landfill cap intended to be calculated as well? How is this proposed to be performed?

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under [comment code 14c].

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**Commenter Name:** Comment submitted by Charlie Sedlock, Director  
**Commenter Affiliation:** Hamm, Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0084.1  
**Comment Excerpt Number:** 7

**Comment Excerpt:**

The requirement to calculate emissions is unwarranted because landfills take precautions to ensure that there are no emissions. Simply because the landfill continues to produce gas does not mean that it is released to the environment. Nonetheless, the potential for overstatement exists similar to the emissions based on the modeling.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 32

**Comment Excerpt:**

EPA's proposal to require landfills to estimate emissions during SSM events is also problematic from a practical perspective, in that there is no previously accepted method for estimating emissions during SSM periods. EPA asks landfills to use the best information available to them in this effort, but the best information available will likely suggest that the emissions are typically zero because, as noted above, the gas collection system is capable of containing the landfill gas for some time. EPA's proposal to require an estimate of emissions also begs the question of whether those estimates will serve any real purpose—after all, without an applicable emission limit to compare those estimates against, the estimates are not likely to have any meaning under the regulations whatsoever. As a result, EPA's proposal seeks to impose additional analysis and reporting requirements that at best will serve no purpose. At worst, the requirement to estimate emissions could be mistaken by states and the public for an indication that those estimates are somehow relevant in determining compliance, increasing the risk that states and citizens may attempt to file enforcement actions or lawsuits that, in reality, would have no basis in the regulations. This risk is not academic—since all flares must be shut down from time to time for maintenance, each maintenance event could generate the potential for an enforcement action or lawsuit.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 51

**Comment Excerpt:**

EPA has made no determination that periods of collection system or control system downtime would lead to excess emissions of the only emission limit within NSPS WWW, which is the NMOC outlet limit on an enclosed combustion system, and has not provided any guidance or basis on which to estimate emissions of NMOC during downtime periods.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 60

**Comment Excerpt:**

**EPA Should Not Require Landfill Operators to Guess Their SSM Emissions.**

EPA proposed to add to its new SSM policy for landfills a requirement for landfill owners to estimate emissions during SSM events. EPA complains that, without this requirement, it "would have no way to gauge the severity of an emissions exceedance that may occur when these operating parameters are not being met or when the control device is not operating." But simply demanding an estimate does not address the fact that landfill owners themselves likewise have no way to gauge emissions when the control device is not operating. EPA claims landfills "may use whatever information is available to estimate NMOC emissions during the period, including but not limited to, landfill gas flow to or bypass of the control device, the concentration of NMOC (from the most recent performance test or from AP-42), and the amount of time the control device is not operating." But EPA does not explain how that information, or any other information, is expected to generate a reasonable estimate of emissions.

EPA appears to accept that, in many cases, the best estimate of the emissions during SSM may be zero because, as EPA has recognized, shutting off a GCCS will essentially eliminate all emissions for at least some period of time. 80 Fed. Reg. at 52134. However, EPA offers little else to explain its asserted need for additional information regarding the quantity of SSM emissions. Until EPA is able to provide a rational basis for this potentially onerous and meaningless exercise, and articulate a specific procedures that can be followed at all landfills, EPA should withdraw its proposed requirement for estimating and reporting SSM emissions.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 19

**Comment Excerpt:**

The concern with any change in how malfunctions are handled is the lack of a technical basis for estimating emissions. It is not known how long the GCCS must be shut down before the landfill begins to generate enough positive pressure which could result in any excess fugitive emissions through the landfill cover. Considering the endless potential operational status differences at individual facilities (i.e. 100% geomembrane cover vs. only soil cover), differing land area, voluntary early capture areas, dense vegetative cover, differing control status, etc. allowable the various state solid waste rule, it is impossible for facilities to even adequately characterize "excess emissions" based upon short term down times of the GCCS or control device(s).

Landfills are a fugitive emission source. Short term shut downs of the control device or the entire GCCS does not change this outcome. Creating an excess "emissions report" assumes that a facility [is] not capturing enough emissions when, frankly, USEPA is aware that well run GCCS capture greater than the average collection efficiency stated in AP-42. The rules currently allow short term 500 ppm exceedances, is it known how many more would exist if the GCCS were shut down for a short period of time (i.e. less than 5 days). Even if these emissions could be estimated, what is the basis or logic for determining them? It is our position that there is too much uncertainty and no way to standardize the process of estimating NMOC emissions during downtime events; therefore this proposed requirement is arbitrary.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 35

**Comment Excerpt:**

We are concerned that, under Subpart XXX, we would be required to estimate emissions during any SSM event. This would not only be time consuming, but it would not be possible to complete this with any degree of accuracy. When a GCCS is partially or fully shut down, the landfill will experience a natural attenuation of LFG emissions. Quantification of this process is not possible.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Comment submitted by Curt Publow  
**Commenter Affiliation:** Decatur Hills Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1  
**Comment Excerpt Number:** 2

**Comment Excerpt:**

*The concern with this proposed change is the lack of a technical basis for estimating emissions [when the collection system or control device is not operating]. It is not known how long the GCCS must be shut down before the landfill begins to generate enough positive pressure which could result in any excess fugitive emissions through the landfill cover. Considering the endless potential operational status differences at individual facilities (i.e. 100% geomembrane cover vs. only soil cover), differing land area, voluntary early capture areas, dense vegetative cover, differing control status, etc. allowable the various state solid waste rule, it is impossible for facilities to even adequately characterize "excess emissions" based upon short term down times of the GCCS or control device(s). Landfills are a fugitive emission source. Short term shut downs of the control device or the entire GCCS does not change this outcome. Creating an "excess emissions report" assumes that a facility is not capturing enough emissions when, frankly, USEPA is aware that well run GCCS capture greater than the average collection efficiency stated in AP-42. The rules currently allow short term 500 ppm exceedances, is it not known how many more would exist if the GCCS were shut down for a short period of time (i.e. less than 5 days). Even if these emissions could be estimated, what is the basis or logic for determining them? It is our position that there is too much uncertainty and no way to standardize the process of estimating NMOC emissions during downtime events; therefore this proposed requirement is arbitrary.*

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Jeffrey Vandebusch  
**Commenter Affiliation:** Foth Infrastructure & Environment, LLC, on behalf of Brown-Outagamie-Winnebago County (BOW) Group of Landfills  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0145  
**Comment Excerpt Number:** 11

**Comment Excerpt:**

Foth and the BOW Group understand that due to recent court decisions, the EPA is proposing to eliminate the limits for the duration of SSM events of 5 days for the LFG collection system and 1 hour for the control device. The proposal clarifies that the emission standards continue to apply during SSM event, and a requirement is added to estimate and report NMOC emissions during SSM events such as when the collection system or control device is not in operation. As MSW



landfills are sources that continue to produce LFG even when the GCCS is shut down, it will be difficult to estimate emissions during SSM events. If it is not possible to eliminate the requirement to estimate emissions during SSM event, we request guidance from the EPA on procedures to estimate emissions during these events.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Matt Lamb, Scientist, Smith Gardner, Inc.

**Commenter Affiliation:** Smith Gardner, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0190

**Comment Excerpt Number:** 3

**Comment Excerpt:**

Flare flame block valves, which block the flow of LFG to the flare, are actuated only when the temperature at the flare tip drops below a given set-point. Depending on ambient temperatures, wind conditions, and flare flame temperature, several minutes may pass before this set-point is reached. In most cases, this set-point is reached before 1 hour has elapsed. Calculating excess emissions during periods of "free venting" of LFG without combustion is relatively simple.

Once the block valve is closed and the flare is no longer free-venting, calculating excess emissions is not straightforward. A LFG collection system establishes a pressure gradient to pull LFG towards the extraction wells, and away from the landfill surface. Typically, once the collection system goes down, this gradient does not immediately reverse, but does so over a period of days. 5 days has been accepted as the period of downtime before excess emissions and pressure on the cap may occur. At this point, the rate of flux through the cap is influenced by several factors, including cover type, thickness, and methane oxidation. Due to the nature of LFG generation, these emissions cannot be directly monitored. Assuming all modeled LFG that is generated during this 5-day period is emitted would greatly overstate emissions.

Regardless of reported excess emissions under the proposed emission guidelines, SSM events should not be considered violations due to several factors, including:

- Previously mentioned remoteness and environmental conditions at landfills;
- Availability of qualified electrical or mechanical technician; and/or
- Availability of replacement parts/components.

It is economically infeasible for many landfills to staff electricians or mechanics full time. This can extend the time necessary to repair or replace blower motors, bearings, and electrical components such as PLC systems. It is also economically infeasible to maintain an inventory of these spare components on-hand for many landfills.

S+G recommends that excess emissions reporting only be required for periods when the flare is free venting for less than 1 hour. S+G also recommends that downtimes reported as deviations or

exceedences during semiannual summaries not be considered violations of applicable regulations if the facility demonstrates that it is taking actions to address the SSM event.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 20

**Comment Excerpt:**

Section §60.39f (c) (5) of the proposed rule requires that facilities perform estimates of NMOC emissions when the control device is not operational. The State of Delaware requests that EPA clarify this requirement. Specifically, please clarify if this requires the estimation of fugitive emissions from the landfill surface during a shut down. Landfills have some inherent ability to retain LFG over short term shut downs (less than 1 hour). Developing meaningful estimates for these emissions will be difficult and highly weather dependent. The State of Delaware recommends that these emission estimates only apply to control device piping and appurtenances. Excess fugitive emissions are best estimated over longer term, such as annual, time frames and this is already accomplished via emissions inventories and the Greenhouse Gas Mandatory Reporting Rule.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 14

**Comment Excerpt:**

The proposed requirement in 40 CFR §39f(c)(5) to estimate emissions of NMOC during periods when the GCCS is not operating is not appropriate and may incorrectly imply that excess emissions would occur during these periods. It would be technically infeasible to estimate NMOC emissions to the atmosphere during these periods, when landfill gas is not actively collected. Likewise, no emission limit would apply to or could be exceeded by a control device

that is shut down and not receiving landfill gas. EPA should revise and clarify these provisions accordingly.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 23

**Comment Excerpt:**

Likewise, the proposed requirement in 40 CFR §39f(c)(5) to estimate emissions of NMOC during periods when the GCCS is not operating is not appropriate and may incorrectly imply that excess emissions would occur during these periods. It would be technically infeasible to estimate NMOC emissions to atmosphere during these periods, when landfill gas is not actively collected. Likewise, no emission limit would apply to or could be exceeded by a control device that is shut down and not receiving landfill gas. EPA should revise and clarify these provisions accordingly.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 23

**Comment Excerpt:**

We support EPA's proposal to add a recordkeeping and reporting requirement for landfill owners or operators to estimate emissions during periods when the GCCS or other control device is not operating.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** John Quigley, Secretary  
**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0169  
**Comment Excerpt Number:** 17

**Comment Excerpt:**

The DEP fully supports provisions requiring MSW landfill owners and operators to estimate emissions during SSM periods, when gas collection systems or control devices may not be operational.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager  
**Commenter Affiliation:** Burns & McDonnell  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1  
**Comment Excerpt Number:** 8

**Comment Excerpt:**

The EPA's proposed rule specifies the standards would apply at all times, including during SSM. The EPA proposes adding recordkeeping and reporting requirements on estimated NMOC emissions during SSM. Each SSM event (which may occur frequently due to power and weather conditions) will require additional state agency review and coordination. EPA has not offered guidance on estimating NMOC emissions during SSM and is on record in the previous rulemaking, stating that such emissions estimates are impossible to make.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 93

**Comment Excerpt:**

EPA's inclusion of proposed requirements to estimate NMOC emissions when the control device or collection system is not operating is inappropriate. 80 Fed. Reg. at 52134. (While EPA notes

in the preamble that the obligation would include both recordkeeping and reporting, the proposed regulatory text does not appear to include a reporting element.) Proposed section 60.39f(c)(5) broadly requires landfill owners and operators to "keep records of estimates of NMOC emissions for periods when the collection system or control device is not operating." This requirement is vague in that it implies that excess NMOC emissions may result from periods of collection or control system downtime; however, EPA does not identify any applicable emission limit that would apply during these periods (there is none) nor does EPA provide guidance for estimating such emissions.<sup>29</sup> Further, EPA expressly acknowledged in its Subpart WWW Background Documents for the Landfill NSPS, and has confirmed again in its Subpart XXX proposal, that it is technically infeasible to measure the amount of landfill gas available for collection. *See* Subpart WWW Background Document at p. 2-85 and 79 Fed. Reg. at 41802. Likewise, potential emissions of landfill gas during collection or control system downtime cannot be measured or reliably estimated, particularly for partial or complete system shutdowns of short duration. Calculations of potential landfill gas emissions are conducted in limited circumstances such as for permitting purposes and to determine whether the NSPS applicability thresholds have been exceeded. However, there is wide recognition that these estimates are based on site-specific variables that estimate landfill gas generation over the life of a landfill, are based on long-term factors that influence gas generation, and cannot be reduced to assume any level of hourly or daily emissions. To estimate landfill gas emissions during short-term periods of collection or control system downtime would be infeasible. Likewise, emissions cannot be estimated for control systems that are not operating because landfill gas does not flow from an offline collection system to an offline control system, and therefore no emissions would be expected to occur. The only emission limit within Subpart WWW, and proposed to be adopted within Subpart Cf, is the NMOC reduction standard or outlet limit for enclosed combustion systems. This standard applies when landfill gas is directed to the control device, but is not relevant to a device that is shut down. Accordingly, the proposed requirement to estimate NMOC emissions during collection or control system downtime bears no relation to an applicable emission limit and is technically and practically inappropriate.

[Footnote 29] In the Subpart Cf preamble, EPA states that requirement to estimate NMOC emissions during periods when the collection or control system is not operating will "enable the EPA to determine the severity of any emissions exceedance that might occur." *See* 80 Fed. Reg. at 52103.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent  
**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1  
**Comment Excerpt Number:** 10

**Comment Excerpt:**

The EPA's proposed rule specifies the standards would apply at all times, including during SSM. The EPA proposes adding recordkeeping and reporting requirements on estimated NMOC emissions during SSM. As such, each SSM event (which may occur frequently due to power and weather conditions) will require additional state agency review and coordination. Further, EPA has not offered guidance on estimating NMOC emissions and is on record in the previous rulemaking, stating that such emissions estimates are impossible to make.

**Comment Response:**

See response to DCN-EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 54, under comment code 14c.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 49

**Comment Excerpt:**

The draft rulemaking assumes that such emissions do occur and must be calculated and reported. However, when all or part of a GCCS goes off-line, excess emissions of LFG do not immediately occur, if they occur at all. First, the landfill itself has a certain storage capacity for LFG, and only once the gas begins to build up pressure will excess emissions result. Second, the landfill cover is also part of the LFG control system, and depending on the cover type, thickness, etc., methane and NMOC emissions can be oxidized and attenuated in the cover soils. Third, even if additional LFG emissions occur during downtime, they may not be "excess" as defined in Clean Air Act requirements. That is, they may not exceed the 500 part per million by volume (ppmv) surface emissions threshold.

**Comment Response:**

In the final rule, the EPA is not requiring estimation of NMOC emissions while the GCCS is not operating. The EPA agrees with commenters that it would be difficult to estimate emissions to the atmosphere during SSM periods. When all or part of a GCCS goes offline, excess emissions do not necessarily occur immediately because landfills have a storage capacity for LFG and will only emit excess emissions when the gas builds up enough pressure. However, the length of time required to build up this pressure will vary for each facility's site-specific conditions such as waste composition and cover type, thus making it difficult to estimate fugitive emissions.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number: 50**

**Comment Excerpt:**

It is impossible to accurately estimate LFG emissions. Any proposed method is likely to overestimate emissions and result in an over-reporting of excess "emissions." The higher the "emissions," the more likely that state agencies will take enforcement action. In fact, some jurisdictions require payment of fees for emissions based on the amount reported. This cost was not included in EPA's cost analysis. Therefore, NW&RA and SWANA request that EPA include a provision noting there will not be excess emissions and remove any requirement for tracking, calculating, and reporting excess emissions from GCCS downtime less than 1 hour for free venting and less than 5 days for GCCS downtime.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, comment excerpt 49, under comment code 14c.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 7

**Comment Excerpt:**

Montauk supports SWANA and also requests that EPA continue to assume that there are no excess emissions during the first 5 days of GCCS downtime and remove the requirement to estimate and report excess emissions from all GCCS downtime less than 1 hour for free venting and less than 5 days for GCCS downtime. [See DCN EPA-HQ-OAR-2003-0215-0108.1, Excerpt 50.]

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0108.1, comment excerpt 49, under comment code 14c.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 18

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**Comment Excerpt:**

The rules confuse the pure definitions of startup, shutdown, and malfunction and intermixes these terms with downtime. Downtime is the duration between a complete shutdown and the beginning of a startup. That duration for most sources is a time when the source is idle and is not producing emissions. We acknowledge that a landfill cannot be turned off, but it is absurd to require a facility to even track startup and shutdown emissions in the case of most landfills. For example, the period of startup for an open flare is the time the pilot light (propane) is heating the thermocouple to the minimum temperature at which time the valve opens and the landfill gas is ignited. This ignition is instantaneous. Therefore, facilities would be required to track the time that propane was used before ignition. To give a clear understanding of how much propane is typically used, one facility Cornerstone completes GCCS operation and maintenance services for used half a of 500 gallon tank after 4 years of continuous operation. Equally, a shutdown of an open flare is the time from when the valve is fully opened and the landfill gas is until it is fully closed and the flow stops. The flame extinguishes in a matter of seconds. Tracking the duration of "malfunctions" is also equally absurd, the fail-close valve is immediately engaged and cuts off the flow of landfill gas to the atmosphere immediately. Malfunction is defined as "*any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded.*" In addition, the rule clearly states that "*Failures that are caused in part by poor maintenance or careless operation are not malfunctions.*" There are occasional malfunctions wherein a control device does not operate properly and an emission limit is exceeded. However, the vast majority of the events characterized as malfunction are not malfunctions at all because a standard is not being exceeded because GCCS is turned off. The only standard is the 1-hour and 5-day allowances in the rules. The standards will disappear if the limitations on downtime are removed and no standard will exist with which to compare whether a malfunction has occurred. The industry has even clearly reported this many time within its routine SSM reports.

The rules have somehow twisted the downtime into a relationship with SSM when it is not reasonable relate the concepts. Perhaps USEPA should change the current rules to more precisely explain the allowable downtime of the GCCS. Therefore, the court decision would not apply to downtime at landfills because it is not excess emissions when the standard allows downtime. The timeframes allowed in the current NSPS are relate to other parts are not true startup, shutdown and malfunction events. Startups and shutdowns which are defined clearly in regulation are the action of starting into operation and the process of shutting down operation. Landfill control system startup rarely take more than a few minutes. Therefore, reports should not have any events listed in there SSM reports because none of them actually have the potential to exceed an applicable standard.

#### **Comment Response:**

In the final rule, the EPA is not requiring estimation of NMOC emissions while the GCCS is not operating. The EPA agrees with commenters that it would be difficult to estimate emissions to the atmosphere during SSM periods. The EPA acknowledges that time to start up and shut down collection and control devices is minimal, thus making it difficult to estimate fugitive emissions during these activities.



## 14.4 SSM-Affirmative Defense

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### 14d. SSM-Affirmative defense

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 33

#### Comment Excerpt:

EPA has recognized the potential unfairness in such circumstances by adopting an “affirmative defense” in most of its NSPS and MACT standards, but that approach was recently rejected by the D.C. Circuit in *NRDC v. EPA*, 749 F.3d 1055 (2014). In that case, the court held that only a federal judge—not EPA—has the right to determine whether a penalty is appropriate for any “violations.” In its preamble to the proposed revisions to the landfill NSPS, EPA cites this case to support its decision not to include an affirmative defense as part of its proposal to eliminate the SSM exemption. Instead, EPA tells landfills to simply rely on federal judges to be fair in deciding whether a penalty is appropriate. However, even if a landfill is eventually successful in convincing a federal judge that a penalty is unwarranted, the landfill would still incur the significant costs of litigating the enforcement action or citizen suit.

#### Comment Response:

In light of *NRDC*, the EPA is not including a regulatory affirmative defense provision in the final rule. Further, as the D.C. Circuit recognized, in an EPA or citizen enforcement action, the court has the discretion to consider any defense raised and determine whether penalties are appropriate. *Cf. NRDC*, at 1064 (arguments that violation were caused by unavoidable technology failure can be made to the courts in future civil cases when the issue arises). The same is true for the presiding officer in EPA administrative enforcement actions.

## 14.5 Set Work Practice Standard for Periods of SS or SSM

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### 14e. Set work practice standard for periods of SS or SSM

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 11

#### Comment Excerpt:

As noted in the preamble, as area sources, landfills are unique. Unlike other sources, we cannot simply “turn off” the LFG-generating activity when the control system goes off-line. Further, because of the nature of GCCSs (e.g., exposed to weather, landfill settlement, variable gas composition and quantity, unpredictable biological activity, etc.), downtime of all or part of the

GCCS is inevitable. As this is part of normal operations, we do not believe that these are instances of excess emissions. Landfills must therefore be afforded some additional flexibility regarding SSM provisions compared to other source categories. We believe this is the reason that the landfill NSPS contained its own “SSM” provision under 40 CFR Part 60, Subpart WWW, §60.755 (e) and is not affected by other rulings on SSM provisions in general.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill’s gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 12

**Comment Excerpt:**

Accordingly, any SSM clarification should focus only on the operation of landfill gas control devices during periods when landfill gas is routed to them via the collection system. In this context, and consistent with its other recent rulemaking efforts, EPA should establish clear work practice requirements for startup and shutdown of landfill gas control devices.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill’s gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 13

**Comment Excerpt:**

By contrast, landfill gas collection systems are not subject to any emission limitation; they are subject to a design and operational standard that includes periods of downtime for necessary

repairs, expansions, upgrades and other maintenance. During these periods, the GCCS is shutdown, valves to atmosphere are closed, and landfill gas is not routed to control devices or treatment systems. We are concerned that the broad language of proposed 40 CFR § 36f(e), (“The provisions of this subpart shall apply at all times, including periods of startup, shutdown or malfunction.”) may be misinterpreted to require operation of the GCCS at all times.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill’s gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 20

**Comment Excerpt:**

Regardless of how well designed, constructed or operated a GCCS is, it will have periods of time when it will be off-line. These periods can be caused by utility power failures, weather conditions, or other events that can cause automatic or manual shutdown of the GCCS or a portion of it. To address this issue, and to avoid the numerous conflicting interpretations that already exist on this issue, we request that EPA add rule language allowing for GCCS downtime to accommodate for periods when the collection system is not operating during activities associated with construction, expansion, repair, replacement, testing, upgrade or other maintenance of the system or its components.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill’s gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number: 21**

**Comment Excerpt:**

As a general matter, EPA's recent efforts to remove SSM exemptions from various rulemakings have focused on either: (1) confirming that numeric emission limitations continue to apply during SSM periods; or (2) establishing alternative work practice or compliance demonstration standards for SSM periods. The only emission limitation that applies to landfills under Subpart Cf is the standard for non-methane organic compound ("NMOC") emissions from landfill gas control devices. Accordingly, any SSM clarification should focus only on the operation of landfill gas control devices during periods when landfill gas is routed to them via the collection system. In this context, and consistent with its other recent rulemaking efforts, EPA should establish clear work practice requirements for startup and shutdown of landfill gas control devices.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 22

**Comment Excerpt:**

By contrast, landfill gas collection systems are not subject to any emission limitation; they are subject to a design and operational standard that includes periods of downtime for necessary repairs, expansions, upgrades and other maintenance. During these periods, the GCCS is shutdown, valves to atmosphere are closed and landfill gas is not routed to control devices or treatment systems. We are concerned that the broad language of proposed 40 CFR § 36f(e), ("The provisions of this subpart shall apply at all times, including periods of startup, shutdown or malfunction.") may be misinterpreted to require operation of the GCCS at all times.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 29

**Comment Excerpt:**

Regardless of how well designed, constructed or operated a GCCS is, it will have periods of time when it will be off-line. These periods can be caused by utility power failures, weather conditions, or other events that can cause automatic or manual shutdown of the GCCS or a portion of it.

To address this issue, and to avoid the numerous conflicting interpretations that already exist on this issue, we request that EPA add rule language to accommodate for periods when the collection system is not operating during activities associated with construction, expansion, repair, replacement, testing, upgrades, or other maintenance of the system or its components. We refer EPA to comments submitted by Waste Management and Republic that address this need for periodic downtime to perform these activities to properly operate and maintain the GCCS which is BSER for Subpart Cf and XXX. EPA may also consider the Bay Area AQMD's current EG rule (Rule 8-34) which allows up to 240 hours of GCCS downtime per year.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 91

**Comment Excerpt:**

EPA's proposed SSM language in Subpart Cf may be interpreted in a manner that is inconsistent with its BSER determination.

As currently proposed, EPA's four-part approach to SSM in Subpart Cf is ambiguous and may be interpreted in a manner that is inconsistent with EPA's BSER determination. EPA must clarify that periods of gas collection and control system downtime are not violations of an emission standard; instead, compliance is demonstrated so long as the proper work practices are followed to shut down the gas mover system and close valves contributing to the venting of landfill gas to atmosphere. Although EPA does propose to include these work practices in the proposed rule at 40 C.F.R. §60.34f(e), EPA's preamble statements around the intent of this requirement are contradictory. EPA first suggests that adhering to these practices "does not constitute compliance" with the applicable collection and control system standards, then notes that "as a practical matter it is unlikely that there would be a violation since no gas would be flowing to the control device." See 80 Fed. Reg. at 52134.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 92

**Comment Excerpt:**

WM strongly *agrees* that no violation would occur when landfill gas is not directed to the control device; however, confusing preamble statements and imprecise regulatory language creates a significant risk that the rule will be misconstrued. The implication of EPA's statements could be that a temporary shutdown of the collection or control system, however brief and for whatever purpose, may constitute a deviation from Subpart Cf requirements, even where the gas mover system is shut down and valves are closed properly. Thus, almost identical regulatory provisions would have two wholly separate meanings under Subpart W and Subparts Cf and XXX, even though the standards are based on the same BSER determination.<sup>28</sup> In this way, EPA's proposal is inconsistent with the very basis for EPA's establishment of the gas collection system requirement as a design standard, rather than a performance standard or emission limitation. Because there are circumstances (both planned and unplanned) when part or all of the collection system may not be operating, as acknowledged in the Subpart W Background Document, compliance "at all times" cannot be construed as requiring continuous operation of gas collection and control systems.

[Footnote 28] EPA's preamble discussion notes that proposed Section 60.34f(e) uses the term "not operating" instead of the word "inoperable" as used in existing Section 60.753, stating "EPA proposes to use the term 'not operating,' which includes periods when the gas collection or

control system is not operating for whatever reason, including when the gas collection system is inoperable." 80 Fed. Reg. at 52134. WM does not object to using the term "not operating" instead of inoperable, to clarify that the same work practices would apply for demonstrating compliance in the event of any shutdown of the gas collection or control system, whether planned or unplanned. WM notes, however, that this phrase should not be construed to require shutdown of the *entire* collection or control system in circumstances where the shutdown event can be managed as a partial shutdown or if backup control devices are available and can be brought online within the one-hour timeframe.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

In addition, we would like to clarify the proposal preamble language that the commenter characterized as "confusing" and "imprecise." The commenter was referring to language in the August 27, 2015 preamble stating, "Compliance with proposed 40 CFR 34f(e) does not constitute compliance with the applicable standards in proposed 40 CFR 36f" and the statement that by shutting down flow to the flare or other control devices a source "...as a practical matter, it is unlikely to be in violation of the 98 percent emission reduction requirements since there will be no gas flowing to the control device." We did not intend to infer that a landfill could be out of compliance with the rule solely by the act of complying with 40 CFR 34f(e). Instead, this language was intended to explain our rationale for adopting the work practice that applies during periods when the gas mover must be shut down for operational reasons.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 94

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**Comment Excerpt:**

WM does not agree with EPA's determination that it is not required and that it would be too difficult to consider periods of malfunction in setting standards under CAA Section 111. See 80 Fed. Reg. at 52133 ("accounting for malfunctions in setting emission standards would be difficult, if not impossible, given the myriad different types of malfunctions that can occur across all sources in the category....."). Court decisions in *Portland Cement I*, *Essex Chemical*, and *National Lime* require EPA to account for the achievability of emission standards during all periods of operation, including SSM. These decisions were based on the Court's recognition that malfunctions are an "inescapable aspect of industrial life," a fact that is especially accurate in the context of landfill gas collection and control systems. See *Portland Cement I*, 486 F.2d at 398-399. Nothing in *Sierra Club* changed this obligation. Further, EPA's Subpart Cf preamble

discussion focuses on its inability to consider malfunctions in setting *emission* standards under CAA Section 111, but does not acknowledge that emission limits are not applicable to gas collection systems. *See* 56 Fed. Reg. at 24484 (noting that "[e]mission limits are not applicable to gas collection systems.").<sup>30</sup> The now-familiar preamble example, a baghouse malfunction causing emissions that are 100 times higher than normal operations over a four-day period, simply has no relevance to the landfill category. *See* 80 Fed. Reg. at 52133. As a practical matter, WM believes that most malfunctions that may impact a landfill gas collection system are appropriately managed in the very same manner EPA has prescribed – by shutting down the gas mover system and closing valves to atmosphere. WM requests that EPA clarify that these practices are adequate and appropriate to demonstrate compliance in malfunction scenarios. Additionally, EPA determined in its development of Subpart WWW that a 5-day allowance for repair would be appropriate to ensure compliance with the design standard in these circumstances.

Likewise, very few control system malfunctions would prevent sources from meeting the NMOC reduction standard. In WM's experience, almost all planned and unplanned shutdowns of landfill gas control devices (including those resulting from malfunction) proceed in accordance with control device design specifications that are precisely tailored to minimizing emissions, preventing bypass of the control device, and meeting the standard for closing all valves to atmosphere well within one hour of the event. WM requests that EPA confirm that a properly shut down control device would constitute compliance with Subpart Cf during periods of malfunction.<sup>31</sup> WM also requests that EPA clarify and confirm the simple proposition that a control system that is shutdown when no landfill gas is routed to it cannot cause or constitute a deviation from the NMOC standard.

[Footnote 30] EPA has likewise stated confirmed that the 500 ppm standard for surface emission monitoring is an operational standard rather than an emission limit. *See* Subpart WWW BID at p. 2-160.

[Footnote 31] In its preamble discussion of malfunction events, EPA summarizes and explains its prior approach to affirmative defense provisions and the Court's decision in *NRDC v. EPA, 2014 U.S. App. LEXIS 7281 (D.C. Cir. April 18, 2014)*. Even in light of the *NRDC* decision, EPA retains enforcement discretion in every context to account for a source's actions undertaken to address and minimize emissions during malfunction events. WM urges EPA to use this enforcement discretion in the landfill context, particularly in light of the complex SSM concerns raised herein. In addition, WM urges EPA to consider alternative approaches, including those identified herein, to ensure that compliance during malfunction scenarios is appropriately addressed in its categorical rulemakings.

#### **Comment Response:**

In addition, we would like to clarify the proposal preamble language that the commenter characterized as "confusing" and "imprecise." The commenter was referring to language in the August 27, 2015 preamble stating, "Compliance with proposed 40 CFR 34f(e) does not constitute compliance with the applicable standards in proposed 40 CFR 36f" and the statement that by shutting down flow to the flare or other control devices a source "...as a practical matter, it is unlikely to be in violation of the 98 percent emission reduction requirements since there will be no gas flowing to the control device." We did not intend to infer that a landfill could be out of compliance with the rule solely by the act of complying with 40 CFR 34f(e)\*. Instead, this



language was intended to explain our rationale for adopting the work practice that applies during periods when the gas mover must be shut down for operational reasons.

\* §60.763(e) states, "In the event the collection or control system is not operating, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within 1 hour.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 99

**Comment Excerpt:**

**Establish work practices for control device and treatment system startup and shutdown:** As set forth above, in other rulemakings EPA has established work practice standards in lieu of emission limits during startup and shutdown or alternative compliance demonstration methods for emissions during startup and shutdown. Work practice standards would be particularly appropriate for landfill gas control devices. WM is confident that our most often-used control devices, open and enclosed flares, meet the 98% reduction or 20 ppmv outlet NMOC emission limits almost immediately upon startup, because landfill gas flares are designed to ensure that a pilot flame is lit with auxiliary fuel before landfill gas is introduced to the combustion chamber, and the heating value of landfill gas is sufficient to ensure combustion in the presence of a flame. (And if the flame cannot be maintained, the flares are designed to stop the flow of landfill gas and shut down.) However, emissions cannot be directly measured during startup periods, and temperature monitors may not immediately provide an accurate reading of combustion zone temperature (depending in part on ambient temperatures and the location of the thermocouple measuring device). Therefore, WM proposes that EPA establish alternative work practice standards in 40 C.F.R. §§ 60.33f(c) and 60.762(b)(2)(iii) for control device startup and shutdown that are consistent with manufacturer's design specifications and which focus on the prevention of bypass and ensuring the presence of flame prior to introducing landfill gas to a control device. While continuous monitoring systems would be operated during startup and shutdown periods and would provide indicators of flow and flame presence, temperature monitoring data should be excluded from the three-hour average compliance demonstration for combustion temperature. (Exclusion of temperature monitoring data during startup and shutdown periods would be consistent with the Subpart AAAA section 63.1975.)

**60.762(b)(2)(iii) Standards for air emissions from municipal solid waste landfills [60.33f(c)]**

A.

(B)(2) [60.33f(c)(2)(ii)] Except during periods of startup and shutdown, the control device or treatment system shall be operated within the parameter ranges established during the initial or most recent performance test or compliance determination when collected landfill gas is routed to the control device or treatment system. The operating parameters to be monitored are specified

in § 60.766. During startup and shutdown, the control device or treatment system must meet the work practices set forth in paragraph 60.762(b)(2)(iii)(E).

(E)<sup>35</sup> [60.33f(c)(5)] During periods of startup and shutdown, the control device or treatment system must be operated as follows:

(1) Operate the control device in accordance with manufacturer's design specifications;

(2) Operate the treatment system in accordance with the site-specific treatment monitoring plan;

(3) Ensure that the control device or treatment system is operational prior to routing landfill gas to the device or system via the gas mover system;

(4) Ensure that landfill gas cannot bypass the control device or treatment system; and

(5) For non-enclosed and enclosed combustors, minimize the duration of control device startup to the period necessary to ensure appropriate and safe routing of landfill gas to the unit in the presence of a flame and sufficient to achieve and maintain the compliance parameters monitored pursuant to § 60.766.

[Footnote 35] In light of its statements in the Subpart Cf preamble and proposed regulatory language with respect to the treatment definition and obligations, WM assumes that the regulatory language that appeared in the Subpart XXX proposal at Section 60.762(b)(2)(iii) will be removed from the final NSPS standards.

#### **Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0202

**Comment Excerpt Number:** 3

#### **Comment Excerpt:**

In addition to the comments specifically raised by the supplemental NSPS, Republic is providing supplemental information regarding Startup, Shutdown, and Malfunction. These comments are consistent with the comments we are submitting separately under the Proposed Rules; Emission Guidelines, Compliance Times, and Standards of Performance for Municipal Solid Waste Landfills. See *docket EPA-HQ-OAR-2014-0451* Additional details regarding Republic's request can be found in Appendix A to these comments, which contains proposed regulatory language that was prepared in coordination with representatives of Waste Management. [See Appendix A to DCN EPA-HQ-OAR-2014-0451-0202 and [comment code 14e and 14z] of this document.]

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 16

**Comment Excerpt:**

As required in the DEP's "Best Available Technology and Other Permitting Criteria for Municipal Solid Waste Landfills," the enclosed flare should be operated with a flame present at all times. The enclosed flare should be equipped with an automatic shut-off mechanism designed to immediately stop the flow of gases when a flame-out occurs. During the restart or start-up, there should be sufficient flow of auxiliary fuel to the burners such that unburned landfill gases are not emitted to the atmosphere." The DEP recommends the EPA consider this approach in the final Subpart Cf requirements.

**Comment Response:**

The EG requires that the control device must be operated as specified in the rule at all times that gas is being collected. The state plan must control emissions at least to the level of the EG and may be more stringent if desired by the state. Therefore, a state has the prerogative to require the use of an automatic shut-off mechanism or any other equipment to ensure compliance with BSER. However, we decline to change BSER but choose to allow the flexibility to use an automatic shut-off mechanism or any other approach for achieving compliance when using a flare.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 56

**Comment Excerpt:**

EPA should adopt an alternative emission limitation in the form of a non-numeric work practice standard for startup, shutdown, and malfunction of control systems.

Like the revisions that EPA proposed last year for the NSPS for MSW landfills, EPA has now proposed to eliminate certain provisions from the emission guidelines applicable to existing

landfills regarding startup, shutdown, and malfunction (SSM) events. But also like last year's proposal, EPA has failed to demonstrate that its new approach will provide any meaningful environmental benefits. Instead, the proposed changes could simply cause confusion and increase the risk that landfills could be penalized for unavoidable events. For that reason, Republic asks EPA to consider revising its proposed emission guidelines to (i) confirm that landfill gas *collection* systems are not subject to numeric emission limitations that could be exceeded during SSM events and (ii) adopt an alternative emission limitation in the form of a non-numeric work practice standard for landfill gas *control* systems to ensure the emission guidelines remain achievable during SSM events.

**EPA's generic SSM policy does not apply to landfill gas collection systems.** EPA's proposed revisions appear to be an attempt to impose its general SSM policy, developed primarily for other types of sources, to MSW landfills. EPA's generic SSM policy begins with a fundamental assumption: that all exceedances of any emission limitation during an SSM event must be deemed a "violation" of the Clean Air Act. EPA proposed to apply that generic policy to MSW landfills by eliminating the existing provision limiting SSM and expressly stating that the emission guidelines "apply at all times, including periods of startup, shutdown, and malfunction." *See* proposed 40 C.F.R. § 60.36f(e).

However, the fundamental premise to EPA's generic SSM policy should not apply to gas collection systems at MSW landfills because those systems are not subject to an emission limitation that could be exceeded during SSM. *See* 56 Fed. Reg. 24468 (May 30, 1991) ("Emission limits are not applicable to gas collection systems."). Instead, the emission guidelines for existing MSW landfills only require a well-designed and well-operated gas collection control system (GCCS). *Id.* Although the collection system must be operated in accordance with its design to minimize surface emissions, EPA's regulations make clear that a "monitored exceedance is not a violation of the operational requirements," but rather only a trigger for corrective action. 40 C.F.R. § 60.753(g). *See also* 40 C.F.R. § 60.755(c)(4) ("As long as the specified actions are taken, the exceedance is not a violation of the operational requirements.")

This unique aspect of the emission guidelines for MSW landfills is appropriate because, as EPA has noted, landfills are relatively unique among stationary sources of air emissions for a variety of reasons. First, unlike other industrial activities, landfills cannot simply "turn off" the process that generates regulated emissions. 80 Fed. Reg. 52133. Landfill gas is generated by the decomposition of waste (which would decompose regardless of whether it is placed in a landfill). Second, if the collection system is "turned off" by closing the system off from the atmosphere, the collection system will not generate any emissions at all. 80 Fed. Reg. at 52134. A well-designed and constructed gas collection will typically be capable of containing landfill gas emissions and maintaining low surface emissions for several days before any concerns regarding uncontrolled emissions would arise. Third, due to the need for proper maintenance of gas collection systems, and the need to expand those systems from time to time, the emission guidelines essentially require landfills to shutdown their gas collection systems periodically.

Recognizing the distinct emission characteristics of MSW landfills, EPA's historical regulation of them has also been unique in character. As such, MSW landfills also require a unique SSM policy. Attempting to apply EPA's generic SSM policy to landfill gas collection systems would only result in confusion because that policy would be inconsistent with the fundamental design of the emission guidelines applicable to collection systems. In its revisions to the emissions

guidelines, EPA should reaffirm that an "exceedance" attributable to a collection system is not a "violation," regardless of whether occurring during normal operation or during an SSM event.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 57

**Comment Excerpt:**

**EPA Should Adopt a Non-Numeric Alternative Emission Limitation for Control Systems to Ensure the Guidelines Are Achievable During SSM.** Unlike landfill gas collection systems, landfill gas control systems are at least subject to parametric limitations that could be exceeded during an SSM event. See 40 C.F.R. §60.758(c) (identifying as an "exceedance" combustion temperatures below the average recorded during the most recent performance test indicating compliance). However, those exceedances can be unavoidable during SSM. As a result, rather than assuming that they represent a violation of the underlying requirement (98 percent control efficiency), EPA should address unavoidable exceedances by ensuring that landfills employ best practices to minimize emissions during SSM. Such a requirement would ensure that the emission guidelines remain achievable during SSM events, that emissions during such events are minimized to the greatest extent possible, and that landfills are not unfairly penalized for events beyond their control. This approach to SSM events for control systems is explained further below.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

## Comment Excerpt Number: 58

### Comment Excerpt:

**Startup & Shutdown.** For most stationary sources, startup and shutdown events can result in emissions that exceed numeric emission limits designed for normal operation because either (i) the process equipment is unable to immediately begin or cease operating at normal efficiency levels or (ii) pollution control devices needed to reduce emissions cannot operate during those periods. As a result, EPA has for many years recognized the need to develop policies to address these inevitable and unavoidable realities for most industrial sources. 80 Fed. Reg. at 52134 ("despite the most diligent of efforts, emission standards may be violated under circumstances entirely beyond the control of the source.")

However, EPA has recently initiated efforts to ensure that an emission limitation applies continuously at all times to all stationary sources, asserting that the Clean Air Act definition of "emission limitation" requires that approach. For example, EPA has issued a rulemaking to restate its SSM policy and require all states to revise their state implementation plans to follow it. *See, e.g.*, 80 Fed. Reg. 33840 (June 12, 2015). But in restating that policy, EPA has made clear that "continuous emission limitations" need not apply the same numeric limit to all modes of operation, stating the following:

[T]he EPA wishes to be very clear on this important point, which is that SIP emission limitations: (i) Do not need to be numerical in format; (ii) do not have to apply the same limitation (e.g., numerical level) at all times; and (iii) may be composed of a combination of numerical limitations, specific technological control requirements and/or work practice requirements, with each component of the emission limitation applicable during a defined mode of source operation.

80 Fed. Reg. at 33889. With this clarification, EPA has confirmed that different periods of operation may warrant different forms of emission limitations.

Republic asks EPA to consider this approach for MSW landfill control systems. The control devices for MSW landfills typically present a very low risk for excess emissions. When they startup and shutdown, they do so quickly. The devices also automatically minimize emissions during startup and shutdown by design. That said, the parameters that landfills must monitor to comply with the emission guidelines can vary somewhat during a startup or shutdown, given that the parameters are established via tests that are only conducted during normal, steady-state operations. Those unavoidable and expected variations should not constitute a violation of the emission guidelines simply because they exceed a value set during a different mode of operation.

To account for the potential variability of certain parameters during startup and shutdown events, Republic asks EPA to consider an alternative emission limitation in the form of a non-numeric work practice standard. EPA has already adopted that approach for several other stationary source categories. For example, in developing new numeric emission limits for electric utilities under its Mercury and Air Toxics Standards (MATS), EPA included the following exception and work practice standard for startup and shutdown periods:

You must be in compliance with the emission limits and operating limits in this subpart. These limits apply to you at all times *except during periods of startup and shutdown*; however, for coal-fired, liquid oil-fired, or solid oil-derived fuel-fired EGUs, you are required to meet the *work practice requirements* in Table 3 to this subpart during periods of startup or shutdown.

40 C.F.R. § 63.10000 (emphasis added). The work practice requirements referred to in this provision simply require the use of clean fuels for startup and the operation of all control equipment while burning the primary fuel, except for those control devices that cannot be engaged until normal operations begin. 40 C.F.R. Part 63, Subpart UUUUU, Table 3. Likewise, in its recently adopted standards for industrial boilers, known as the "Boiler MACT," EPA followed the same "exception-and-work-practice-standard" approach:

These standards apply at all times the affected unit is operating, *except during periods of startup and shutdown* during which time you must comply only with Table 3.

40 C.F.R. § 63.7500 (emphasis added). The "work practices standards" for industrial boilers similarly require only the use of clean fuels during startup and the operation of controls devices "as expeditiously as possible." 40 C.F.R. Part 63, Subpart DDDDD, Table 3.

Startup and shutdown of MSW landfill control systems warrant a similar approach. Specifically, Republic recommends that EPA require landfills to operate controls in accordance with manufacturer's specifications. EPA's proposed provision requiring shutdown of the gas mover system is also a reasonable work practice standard that could be incorporated into the alternative emission limitation to minimize emissions during SSM events. *See* 40 C.F.R. 60.34f(e). However, EPA should delete the provision suggesting that "compliance with proposed 40 C.F.R. 60.34f(e) does not constitute compliance with the applicable standards in proposed 40 C.F.R. 60.36f." Once EPA determines what the appropriate practices for minimizing emissions should be, a source owners should be able to meet those requirements without fear that they could still be held in "violation." Republic also asks EPA to retain the provision from the existing emission guidelines that requires MSW landfills to ensure that SSM events "shall not exceed 5 days for collection systems and shall not exceed 1 hour for treatment or control devices." That practice should be sufficient to ensure that uncontrolled emissions are minimized. And, by imposing this requirement as part of an alternative emission limitation work practice standard, EPA will ensure that its emission guidelines are achievable during SSM events.

Additional details regarding Republic's request for an alternative emission limitation in the form of a work practice standard can be found in Appendix A to these comments, which contains proposed regulatory language that was prepared in coordination with representatives of Waste Management.

[See Appendix A to DCN EPA-HQ-OAR-2014-0451-0176 and [commend code 14e and 14z] of this document.]

#### **Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0176  
**Comment Excerpt Number:** 59

**Comment Excerpt:**

**Malfunctions.** Although malfunctions differ from startups in that they are often sudden and unexpected, malfunction events share several key characteristics with startup and shutdown events. First, malfunctions are unavoidable—just as every MSW landfill control system must startup and shutdown from time to time, malfunctions are equally inevitable because no device can be expected to operate perfectly for its entire useful life. Second, malfunctions may unavoidably result in higher emission rates—just as the variable and transient conditions of a startup or shutdown may result in exceedance of normal, steady-state operating parameters, malfunctions can also result in unavoidable variability (if for no other reason that they typically require a shutdown of the control device).

In its preamble to the proposed emission guidelines, EPA appears to ignore these facts. For instance, EPA claims that its "interpretation of the CAA and, in particular, CAA section 111 is reasonable and encourages practices that will *avoid* malfunctions." 80 Fed. Reg. 52,134. However, that statement fails to recognize that malfunctions are *unavoidable*, and indeed EPA long ago defined the term "malfunction" to only include events that are "not reasonably preventable." 40 C.F.R. § 60.2. EPA also uses the hypothetical of a 4-day malfunction of a control device with a 99 percent removal efficiency to claim that "[i]t is reasonable to interpret CAA section 111 to *avoid* such a result." 80 Fed. Reg. 52,133. But again, an "avoidable" malfunction is not a "malfunction" at all, under EPA's own definition of that term. 40 C.F.R. § 60.2. EPA should clarify that the "malfunctions" it intends to address with any new malfunction policy are those that are already "unavoidable."

Despite the unavoidable nature of malfunctions, EPA has flatly admitted that its emission guidelines will simply ignore them, spending several paragraphs of the preamble defending that head-in-the-sand perspective. 80 Fed. Reg. at 52133. EPA admits that "[a] malfunction should not be treated in the same manner as the type of variation in performance that occurs during routine operations of a source." *Id.* Yet EPA's proposal would apply the emission guidelines to emissions resulting from malfunctions just like emissions occurring during normal operation. In short, EPA's proposal would result in a mismatch—regulatory requirements would apply to operating conditions for which they were not designed.

In other rulemaking actions, EPA has not attempted to craft an alternative emission limitation or work practice standard for malfunctions in recognition of the difficulty in addressing all the myriad ways in which an industrial source of emissions may malfunction, leaving sources at the mercy of enforcement discretion and vulnerable to citizen suits. However, that approach is unnecessary for MSW landfills because landfill control systems are far more predictable during a malfunction than most sources—when a landfill gas control system malfunctions, it automatically shuts down quickly, thus minimizing emissions by design. Once shutdown, landfill gas emissions to the atmosphere cease until the unit can be repaired or replaced and restarted.



Thus, in the context of MSW landfills, there is no reason not to treat malfunctions in a manner similar to startups and shutdowns—by establishing an alternative emission limitation in the form of an exception and work practice standard provision.

Unfortunately, EPA's proposal appears focused entirely on its general SSM policy rather than attempting to discern the best policy for MSW landfill control systems specifically. For example, EPA's hypothetical of a 4-day malfunction of a control device with a 99 percent removal efficiency is completely inappropriate for MSW landfills. As EPA notes just a few sentences later, malfunctions of landfill gas control systems are unlikely to result in excess emissions since both the control device and the gas mover equipment would be shut down and "no gas would be flowing to the control device." 80 Fed. Reg. at 52134. Rather than emitting at rates 100 times greater than normal operations, as EPA's hypothetical assumes, MSW landfill emissions quickly drop to zero, eliminating EPA's concern over uncontrolled emissions.

For these reasons, Republic recommends that the same alternative emission should apply to startup, shutdown, and malfunctions. Just like startups, minimizing the duration of any shutdown and requiring a shutdown of the gas mover system should be sufficient to minimize emissions to the greatest extent possible and would likely eliminate them completely in almost all cases. An appropriate alternative emission limitation in the form of a non-numeric work practice standard will ensure that EPA's proposed provision—"the provisions of this subpart apply at all times, including periods of startup, shutdown, and malfunction"—does not result in confusion, since landfills will truly be capable of achieving the emission guidelines (including those expressly designed for SSM events) at all times.

**Republic's recommended approach to SSM is consistent with relevant court decisions.** The policy for SSM events recommended above is entirely consistent with recent court decisions addressing SSM issues. For example, the 2008 decision of *Sierra Club v. EPA*, which EPA cites at the beginning of its SSM discussion in the emission guidelines proposal, only addressed one question: whether EPA may adopt an SSM exemption to a Section 112 emission limitation, leaving in place only a "general duty" to minimize emissions that EPA admitted was not Section 112-compliant. *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008). EPA defended its regulations by attempting to argue that its Section 112 standards were still "continuous," despite an SSM exception, because its regulations also contain an overarching "general duty" to minimize emissions that applies at all times. The court rejected EPA's argument, but only because EPA admitted that it had made no effort to demonstrate that the "general duty" provision complied with the requirements of Section 112, which set forth clear requirements for EPA in designing any non-numeric emission limitations. *Id.* at 1027-28. The court did not rule that approach unlawful *per se*, it simply recognized that EPA had failed to even try it in accordance with the requirements of Section 112(h).

In the preamble, EPA also cites another court decision, *NRDC v. EPA*, 749 F.3d 1055 (D.C. Cir. 2014), claiming that the case precludes any use of an "affirmative defense" to provide legal protections for unavoidable emissions during SSM events. EPA is correct that the court determined that the Clean Air Act prohibits EPA from establishing an "affirmative defense" that binds the federal court's discretion in establishing an appropriate remedy for "violations." But the court did not address EPA (or a state's) authority to establish requirements that determine, in the first instance, what the "emission limitation" is and how to determine whether a "violation" of that emission limitation has occurred. Instead, the court's analysis, like EPA's general SSM

policy, assumed from the beginning that a "violation" has already occurred, and therefore only addresses the possible remedies available for a "violation." The court did not address whether EPA may adopt provisions that eliminate the "violation" altogether by imposing a different type of emission limitation with which a source can comply during SSM.

In fact, adopting an alternative emission limitation in the form of a work practice standard is more consistent with EPA's recognition that emission guidelines must be "reasonable and achievable by sources." *See, e.g.*, 80 Fed. Reg. at 33898. Without an alternative emission limitation, MSW landfill control systems may not be able to achieve the emission guidelines during SSM events, which would unreasonably place landfills at risk for enforcement over events they cannot avoid or control.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. *See, e.g.*, 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

## 14.6 SSM-Other

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### 14z. SSM-Other

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 24

**Comment Excerpt:**

NWRA and SWANA have worked closely with both Waste Management and Republic Services in evaluating SSM issues for municipal solid waste landfills, and we support their comments and recommendations with respect to EPA's Subpart Cf proposal.

**Comment Response:**

We have responded to all comments from Waste Management and Republic Services in this section and in other sections of the Response to Comments document.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number: 85**

**Comment Excerpt:**

WM commented extensively on EPA's proposed approach to startup, shutdown and malfunction ("SSM") events in Subpart XXX. Because EPA's approach to SSM in Subpart Cf, as proposed, appears to be substantially identical to its Subpart XXX proposal, WM incorporates those comments herein by reference. Likewise, WM's comments herein apply to both proposed Subparts XXX and Cf.

As an initial matter, WM does not agree with EPA's conclusion that the decision of the U.S. Court of Appeals for the D.C. Circuit in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), *cert. denied*, 130 S.Ct. 1735 (U.S. 2010) compels EPA change its current approach to SSM issues in Subpart WWW. Instead, the Subpart WWW approach is supported by the Court's decision. Further, WM is concerned that EPA's proposed SSM language in Subpart Cf is inconsistent with the structure of the rule, particularly EPA's determination of BSER for the control of landfill gas emissions. EPA's proposal does not reflect the unique nature of municipal solid waste landfills and does not address the operational realities of the source category. Because landfills are not conventional air emission sources, any new approach to SSM concepts in Subpart Cf must be carefully tailored to the source category to establish clear and achievable standards that are consistent with the objectives of Section 111 of the CAA. EPA readily acknowledges that municipal solid waste landfill facilities are unlike many other types of industrial sources in that landfill emissions are produced by a biological process that cannot be stopped or restarted. 80 Fed. Reg. at 52133. EPA further notes that the primary SSM concern is with malfunction of the gas collection and control system and monitoring equipment, rather than with startup or shutdown of the landfill itself. *Id.* However, instead of directly and clearly addressing the unique operational aspects of landfill gas collection and control, EPA applies a one-size-fits-all prohibition on SSM allowances that does not address the complexities of the landfill category.

**Comment Response:**

The EPA disagrees with the commenter's view on the application of the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008). The EPA's view of the *Sierra Club v. EPA* decision is provided in the final rule preamble (in Sections V.D and VI.D.) and the proposed NSPS rule (at 79 FR 41815-41816). That said, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final NSPS Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number: 87**

**Comment Excerpt:**

**SSM Provisions Have Been a Longstanding Feature of NSPS Rulemakings.**

EPA acknowledged early in the context of its rulemakings under Section 111 of the Clean Air Act that standards of performance may not be achievable during periods of startup, shutdown or malfunction. In 1977, EPA added a clarification to the NSPS general provisions set forth at 40 C.F.R. Part 60, Subpart A, that "[o]perations during periods of startup, shutdown and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limits during periods of startup, shutdown and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard." 42 Fed. Reg. 57125 (November 1, 1977). This action was consistent with Court decisions that questioned the achievability of Section 111 standards across all operating conditions. "In *Essex Chemical* as well as *Portland Cement I* we expressed concern that the standards set might not have been achievable in periods of abnormal operation, e.g. during the 'startup, shut-down and [equipment] malfunction' periods that occur in plant operations; and we remanded for further consideration of this issue." *National Lime Association v. EPA*, 627 F.3d 416,430 (D.C.Cir. 1980) citing *Essex Chemical Corp. v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), cert. denied, 416 U.S. 969 (1974) and *Portland Cement Association v. Ruckelshaus*, 486 F.2d 375, 398-399 (D.C. Cir. 1973), cert. denied, 417 U.S. 921 (1974).

While providing a general exception for emission exceedances during SSM events, the final phrase of Section 60.8(c) ("unless otherwise specified in the applicable standard") clearly contemplates that the exception may be narrowed or further clarified for individual source categories through EPA's development of standards in individual NSPS subparts. Indeed, in the current action, EPA notes its intention in the Subpart Cf preamble to "supersede" the language of Section 60.8(c) through proposed language in Subpart Cf. See 80 Fed. Reg. at 52112. However, in its development of Subpart WWW, EPA already carefully considered whether unique aspects of the municipal waste landfill source category would require specific provisions governing SSM events. The *Sierra Club* decision should not be interpreted to undo that category-specific determination.

**Comment Response:**

The EPA disagrees with the commenter's view on the application of the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), and how that more recent decision impacts the older cases cited by commenter and restricts the EPA's discretion under 60.8(c). The EPA's view of the *Sierra Club v. EPA* decision is provided in the final rule preamble (in Sections V.D and VI.D.) and the proposed rule (at 79 FR 41815-41816). However, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final NSPS Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 88

**Comment Excerpt:**

EPA adopted a category-specific approach for municipal solid waste landfills in Subpart WWW.

EPA's determination of BSER was based on the unique nature of landfills.

EPA's approach to SSM events in the Landfill NSPS was informed by its evaluation of available control technologies for municipal solid waste landfills. Its determination of BSER for landfills meeting the relevant size capacity and emission thresholds included (1) a well-designed and well-operated gas collection system; and (2) a control device capable of reducing the NMOC in collected gas by 98 weight-percent. *See* 49 Fed. Reg. 9905, 9907 (March 12, 1996). Importantly, EPA's statements in the Subpart WWW background documents acknowledge that a design and operational standard, rather than a numeric emission limit, is the most appropriate manner in which to require the collection of landfill gas generated within landfills:

*A performance standard is not appropriate for gas collection system design because it is not feasible to measure gas generated versus gas collected at a landfill and determine what performance a collection system is achieving... ..Because a performance standard is not feasible, a design and operational standard has been set as BDT for gas collection system design. The specifications for active collection systems do not give prescriptive design specifications; rather, they present criteria on which to base a collection design plan.*

Subpart WWW BID at p.2-85.

In evaluating the appropriate technology on which to base the Subpart WWW gas collection requirements, EPA determined that municipal solid waste landfills could not be held to a specific emission limit or pollutant reduction standard. Instead, EPA established a design standard for well-designed and well-operated landfill gas collection systems, as follows:

*A well-designed and well-operated collection system would, at a minimum: (1) Be capable of handling the maximum expected gas generation rate; (2) have a design capable of monitoring and adjusting the operation of the system; and (3) be able to collect gas effectively from all areas of the landfill that warrant control.*

*See* 61 Fed. Reg. at 9907. Thus, in light of the inability to measure compliance against a numeric emission limitation or standard of performance, EPA established a design standard based on criteria that would be met on a source-specific basis established through a gas collection and control system design plan. *See also*, 40 C.F.R. §60.752(b)(i) (requiring the submission of a gas collection and control system design plan, and stating that "[b]ecause of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical

collection systems, or horizontal trenches only, leachate collection components, and passive systems").

EPA relied on Clean Air Act Section 111(h) as the basis for its selection of a design standard, rather than a standard of performance for gas collection systems; EPA's determination almost exactly tracks the language of Section 111(h), which allows EPA to establish a design or work practice standard when "the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations." 42

U.S.C. §7411(h)(2)(B). *See* 56 Fed. Reg. 24468 (May 30, 1991). Importantly, compliance with the design and operational standard for gas collection cannot be met on an instantaneous basis. The design and performance of a landfill gas collection system is based on a design which allows for expansion, upgrade, repair and corrective actions where necessary to meet operational standards. The system is evaluated over the life of the landfill and monitored via operational parameters such as wellhead and surface emission standards; notably, exceedances of these standards do not constitute non-compliance unless the landfill owner or operator fails to correct the exceedance using work practices and corrective action timeframes prescribed by the rule. *See* 40 C.F.R. §60.753(g).

By contrast, enclosed combustor control systems are subject to a numeric emission limitation that can be measured when the control device is operating, based on the reduction of NMOC by 98% or to outlet concentrations less than 20 ppmv. *See* Subpart WWW Background Document at 2-86, 40 C.F.R. 60.752(b)(2)(iii). Compliant operation of enclosed combustors is based on maintaining average combustion temperature above a minimum standard established via stack test. *See* 40 C.F.R. §60.758(c)(1)(i).

### **EPA Acknowledged that a Well-Designed and Well-Operated Gas Collection System Will Experience Downtime.**

While the Landfill NSPS requires landfill gas collection systems to meet the enumerated design criteria, the Landfill NSPS expressly anticipates that the landfill gas collection and control system may not be operational at all times. Several provisions demonstrate EPA's acknowledgement that the landfill gas collection system may experience downtime: first, Section 60.753(f) requires operation of the control or treatment system at all times *when the collected gas is routed to the system*; second, Section 60.753(e) requires that the gas mover system be shut down and all valves in the collection and control system contributing to the venting of the gas to the atmosphere be closed within one hour *in the event that the collection or control system is inoperable* (*see* 40 C.F.R. §§60.753(e) and (f)); and finally, the operational standards for gas collection systems expressly require corrective actions and system expansions to address exceedances of wellhead and surface emission operational standards. *See* 40 C.F.R. § 60.755.

Together, these provisions evidence EPA's understanding that a well-designed and well-operated gas collection and control system may experience operational circumstances in which the landfill gas collection system requires maintenance, repair or corrective action, or experiences partial or complete shutdown due to planned or unplanned events. Although the landfill cannot stop generating landfill gas in such circumstances, EPA made clear and specific determinations with respect to the manner in which sources would comply during such periods by ensuring that the gas mover system is shut down and valves in the collection and control system are closed to atmosphere, and by acknowledging that the control systems would not and could not operate during shutdown of the landfill gas collection system.

Importantly, EPA did not find that temporary shutdowns for maintenance, repair or malfunction would prevent compliance with (or constitute a deviation from) the overall requirement to meet collection system design criteria, which are not met on an instantaneous basis and instead reflect the design and operation of landfill gas collection systems over the life of the landfill. By contrast, EPA specifically addressed SSM events in the context of the Landfill NSPS by narrowing the SSM provision of Section 60.8(c) through the 5-day / 1-hour provision of Section 60.755(e), as follows:

*The provisions of this subpart apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown or malfunction shall not exceed 5 days for collection systems and shall not exceed 1 hour for treatment or control devices.*

40 C.F.R. §60.755(e). The history of the Landfill NSPS regulatory development demonstrates that EPA carefully considered the unique and dynamic nature of landfills and landfill gas collection and control when developing the 5-day / 1-hour provision. For example, statements in the Subpart WWW Background Document acknowledged that downtime and repair events in the gas collection system would be inevitable, and would require a period of time for resolution:

*The 5-day period for collection systems was selected in recognition that a major problem with a collection system will likely take longer than an hour to locate and solve but also that the landfill is not going to stop generating LFG. Localized problems with crushed pipes, etc., may be resolved through adjustments to the draw from other wells in the vicinity until repair is effected. If the blowers need to be repaired or replaced, the collection/control system may be able to function temporarily as a passive system while repairs are effected. However, the EPA has no data upon which to base how long such an arrangement would be feasible. Therefore, owners and operators should take care to plan for such contingencies. A 5-day initial attempt at repair has been required in other regulations requiring that VOC-laden gas be routed to a control device. Absent any clear data to support a different time period, the EPA has adopted that repair period for the NSPS.*

Subpart WWW BID at p. 2-160. In addition, EPA acknowledged that work practices during these events would be site-specific, and developed by individual landfill owners/operators, rather than by the agency:

*Whether the owner or operator has arranged with vendors for quick turnaround on replacement parts, has spare system components on site, or has multiple devices on line so that the flow may be distributed among them, compliance can be maintained without EPA specifying a particular strategy. Therefore, the EPA has elected to specify a downtime that is acceptable under these regulations, and leave the strategy on how to comply to the owners and operators to negotiate with the appropriate regulatory agency.*

Subpart WWW BID at p. 2-161

In addition to considering the time period which may be required for the resolution of operational issues in gas collection systems, EPA specifically considered the time period for achieving control device shutdown and whether automatic devices should be required for the cessation of flow to control devices during gas collection system shutdown:

*After consideration of the comment regarding automatic blower shutdown, the EPA has included provisions requiring that the gas mover system be shut down and all valves to the collection and*

*control system closed whenever the control device is inoperable. The provisions also require that the control device be operated at all times when LFG is routed to the device. Again, in an effort to avoid requiring that landfill owners and operators comply with the NSPS in only one of many alternative means of compliance, the EPA is not requiring that this be accomplished through the use of automatic devices. While these devices may be appropriate in many cases, there may be very small systems that could be just as easily shut down manually. If landfill emissions were routed to the atmosphere through the collection and control system for some portion of an hour, this would still be a relatively small emission event.*

Subpart WWW BID at p.2-161.

The excerpts set forth above from the Subpart WWW Background Document show EPA's careful consideration of downtime events in the context of its chosen technology, which was based on a design standard for gas collection rather than a numeric emission limit. EPA acknowledged in its development of the Landfill NSPS that a well-designed and well-operated gas collection system would experience downtime and specifically addressed those circumstances through sections 60.753(e) and (f) and 60.755(e), as well as through site-specific procedures that would be developed through the gas collection and control system design plan. Based on these statements in the Subpart WWW Background Document and regulatory provisions, the 5-day / 1-hour provision provides an allowance for the duration of SSM events within the landfill gas collection system during which work practices would be followed to restore the collection system to operation. Likewise, the one-hour standard for SSM events impacting control devices is consistent with the requirement to close all valves to atmosphere within one hour, and ensures that landfill gas cannot bypass the control device when such downtime occurs.

EPA supplemented these category-specific determinations in the Subpart AAAA NESHAP(). First, the Subpart AAAA incorporates by reference the compliance provisions of the Landfill NSPS in Section 63.1960. *See* 40 C.F.R. §63.1960. Second, Section 63.1975 addresses the calculation of control device combustion temperatures over a 3-hour average, specifically requiring the exclusion of data collected during SSM events. This provision is consistent with the approach EPA has taken in many rules, especially for startup and shutdown periods, recognizing that a control device may need a certain time period to reach the required operating temperature and that such periods, when appropriately limited, are not indicators of non-compliance.

EPA has expressly reaffirmed its prior determinations of BSER and the bases therefore in both proposed Subparts XXX and Cf. In particular, EPA has reaffirmed that *"a well-designed and well-operated gas collection and control system with a control device capable of reducing NMOC by 98 percent by weight continues to be the best system of emission reduction ('BSER') for controlling LFG emissions. Thus, there is no change to the fundamental means of controlling LFG..." See* 80 Fed. Reg. at 52110. Likewise, EPA has expressly confirmed that Section 111(h) of the Clean Air Act provides the basis for its selection of a design and operational standard in lieu of a numeric emission limit for landfill gas collection. *See* 79 Fed. Reg. at 41802. EPA has not changed any of the reasoning behind these determinations, including the statements from the Subpart WWW BID. EPA must not now undermine these determinations with imprecise SSM language that could have the unintended effect of changing the nature of the underlying requirements.

**Comment Response:**



In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final NSPS Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 89

**Comment Excerpt:**

The 2008 *Sierra Club* Decision Does Not Require New Approach to SSM for Landfills.

In the preamble to Proposed Subpart Cf, EPA relies almost exclusively on the D.C. Circuit's decision in *Sierra Club* as the basis for its proposed approach toward SSM events in Subpart Cf. "Consistent with *Sierra Club v. EPA*, the EPA is proposing standards in 40 C.F.R. Subpart Cf that apply at all times." 80 Fed. Reg. at 52133. EPA appears to conclude that *Sierra Club* would require changes to the SSM provisions of Subpart WWW, but it does not.

The *Sierra Club* decision addressed what the Court viewed as a "blanket exemption" from compliance with emission standards promulgated under Section 112 of the Clean Air Act. See 551 F.3d at 1025-1026. The Court held that the definition of "emission standard" in Section 302(k) of the Clean Air Act, when read in conjunction with Section 112, requires continuous compliance, including during periods of startup, shutdown and malfunction. However, the *Sierra Club* Court noted that a work practice standard under Section 112(h) may provide an alternate basis for determining compliance in circumstances under which emission limitations cannot be met. "*EPA has not purported to act under section 112(h), providing that a standard may be relaxed 'if it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard for control of a [HAP]'*". 551 F.3d at 1028 (alteration in original). The text of Section 112(h) is almost identical to the text of Section 111(h), which underpins EPA's determination in Subpart WWW that a design and operational standard is more appropriate than a performance standard or numeric emission limitation for landfill gas collection systems. EPA has re-affirmed this determination in its reevaluation of BSER in the both Subpart Cf and the Subpart XXX proposals. Therefore, to the extent that *Sierra Club* applies to standards promulgated under Section 111 of the Clean Air Act (WM believes it does not), it clearly does not govern in this context, where EPA *already* defined the governing standard under Section 111(h) as a design and operational standard that includes periods of maintenance, repair and expansion sometimes necessitating system downtime. Because *Sierra Club* concerned itself with the applicability of numeric emission limits during SSM periods, and did not address design and operational requirements, *Sierra Club* does not apply.

**Comment Response:**

The EPA disagrees with the commenter's view on the application of the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008). The EPA's view of the *Sierra Club v. EPA* decision is provided in the final rule preamble (in Sections V.D and VI.D.) and the proposed NSPS rule (at 79 FR 41815-41816). However, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.34f(e) and discussions in the Final NSPS Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 95

**Comment Excerpt:**

Other recent EPA rulemakings offer examples of category – specific SSM approaches.

In its effort to clarify its approach to SSM generally, EPA has demonstrated in its other recent rulemakings a much more precisely tailored SSM approach for other source categories. While most of these efforts relate to EPA's clarifications around *numeric* emission limits, the reasoning that supports EPA's source-specific accommodations for SSM in other source categories may also be useful in clarifying certain aspects of compliance for municipal solid waste landfills.

First, EPA has been willing to define startup and shutdown for source categories, where specific circumstances warrant and where alternative work practice standards are established for compliance during startup and shutdown periods. *See e.g.* National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants; Final Rule, 80 Fed. Reg. 62390 (October 15, 2015); National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production; Final Rule, 80 Fed. Reg. 56700 (September 18, 2015); National Emissions Standards for Hazardous Air Pollutants for Mineral Wool Production and Wool Fiberglass Manufacturing; Final Rule, 80 Fed. Reg. 45280 (July 29, 2015).

Second, EPA has adopted work practice standards in lieu of numeric emission limits for periods of startup and shutdown. As an example, in the Phosphoric Acid Manufacturing and Phosphate Fertilizer Production RTR and Standards of Performance for Phosphate Processing Final Rule, EPA "determined that work practice standards for periods of startup and shutdown are appropriate in lieu of numeric emission limits due to the short duration of startup and shutdown, and control devices used on the various process lines in this source category are effective at achieving desired emission reductions immediately upon startup." *See* 80 Fed. Reg. 50386, 50391 (August 19, 2015). Another basis for the adoption of work practice standards is that emissions cannot be accurately measured during startup and shutdown periods. *See e.g.* National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry and

Standards of Performance for Portland Cement Plants; Final Rule, 78 Fed. Reg, 10006, 10015 (February 12, 2013).<sup>32</sup>

Third, EPA has established control device downtime allowances for maintenance and repair. In its NESHAP for Brick and Structural Clay Products Manufacturing; and NESHAP for Clay Ceramics Manufacturing; Final Rule, EPA established a control device bypass allowance during periods of routine maintenance upon request and up to four percent of the annual operating uptime for each kiln. *See* <http://www3.epa.gov/airtoxics/brick/brickpg.html>.

Fourth, where appropriate to give effect to alternative work practice or compliance demonstration standards for startup and shutdown periods, EPA has established monitoring, recordkeeping and reporting obligations that are specific to startup and shutdown periods. *See e.g.* Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards; Final Rule (Not yet published in Federal Register, available at: <http://www3.epa.gov/airtoxics/petref.html>); Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units; Final Rule (Not yet published in Federal Register; available at: <http://yosemite.epa.gov/opei/rulegate.nsf/byRIN/2060-AQ91>)

Fifth, EPA has established exceptions from monitoring requirements during periods of monitor malfunctions, associated repairs, and required quality assurance or control activities. *See e.g.* NESHAP for Brick and Structural Clay Products Manufacturing; and NESHAP for Clay Ceramics Manufacturing; Final Rule (Not yet published in Federal Register, available at: <http://www3.epa.gov/airtoxics/brick/brickpg.html>); Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards; Final Rule (Not yet published in Federal Register, available at: <http://www3.epa.gov/airtoxics/petref.html>); Oil and Natural Gas Sector: Emission Standards for New and Modified Sources; Proposed Rule, 80 Fed. Reg. 56593 (September 18, 2015); and Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units; Final Rule (Not yet published in Federal Register; available at: <http://yosemite.epa.gov/opei/rulegate.nsf/byRIN/2060-AQ91>)

Consistent with some of these concepts, WM offers suggested options below for how EPA may specifically address SSM considerations in Subparts Cf and XXX in a manner that is consistent with its regulatory determinations for the source category as well as its approach in recent rulemakings.

[Footnote 32] EPA has also identified appropriate criteria for the establishment of standards for startup and shutdown periods in its State Implementation Plans: Response to Petition for Rulemaking; Restatement and Update of EPA's SSM Policy Applicable to SIPs; Findings of Substantial Inadequacy; and SIP Calls to Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown and Malfunction; Final Rule, 80 Fed. Reg. 33840 (June 12, 2015).

### **Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas

collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 97

**Comment Excerpt:**

Clarify that SSM provisions apply to control devices and not collection systems

If EPA determines that the Subpart WWW 5-day / 1-hour provision must be revised or reevaluated in Subparts Cf and XXX, EPA must do so in a more thorough and thoughtful manner than is currently proposed. EPA must provide clear compliance obligations and guidance for facilities experiencing SSM events. Because EPA's proposed SSM language is intended to ensure that no exemption from numeric emission limitations would apply during SSM events, EPA should tailor the SSM language to the only aspect of proposed Subpart Cf that is subject to an emission limit - control or treatment system operations.<sup>34</sup> Further, EPA should evaluate whether alternative work practice and/or monitoring standards should be established for control device or treatment system startup and shutdown periods. For collection systems, EPA should clarify that downtime periods are anticipated operating conditions that were considered in EPA's establishment of BSER, and confirm that the existing work practice requirements (shutdown of gas mover, closure of valves) constitute compliance for these periods. In this context, WM offers the following general considerations and has included proposed conceptual draft revisions to Subparts Cf and XXX below.

WM offers the following conceptual revision language to EPA in the context of WM's comments on the SSM provisions of Subparts XXX and WM. The rule citations refer to sections of proposed Subpart XXX, with the corresponding Subpart Cf citation in [brackets]. This draft is preliminary and offered with the intention of facilitating discussion with EPA on practical solutions to the concerns noted in WM's comments on the proposed rulemaking.

WM would welcome an opportunity to further discuss these issues and proposed approaches to clarifying SSM concepts in proposed Subparts XXX and Cf, and would be happy to provide additional information that may be helpful to EPA's evaluation of these comments.

- **Revise the proposed general SSM language:** WM requests that EPA revise the proposed language in 40 C.F.R. §§ 60.36f(e) and 60.765(e) ("The provisions of this subpart apply at all times, including periods of startup, shutdown and malfunction") because as written it is very broad and may be misconstrued, for the reasons discussed above. Since the control device standard for NMOC (98% reduction or 20 ppmv at the outlet) is the only emission limit contained in proposed Subparts Cf and XXX, this language should be tailored to that standard. For example, EPA might consider the following language for sections 60.765(e) and 60.36f(e): "The provisions of 40 C.F.R.

§60.33f(c) [§60.762(b)(2)(iii)] shall apply at all times when landfill gas is routed to the control device or treatment system, including periods of startup, shutdown or malfunction."

[Footnote 34] WM notes for this purpose that a landfill gas treatment system does not constitute a control device and is not itself subject to an emission limitation. However, any atmospheric vent within the treatment system would be subject to a control requirement (*see* 40 C.F.R. §60.33(c)(4); therefore the SSM requirements may be applicable to that aspect of treatment systems.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 98

**Comment Excerpt:**

**Establish category-specific definitions of startup and shutdown:** Whereas the general definitions of "startup" and shutdown" contained in Part 60, Subpart A relate directly to the startup and shutdown of an affected source, these definitions are not appropriate for landfills, which themselves cannot be started up or shut down and are not subject to an emission standard. *See* 40 C.F.R. §60.2. EPA has acknowledged this in its preamble to Subpart Cf. *See* 80 Fed. Reg. at 52133. Accordingly, definitions of startup and shutdown in the landfill context should focus on the control or treatment system, because only these systems are subject to an emission standard, and it is the availability of the control or treatment system that ultimately determines when and the extent to which landfill gas can be moved through the collection system via the gas mover. As a practical matter, startup and shutdown are confined events that are limited to the routing or cessation of flow to the control device or treatment system. An appropriate definition of startup would focus on the setting in operation of the landfill gas control device or treatment system upon routing collected gas to the device or system. An appropriate definition of shutdown would focus on the cessation of operation of a control device or treatment system upon cessation of landfill gas flow to the device or system.

**60.761 Definitions [60.41f]**

*Startup*, as used in this subpart, means the setting in operation of a control device or treatment system and routing of collected landfill gas to the device or system via the gas mover equipment.

Startup is complete when monitored data reflects compliance with the standards set forth in § 60.762(b)(2)(iii).

Shutdown, as used in this subpart, means the cessation of operation of a control device or treatment system upon cessation of landfill gas flow to the control device or treatment system.

### **Comment Response:**

Based on the changes made in the final rule, there is no need to publish unique definitions for startup and shutdown in the landfill NSPS and EG. In addition, the preamble to the proposed and final rule makes it clear that for landfills the primary startup, shutdown, and malfunction concern is with the gas collection and control systems and associated monitoring equipment. In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 100

### **Comment Excerpt:**

**Clarify compliance obligation during periods when the gas collection system is not operating:** The gas collection requirement is a design and operational standard evaluated over the life of the system through the gas collection and control system design plan and with compliance determined via monthly wellhead and quarterly SEM monitoring. The gas collection requirement is neither an emission limit nor a requirement for which compliance can be evaluated instantaneously. Further, gas collection system components require routine adjustment, repair, replacement and expansion, all of which require the system to experience downtime. These offline periods are typically short and often only impact only a portion of the system, but EPA has long recognized that partial or complete collection system downtime periods are sometimes necessary. EPA has established a work practice standard - shutdown of the gas mover system and closure of valves to atmosphere – to ensure that collection systems are managed properly during these periods. However, if EPA determines that the 5-day / 1-hour provision must be eliminated, WM is concerned that there will be a potential for state and local agencies to misconstrue EPA's action and to require "continuous" operation of the gas collection system. This is simply not feasible, though WM also recognizes that extended offline periods of the gas collection system would likely cause a failure to meet EPA's intended design and operational standards. In addition to the requirement shutdown the gas mover system and close all valves contributing of the venting of landfill gas to atmosphere within one hour in the event of collection or control system downtime, WM requests that EPA consider adding rule language to

confirm that collection system downtime for construction, expansion or repair is an anticipated operational scenario in Subparts Cf and XXX, and that compliance is maintained so long as the landfill owner / operator undertakes to minimize the potential for emissions of landfill gas to atmosphere, and restores the system to operation as expeditiously as practicable. These standards could be added in a new paragraph within proposed 40 C.F.R. §§ 60.34f and 60.763. In this context WM would also suggest incorporating a reporting obligation for collection system downtime exceeding 5 days. While the 5-day period would not constitute a compliance exemption, the information will help EPA in evaluating compliance with the requirements to minimize emissions and restore the system to operation as expeditiously as practicable.

#### **60.763 Operational Standards for Collection and Control Systems [60.34f]**

[new (f)] When the collection system is not operating during activities associated with construction, expansion, repair, replacement, testing, upgrade or other maintenance of the system or its components, minimize the potential for venting of landfill gas to atmosphere and return the collection system to operation as expeditiously as practicable.

#### **60.765 Compliance Provisions [60.36f]**

(e) The provisions of § 60.762(b)(2)(iii) apply at all times when landfill gas is routed to the control device or treatment system, including periods of startup, shutdown and malfunction.

#### **Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 101

#### **Comment Excerpt:**

**Clarify monitoring obligations:** As noted above, WM requests that EPA clarify that monitor data collected during startup and shutdown periods should not be used in compliance determinations for combustion temperature. This would be consistent with Subpart AAAA and consistent with the establishment of alternative work practice standards and compliance demonstration for control device startup and shutdown periods. Likewise, consistent with other recent EPA rulemakings, EPA should clarify that periods of monitor malfunction, repairs, maintenance and required quality assurance or control activities are excluded from the monitoring requirement.

#### **60.766 Monitoring of Operations [60.37f]**

(h) The monitoring requirements of paragraphs (b), (c), (d) and (g) apply at all times that collected landfill gas is routed to the control device or treatment system, except during periods of monitoring system malfunctions and associated repairs, maintenance, and required quality assurance or control activities. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system malfunctions that are caused in part by poor maintenance or careless operation are not malfunctions. You are required to complete monitoring system repairs in response to monitoring system malfunctions and return the monitoring system to operation as expeditiously as practicable.

**Comment Response:**

The changes proposed by the commenter are not necessary. In the final NSPS and EG, we have specified that during periods of startup, shutdown, and malfunction the landfill is subject to a work practice standard and not the operating parameter limits of the compliance provisions of §60.765 or §60.36f (for the EG).

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 102

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**Comment Excerpt:**

**Clarify recordkeeping and reporting obligations:** Several clarifications to the proposed recordkeeping and reporting obligations would be necessary to give effect to WM's proposals. Most importantly, EPA must revise the proposed requirement in 40 C.F.R. §§ 60.39f(c)(5) and 60.768(c)(5) to estimate NMOC emissions during periods of collection or control system downtime. The only appropriate NMOC emission calculation and reporting requirement for SSM scenarios would be during periods of operation, when landfill gas is routed to the system and the control device or treatment fails to operate as designed to meet the NMOC emission standard. Emissions cannot feasibly be calculated during collection and control system downtime, and collection or control system downtime does not constitute either a violation of the rule or represent an emission exceedance. Accordingly, estimation of emissions during downtime periods should not be required.

**60.767 Reporting Requirements [60.38f(h)]**

(f)

(1) Value and length of time for exceedance of applicable parameters monitored under §60.766(a), (b), (c), (d), and (g). Data collected during control device startup and shutdown, and monitoring system malfunction, repair, maintenance and quality assurance or control activities shall be excluded from the compliance demonstration.

(3) Description and duration of all periods when the control device or treatment system was not operating in accordance with § 60.762(b)(2)(iii) when collected landfill gas was routed to the



control device or treatment system and the length of time the control device or treatment system was not operating in accordance with § 60.762(b)(2)(iii) when landfill gas was routed to the control device or treatment system.

(4) All periods when the entire collection system was not operating for a period exceeding 5 days.

#### **60.768 Recordkeeping Requirements [60.39f]**

(c)

(1)

(i) For enclosed combustors, except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million British thermal unit per hour) or greater, all 3 hour periods of operation during which the average temperature was more than 28°C below the average combustion temperature during the most recent performance test at which compliance with § 60.762(b)(2)(iii) was determined. Data collected during control device startup and shutdown, and monitoring system malfunction, repair, maintenance and quality assurance or control activities shall be excluded from the calculation of each 3-hour average.

(5) Each owner or operator of a landfill seeking to comply with § 60.762(b)(2) using an active collection system designed in accordance with § 60.762(b)(2)(ii) shall keep records of estimates of NMOC emissions for periods when the control device or treatment system is not operating in accordance with § 60.762(b)(2)(iii) when landfill gas is routed to the control device or treatment system.

#### **Comment Response:**

Because the final rule does not implement the specific recommendations of this commenter, the recommended reporting and recordkeeping of this comment are not relevant. The final rule is structured to address the concerns raised by this commenter on the proposed startup, shutdown and malfunction provisions, but does so in a different manner than this commenter recommended. In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 104

**Comment Excerpt:**

EPA should ensure that proposed Subparts XXX and Cf will be consistent with the requirements of NESHAP Subpart AAAA. Likewise, if and when EPA amends Subpart AAAA, it should do so in a manner that is consistent and complimentary to Subparts XXX and Cf. One area in which the NSPS/EG should be consistent with Subpart AAAA is with respect to monitoring requirements. As noted above, Subpart AAAA contains a provision in §63.1975 that specifically addresses combustion temperature data recorded during SSM events and periods of monitor system breakdown, repair and quality assurance activities. These provisions should be given effect in Subparts XXX and Cf.

§ 60.39f(j) AND 60.768(g) *NEW*

For the purposes of the landfill monitoring requirements, deviations include the items in paragraphs (a), (b) and (c) of this section.

(a) A deviation occurs when the control device operating parameter boundaries described in 60.39f(c)(1) [40 CFR 60.768(c)(1)] are exceeded.

(b) A deviation occurs when 1 hour or more of the hours during the 3-hour block averaging period does not constitute a valid hour of data. A valid hour of data must have measured values for at least three 15-minute monitoring periods within the hour.

(c) A deviation occurs when a treatment system monitoring plan is not developed, implemented or maintained on site where the site relies on the treatment system to meet 60.33f(c)(3) [60.762(b)(2)(iii)(C)]

**Comment Response:**

Because a work practice applies during periods of startup, shutdown and malfunction rather than the operating parameter limits of the compliance requirements of §60.765, the changes recommended by the commenter are not relevant.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 106

**Comment Excerpt:**

EPA should ensure clarity and consistency among Subparts XXX, Cf and AAAA with respect to the applicability of the general provisions in Part 60 Subpart A, and Part 63, Subpart A. In particular, given the unique nature of the subcategory and the manner in which it is regulated, along with the specific monitoring, recordkeeping and reporting requirements contained in the proposed rules, EPA should clarify that these provisions within Subparts XXX, Cf and AAAA supersede the general provisions on Subpart A.

**Comment Response:**

This change is not necessary because the Part 60 General Provisions at 60.11(f) already specify that provisions of an applicable subpart supersede any conflicting requirements of subpart A.

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**Commenter Name:** Claudia R. Rodgers, Acting Chief Counsel

**Commenter Affiliation:** Small Business Administration

**Document Control Number:** EPA-HQ-OAR-2014-0451-0155

**Comment Excerpt Number:** 8

**Comment Excerpt:**

*EPA should allow small entities to incorporate startup, shutdown, and maintenance and repair activities into the GCCS design plan. As EPA has done in other recent Clean Air Act rulemakings, it is proposing that standards in the Emission Guidelines apply at all times, including periods of startup, shutdown, and malfunction (SSM). As EPA recognizes, landfills operate and emit pollution in a fundamentally different manner than traditional smokestack industries; there is no way to shut down or start up the emissions of the landfill. Therefore SSM in the case refers to operation of the GCCS.*

Small entities have expressed concern that a narrow approach to SSM will impose a significant regulatory burden when a landfill engages in routine maintenance of the GCCS, particularly if that maintenance is in response to an unplanned but not unexpected incident. For example, if a valve breaks, the breakage is unplanned, but it should be a routine repair and one for which the landfill should have a plan. Advocacy suggests that a GCCS can be well-designed and well-operated if it has such a plan for exceptional events and complies with the plan.

Advocacy recommends that EPA allow landfills to incorporate unplanned but planned-for events into the GCCS design plan and provide that adherence to the plan would not be considered an SSM event.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D. The work practice standard provides substantial flexibility in responding to SSM events. The commenter's suggested change is unnecessary and would add potentially confusing language that attempts to define what constitutes an SSM event based on the response by the landfill operator rather than the operation of the source.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 47

### **Comment Excerpt:**

EPA Adopted A Category-Specific Approach to SSM for Municipal Solid Waste Landfills. EPA's approach to SSM events in the Landfill NSPS was informed by its evaluation of available control technologies for municipal solid waste landfills. Its determination of BDT for landfills meeting the relevant size capacity and emission thresholds included (1) a well-designed and well-operated gas collection system; and (2) a control device capable of reducing the NMOC in collected gas by 98 weight-percent. *See* 49 Fed. Reg. 9905, 9907 (March 12, 1996). Importantly, EPA's statements in the Subpart WWW background documents acknowledge that a design standard, rather than an emission limit, is the most appropriate manner in which to require the collection of landfill gas generated within landfills:

A performance standard is not appropriate for gas collection system design because it is not feasible to measure gas generated versus gas collected at a landfill and determine what performance a collection system is achieving ..... Because a performance standard is not feasible, a design and operational standard has been set as BDT for gas collection system design. The specifications for active collection systems do not give prescriptive design specifications; rather, they present criteria on which to base a collection design plan.

Subpart WWW BID at p.2-85.

Thus, in evaluating the appropriate technology on which to base the Subpart WWW gas collection requirements, EPA determined that municipal solid waste landfills could not be held to a specific emission limit or pollutant reduction standard. Instead, EPA established a design standard for well-designed and well-operated landfill gas collection systems, as follows:

A well-designed and well-operated collection system would, at a minimum: (1) Be capable of handling the maximum expected gas generation rate; (2) have a design capable of monitoring and adjusting the operation of the system; and (3) be able to collect gas effectively from all areas of the landfill that warrant control.

*See* 61 Fed. Reg. at 9907. Thus, in light of the inability to measure compliance against an emission limitation or standard of performance, EPA established a design standard based on criteria that would be met on a source-specific basis established through a gas collection and control system design plan. *See also*, 40 C.F.R. §60.752(b)(i) (requiring the submission of a gas collection and control system design plan, and stating that "[b]ecause of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems, or horizontal trenches only, leachate collection components, and passive systems"). EPA relies on Clean Air Act Section 111(h) as the basis for its selection of a design standard, rather than a standard of performance; EPA's determination almost exactly tracks the language of Section 111(h), which allows EPA to establish a design or work practice standard when the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations." 42 U.S.C. §7411(h)(2)(B). *See* 56 Fed. Reg. 24468 (May 30, 1991); *See also*, 79 Fed. Reg. at 41802.

By contrast, enclosed combustor control systems are subject to a performance standard, based on reduction of NMOC by 98% or to concentrations less than 20 ppmv. *See* Subpart WWW Background Document at 2-86, 40 C.F.R.60.752(b)(2)(iii). Compliant operation of enclosed

combustors is based on average combustion temperature being maintained above a minimum standard established via stack test. *See* 40 C.F.R. §60.758(c)(1)(i).

While the Landfill NSPS requires landfill gas collection systems to meet the enumerated design criteria, the Landfill NSPS expressly anticipates that the landfill gas collection and control system may not be operational at all times. Two provisions demonstrate EPA's acknowledgement that the landfill gas collection system may experience downtime: first, Section 60.753(f) requires operation of the control or treatment system at all times *when the collected gas is routed to the system*; and second, Section 60.753(e) requires that the gas mover system be shut down and all valves in the collection and control system contributing to the venting of the gas to the atmosphere be closed within one hour *in the event that the collection or control system is inoperable*. *See* 40 C.F.R. §§60.753(e) and (f). Together, these provisions evidence EPA's understanding that a well-designed and well-operated gas collection and control system may experience operational circumstances in which the landfill gas collection system requires maintenance or repair, or experiences partial or complete shutdown due to malfunction or other operational circumstances. Although the landfill cannot stop generating landfill gas in such circumstances, EPA made clear and specific determinations with respect to the manner in which sources would comply during such periods by ensuring that the gas mover system is shut down and valves in the collection and control system are closed to atmosphere, and by acknowledging that the control systems would not and could not operate during shutdown of the landfill gas collection system.

EPA did not find that temporary shutdowns for maintenance, repair or malfunction would prevent compliance with (or constitute a deviation from) the overall requirement to meet collection system design criteria, which are not met on an instantaneous basis and instead reflect the design and operation of landfill gas collection systems over the life of the landfill. By contrast, EPA specifically addressed SSM events in the context of the Landfill NSPS by narrowing the SSM provision of Section 60.8(c) through Section 60.755(e), as follows:

The provisions of this subpart apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown or malfunction shall not exceed 5 days for collection systems and shall not exceed 1 hour for treatment or control devices.

40 C.F.R. §60.755(e) (hereinafter, the "5-day / 1-hour provision"). The history of the Landfill NSPS regulatory development demonstrates that EPA carefully considered the unique and dynamic nature of landfills and landfill gas collection, and control when developing the 5-day / 1-hour provision. For example, statements in the Subpart WWW Background Document acknowledged that SSM events in the gas collection system would be inevitable, and would require a period of time for resolution:

The 5-day period for collection systems was selected in recognition that a major problem with a collection system will likely take longer than an hour to locate and solve but also that the landfill is not going to stop generating LFG. Localized problems with crushed pipes, etc., may be resolved through adjustments to the draw from other wells in the vicinity until repair is effected. If the blowers need to be repaired or replaced, the collection/control system may be able to function temporarily as a passive system while repairs are effected. However, the EPA has no data upon which to base how long such an arrangement would be feasible. Therefore, owners and operators should take care to plan for such contingencies. A 5-day initial attempt at repair has been required in other regulations requiring that voc-laden gas be routed to a control device.

Absent any clear data to support a different time period, the EPA has adopted that repair period for the NSPS.

Subpart WWW BID at p. 2-160. In addition, EPA acknowledged that work practices during SSM events would be site-specific, and developed by individual landfill owners/operators, rather than by the agency:

Whether the owner or operator has arranged with vendors for quick turnaround on replacement parts, has spare system components on site, or has multiple devices on line so that the flow may be distributed among them, compliance can be maintained without EPA specifying a particular strategy. Therefore, the EPA has elected to specify a downtime that is acceptable under these regulations, and leave the strategy on how to comply to the owners and operators to negotiate with the appropriate regulatory agency.

Subpart WWW BID at p. 2-161

In addition to considering the time period which may be required for the resolution of SSM issues in gas collection systems, EPA specifically considered the time period for achieving control device shutdown and whether automatic devices should be required for the cessation of flow to control devices during gas collection system shutdown:

After consideration of the comment regarding automatic blower shutdown, the EPA has included provisions requiring that the gas mover system be shutdown and all valves to the collection and control system closed whenever the control device is inoperable. The provisions also require that the control device be operated at all times when LFG is routed to the device. Again, in an effort to avoid requiring that landfill owners and operators comply with the NSPS in only one of many alternative means of compliance, the EPA is not requiring that this be accomplished through the use of automatic devices. While these devices may be appropriate in many cases, there may be very small systems that could be just as easily shut down manually. If landfill emissions were routed to the atmosphere through the collection and control system for some portion of an hour, this would still be a relatively small emission event.

Subpart WWW BID at p.2-161.

The excerpts set forth above from the Subpart WWW Background Document show EPA's careful consideration of SSM events in the context of its chosen technology, which was based on a design standard for gas collection rather than an emission limit. EPA acknowledged in its development of the Landfill NSPS that a well-designed and well-operated gas collection system would experience downtime and specifically addressed those circumstances through sections 60.753(e) and (f) and 60.755(e) as well as through site-specific procedures that would be developed through the gas collection and control system design plan. Based on these statements in the Subpart WWW Background Document and regulatory provisions, the 5-day / 1-hour provision provides an allowance for SSM events within the landfill gas collection system, so long as those events do not exceed 5 days. Likewise, SSM of a control device, during which landfill gas may be vented to atmosphere through a control device that is not meeting the performance standard, may not exceed one hour. By contrast, shutdown of a control device during periods when landfill gas is not routed to the device would not constitute a deviation from Subpart WWW and is not limited. (However, the 5-day limitation on SSM of landfill gas collection systems imposes an effective limitation on control device downtime.)

EPA supplemented these category-specific determinations in the Landfill NESHAP in two ways. First, the Landfill MACT incorporates by reference the compliance provisions of the Landfill NSPS in Section 63.1960. See 40 C.F.R. §63.1960. Second, Section 63.1975 addresses the calculation of control device combustion temperatures over a 3-hour average, specifically requiring the exclusion of data collected during SSM events. This provision is consistent with the approach EPA has taken in many rules, especially for startup and shutdown periods, recognizing that a control device may need a certain time period to reach the required operating temperature and that such periods, when appropriately limited, are not indicators of non-compliance.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 88, under comment code 14z.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 48

**Comment Excerpt:**

The 2008 *Sierra Club* Decision Does Not Provide An Appropriate Basis for EPA's Approach in Proposed Subpart XXX. In the preamble to Proposed Subpart XXX, EPA relies almost exclusively on the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), *cert. denied*, 130 S.Ct. 1735 (U.S. 2010) as the basis for its proposed approach toward SSM events in Subpart XXX. "Consistent with *Sierra Club* .... , the EPA has established standards in Subpart XXX that apply at all times." 79 Fed. Reg. at 41815. However, EPA fails to explain why the *Sierra Club* decision would govern in this context. Indeed, it should not.

As an initial matter, the *Sierra Club* decision addressed challenges to the general SSM provisions of 40 C.F.R. Part 63, promulgated under CAA Section 112, 42 U.S.C. §7412. These provisions, set forth at Sections 63.6(f)(1) and 63.6(h)(1) and referred to as the General Provisions, provided an exemption from compliance with Part 63 emission standards during periods of SSM.

The Court vacated the General Provisions, holding that when read in combination, Sections 112 and 302(k) of the Clean Air Act (defining "emission standard") required that emission standards promulgated under Section 112 must require continuous compliance. 551 F.3d at 1027-28. The *Sierra Club* Court did not address the SSM provisions promulgated under Section 111 of the Clean Air Act, and the *Sierra Club* decision did not address any category-specific SSM provisions contained within individual subparts promulgated under either Sections 111 or 112 in Parts 60 or 63. Additionally, the context of the *Sierra Club* decision is important - the Court held that EPA had reopened the General Provisions of Part 63 in a circumstance where EPA had completely changed the regulatory context for the SSM rules by stripping away protections that had accompanied the rules when originally promulgated in 1994. *See* 551 F.3d at 1025-26. In essence, the Court's decision was based on its determination that EPA had reduced the General Provisions to a "blanket exemption" from standards promulgated under Section 112 of the Clean Air Act. *Id.*

EPA's subsequent interpretation and implementation of the Sierra Club decision evidenced its narrow interpretation of the Court's holding. In responding to requests by industry groups for clarification regarding EPA's implementation of the decision in the enforcement context, EPA stated that the Court's vacatur of the General Provisions under Part 63 would not have "a direct impact on ... source category-specific SSM provisions because those provisions were not challenged and were not before the Court in Sierra Club." See Letter from Adam Kushner to Industry Representatives, dated July 22, 2009 (the "Kushner Letter") [see Attachment 18 of DCN EPA-HQ-OAR-2003-0215-0100.1]. EPA noted in the Kushner Letter that only those Part 63 source category rules that "do nothing more than incorporate" the vacated general provisions would be affected.<sup>23</sup> *Id.* Importantly, in addition to narrowly interpreting the impact of Sierra Club on Part 63, the Kushner Letter did not address any impact on Part 60 NSPS standards or its SSM provisions. Likewise, in the years since the Sierra Club decision, EPA has not sought to amend the SSM provisions of Part 60, including Section 60.8(c).

Just as the Sierra Club decision cannot be interpreted to invalidate or affect the general NSPS SSM provisions, it cannot be interpreted to preclude EPA from providing SSM protection under proposed Subpart XXX or to call into question the validity of the 5-day / 1-hour provision for collection and control systems. Unlike the Part 63 General Provisions considered in Sierra Club, an SSM exception in the Landfill NSPS is not an exemption from compliance with an emission limit. As noted above, the requirement to operate a landfill gas collection system is not an emission limitation, and instead constitutes a design standard established under CAA Section 111(h). Whereas the Sierra Club Court held that the Part 63 general duty to minimize emissions during SSM periods was not enough to comply with the CAA Section 112 requirement that emission limitations apply on a continuous basis, the Sierra Club Court noted that a work practice standard under Section 112(h) may provide an alternate basis for identifying circumstances under which emission limitations cannot be met. "*EPA has not purported to act under section 112(h), providing that a standard may be relaxed 'if it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard for control of a [HAP]'*". 551 F.3d at 1028 (alteration in original). The text of Section 112(h) is almost identical to the text of Section 111(h), which underpins EPA's determination in Subpart WWW that a design standard is more appropriate than a performance standard or emission limitation for landfill gas collection systems. EPA has re-affirmed this determination in its reevaluation of the Best System of Emissions Reduction ("BSER") in the Subpart XXX proposal:

The EPA has not determined that the circumstances have changed so as to require the establishment of a standard of performance for the gas collection system. (CAA section 111(h)(3).) Therefore, for the gas collection system, the EPA proposes to maintain the design and operational standards in subpart WWW in subpart XXX.

79 Fed. Reg. at 41802.

Despite evaluating and re-adopting its determination that an emission or performance standard is not feasible for collection systems, EPA erroneously attempts to apply SSM concepts to those systems. EPA has offered no explanation of why or how this standard can be met "*at all times*" notwithstanding its prior determinations that a well-designed and well-operated GCCS would experience downtime as well as startups, shutdowns and malfunctions. This failure runs afoul of the Court's decisions in *Portland Cement I*, *Essex Chemical* and *National Lime* that EPA must address the achievability of standards across all operating conditions. Nothing in *Sierra Club*



would obviate EPA's obligation to ensure achievability and clarity; because EPA's selection of the gas collection and control system design standard is underpinned by a determination that an emission limitation or performance standard is infeasible, EPA must expressly address what standard would apply and how it would be met during SSM periods, instead of blindly purporting to follow the *Sierra Club* decision in a context where it does not apply.

Likewise, the *Sierra Club* decision does not require or justify EPA's apparent abandonment of the 5-day / 1-hour provision in proposed Subpart XXX. The 5-day / 1-hour provision is not a "blanket exemption" from compliance. Instead, EPA carefully examined a range of possible operating circumstances that may lead to startup, shutdown or malfunction of a gas collection and control system and determined not only that 5 days (for collection systems) and 1 hour (of free-venting of landfill gas to the atmosphere for treatment or control systems) were appropriate limitations on the duration of SSM, but also determined that there may be a range of specific work practices followed during such circumstances, and that such work practices would be determined on a site-specific basis. Indeed, as discussed in more detail below, WM has incorporated work practices for SSM conditions within its SSM plans, as required under the Landfill MACT.

In sum, promulgation of proposed Section 60.765(e) and removal of the 5-day / 1-hour provision would be inconsistent with both the *Sierra Club* decision and the Kushner memo, EPA's technology determinations made in the context of its promulgation of Subpart WWW, and EPA's obligation to establish standards that account for and are achievable during all periods of operation, including SSM events.

[Footnote]

(23) Despite the specific SSM provisions addressed in the Landfill MACT at Section 63.1975, discussed above, the Kushner Letter erroneously listed the Landfill MACT as a source category that would be affected by the *Sierra Club* vacatur of the Part 63 general SSM provisions. WM submitted a letter to EPA identifying this mistake. (See Attachment 18 [of DCN EPA-HQ-OAR-2003-0215-0100.1]).

**Comment Response:**

The EPA disagrees with the commenter's view on the application of the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008). The EPA's view of the *Sierra Club v. EPA* decision is provided in the final rule preamble (in Sections V.D and VI.D.) and the proposed rule (at 79 FR 41815-41816).

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 53

**Comment Excerpt:**

Any Change in Approach to SSM Must Be Based on Specific Evaluation of Landfill Gas Collection and Control Systems If EPA determines that its current approach to SSM in Subpart

WWW must be revised or reevaluated, EPA must do so in a more thorough and thoughtful manner than is currently proposed in Subpart XXX. EPA must provide clear compliance obligations and guidance for facilities experiencing SSM events. In the context of proposed Subpart XXX, EPA has not undertaken a specific review of gas collection and control system operating conditions that may be faced by landfills during routine startup and shutdown, has not clearly defined SSM events for the category, and has not evaluated unique compliance considerations during those events.

By contrast, EPA has undertaken specific examinations of routine startup and shutdown events in promulgating other recent categorical standards. In some cases, EPA has evaluated startup and shutdown periods and determined that sources can meet the relevant emission limitations during those conditions, and therefore it is appropriate to require compliance during those conditions. In other cases, EPA has determined that compliance cannot be maintained during startup and shutdown conditions, and therefore has established work practices or alternative compliance demonstration methods during those periods. In these circumstances, EPA has also considered whether source-specific definitions of startup and shutdown would be appropriate. *See e.g.* proposed amendments to the Grain Elevator NSPS, 79 Fed. Reg. at 39242-39265, 39256 (July 9, 2014); NSPS for Nitric Acid Plants, 77 Fed. Reg. at 48433-48448, 48438 (Aug. 14, 2012); Boiler MACT rulemaking, 78 Fed. Reg. at 7138-7213 (Jan. 31, 2013); CISWI rulemaking 78 Fed. Reg. 9121-9213, 9124 (Feb. 7, 2013); Subpart Dc NSPS 77 Fed. Reg. 9304-9513, 9380 (Feb. 16, 2012). EPA must undertake these same evaluations for municipal solid waste landfills, but has not done so in proposing Subpart XXX.

Further, EPA's determination that it is not required and that it would be too difficult to consider periods of malfunction in setting standards under CAA Section 111 is also incorrect. *See* 79 Fed. Reg. at 48115-41816 ("accounting for malfunctions in setting emission standards would be difficult, if not impossible, given the myriad different types of malfunctions that can occur across all sources in the category ..... "). EPA ignores Court decisions in *Portland Cement I*, *Essex Chemical*, and *National Lime*, in which the Court clearly required EPA to account for the achievability of emission standards during all periods of operation, including SSM. These decisions were based on the Court's recognition that malfunctions are an "inescapable aspect of industrial life," a fact that is especially accurate in the context of landfill gas collection and control systems. *See Portland Cement I*, 486 F.2d at 398-399. Nothing in *Sierra Club* changed this obligation. Moreover, EPA's own discussion of malfunction issues in the preamble to proposed Subpart XXX demonstrates that EPA's now-standard approach - to not consider malfunctions in setting categorical emission standards - is not applicable in the landfill context. EPA's discussion focuses on its purported inability to consider malfunctions in setting *emission* standards under CAA Section 111, ignoring its statements that emission limits are not applicable to gas collection systems. *See* 56 Fed. Reg. at 24484 (noting that "Emission limits are not applicable to gas collection *systems*.").<sup>26</sup> EPA has not demonstrated that it would be difficult or impossible to account for malfunctions in establishing the landfill gas collection system design standard. Indeed, EPA did expressly consider a wide array of such circumstances in its background to Subpart WWW, and determined that a 5-day allowance for repair would be appropriate to ensure compliance with the design standard, but has not done the same in its Subpart XXX proposal.

Although EPA did establish a performance / emission standard for enclosed combustors, EPA has not made any effort to identify or evaluate possible control system malfunctions that would

prevent sources from meeting the NMOC reduction standard. For example, EPA has failed to concede even the simple proposition that a control system that is shutdown when no landfill gas is routed to it cannot cause or constitute a deviation from the NMOC standard. EPA must clarify and confirm this simple principle.

EPA must acknowledge and account for the fact that landfill gas collection and control systems may experience partial or complete startup, shutdown, downtime or malfunction during any number of operational circumstances. In WM's experience, very few SSM circumstances would create a risk of failing to meet the overall design specifications for active landfill gas collection systems. However, because EPA has failed to define or address these circumstances, and has failed to address what compliance would require, the effect of EPA's SSM proposal would be a presumptive deviation from Subpart XX during any SSM event of any duration. Since no emission or performance standard applies to landfill gas collection systems, EPA must expressly define the circumstances under which startup, shutdown, malfunction or downtime events would constitute a deviation from compliance and must prescribe specific work practices that would apply during those circumstances.<sup>27</sup>

For enclosed flares, EPA must account for startup and shutdown sequences conducted in accordance with system design, SSM and gas collection and control design plans. Consistent with determinations made in the context of the Landfill MACT, EPA must acknowledge that even a well-designed and operated enclosed combustor requires completion of a defined startup and shutdown sequence during which it is not possible to meet minimum operating temperatures on a continuous basis. Accordingly, EPA must confirm that monitoring data gathered during startup and shutdown periods need not be included within the calculated three-hour average combustion temperature, consistent with Landfill MACT provisions. Or, if data collected during startup and shutdown events must be considered, EPA should evaluate a revision of the averaging period for enclosed combustor operating temperature in order to account for such periods. As for non-enclosed flares, excess emissions do not occur during startup or shutdown sequences. Finally, to the extent that operating and monitoring parameters are established under Subpart XXX for treatment systems, EPA must evaluate how startup and shutdown of such systems may affect compliance during those periods. Establishing narrowly tailored startup and shutdown provisions would be consistent with EPA's stated approach in other rulemakings and is particularly appropriate here.

With respect to malfunctions, EPA must both define malfunction periods in a manner that is specific to the municipal solid waste landfill source category, and must establish alternative standards that would apply during such periods. As an initial matter, EPA must confirm that a malfunction would not create any deviation from compliance standards in the context of Subpart XXX unless there is a specific and measurable failure to meet the overall design criteria for collection systems, or a failure to meet the NMOC reduction standard for enclosed combustors outside of startup and shutdown events that meet combustor design procedures. For those malfunctions that may cause deviations from Subpart XXX standards, EPA has the authority and is required to establish standards that are achievable under CAA Section 111, including through the use of its authority under Section 111(h) of the CAA to develop work practices for malfunction periods.

[Footnotes]

(26) EPA has likewise stated confirmed that the 500 ppm standard for surface emission monitoring is an operational standard rather than an emission limit. *See* Subpart WWW BID at p. 2-160.

(27) In its preamble discussion of malfunction events, EPA summarizes and explains its prior approach to affirmative defense provisions and the Court's decision in *NRDC v. EPA, 2014 U.S. App. LEXIS 7281 (D.C. Cir. April 18, 2014)*. WM reserves the right to comment further on the issue of affirmative defenses as EPA develops its enforcement and regulatory policies in the wake of the *NRDC* decision. However, even in light of the *NRDC* decision, EPA retains enforcement discretion in every context to account for a source's actions undertaken to address and minimize emissions during malfunction events. WM urges EPA to use this enforcement discretion in the landfill context, particularly in light of the complex SSM concerns raised herein. In addition, WM urges EPA to consider alternative approaches, including those identified herein, to ensure that malfunction scenarios are appropriately addressed in its categorical rulemakings.

**Comment Response:**

The EPA disagrees with the commenter's view on the application of the D.C. Circuit's decision in *Sierra Club v. EPA, 551 F.3d 1019 (D.C. Cir. 2008)*. The EPA's view of the *Sierra Club v. EPA* decision is provided in the final rule preamble (in Sections V.D and VI.D.) and the proposed rule (at 79 FR 41815-41816). That said, in recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. *See, e.g., 60.763(e)* and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Sheila Holman, Director, Division of Air Quality

**Commenter Affiliation:** North Carolina Department of Environment and Natural Resources (NCDENR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0089.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

DAQ is concerned with the implementation of the emissions standards during the periods of malfunction. According to 40 CFR 60.2, "*Malfunction* means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions." DAQ believes it is unrealistic to regulate emissions from an unforeseeable event. Additionally, enforcing excess emissions from an unpreventable failure of equipment does not encourage facilities to minimize the emissions during the event of malfunction. Although DAQ supports the operational standards in the event the collection or control system is not operating (§60.763(e)), DAQ recommends EPA to give more flexibility to the facilities during the event of malfunction.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 46

**Comment Excerpt:**

SSM Provisions Have Been a Longstanding Feature of NSPS Rulemakings. EPA acknowledged early in the context of its rulemakings under Section 111 of the Clean Air Act that standards of performance may not be achievable during periods of startup, shutdown or malfunction. In 1977, EPA added a clarification to the NSPS general provisions set forth at 40 C.F.R. Part 60, Subpart A, that "[o]perations during periods of startup, shutdown and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limits during periods of startup, shutdown and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard." 42 Fed. Reg. 57125 (November 1, 1977). This action was consistent with Court decisions that questioned the achievability of Section 111 standards across all operating conditions. "In *Essex Chemical* as well as *Portland Cement I* we expressed concern that the standards set might not have been achievable in periods of abnormal operation, e.g. during the 'startup, shut-down and [equipment] malfunction' periods that occur in plant operations; and we remanded for further consideration of this issue." *National Lime Association v. EPA*, 627 F.3d 416,430 (D.C.Cir. 1980) citing *Essex Chemical Corp. v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), cert. denied, 416 U.S. 969 (1974) and *Portland Cement Association v. Ruckelshaus*, 486 F.2d 375, 398-399 (D.C. Cir. 1973), cert. denied, 417 U.S. 921 (1974).

While providing a general exception for SSM events, the final phrase of section 60.8(c) ("unless otherwise specified in the applicable standard") clearly contemplates that the exception may be narrowed or further clarified for individual source categories through EPA's development of standards in individual NSPS subparts. In its development of individual NSPS standards, EPA has carefully considered whether unique aspects of source category operation would require specific provisions governing SSM events. For example, EPA's Standards of Performance for Large Municipal Waste Combustors contain detailed requirements governing SSM events, including definitions governing startup events and limitations on the duration of SSM events. See 40 C.F.R. §60.58b(a)(1). Likewise, EPA's standards for Hospital/Medical/Infectious Waste Incinerators include a specific definition for "startup" "shutdown" and "malfunction" and require specific planning and recordkeeping procedures for SSM events. See generally, 40 C.F.R. Part 60, Subpart Ec. EPA has continued in its more recent NSPS rulemakings to adopt category-specific approaches for defining and addressing compliance obligations during SSM events. EPA must do the same in Subpart XXX, and should rely on the determinations made in the context of

its development of Subpart WWW, which findings continue to be accurate and appropriate for the source category.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 87, under comment code 14z.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 45

**Comment Excerpt:**

The requirement to operate a GCCS is not an emission limitation but instead constitutes a design standard established under CAA Section 111(h). When the Court held that the duty to minimize emissions during SSM periods was not enough, they also noted that a work practice standard under Section 112(h) may provide a basis for identifying circumstances under which emission limitations cannot be met. Section 112(h) is almost identical to Section 111(h), which supports Subpart WWW in that a design standard is more appropriate than a performance standard or emission limitation for GCCS.

EPA also claims that the Court held that continuous emission standards apply. However, nothing precludes EPA from establishing work practices that would apply during periods of SSM, when numeric limits do not apply. This is particularly relevant to landfills because there are no continuous numeric emission limits. Instead, BSER is a well-design, well-operated GCCS with a control device capable of reducing NMOC by 98%.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 51

**Comment Excerpt:**

EPA should provide clear compliance obligations and guidance for landfill during periods of SSM. In the proposed Subpart XXX, EPA did not conduct a specific review of GCCS operating conditions nor has it evaluated unique compliance considerations during those events.

By contrast, EPA has undertaken specific examinations of routine startup and shutdown events in promulgating other recent categorical standards. In some cases, EPA evaluated startup and shutdown periods and determined that sources can meet emission limitations during those conditions, and therefore it is appropriate to require compliance during those conditions. In other cases, EPA has determined that compliance cannot be maintained during startup and shutdown conditions, and therefore has established work practices or alternative compliance demonstration methods during those periods. In these circumstances, EPA has also considered whether source-specific definitions of startup and shutdown would be appropriate. *See e.g.* proposed amendments to the Grain Elevator NSPS, 79 Fed. Reg. at 39256; NSPS for Nitric Acid Plants, 77 Fed. Reg. at 48438; Boiler MACT rulemaking, 78 Fed. Reg. at 7146; CISWI rulemaking 78 Fed. Reg. 9120, 9124; Subpart Dc NSPS 77 Fed. Reg. at 9380. Given the uniqueness of landfills, we recommend that EPA undertake landfill specific evaluations for SSM.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 98, under comment code 14z.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 46

**Comment Excerpt:**

As an example of the type and magnitude of enforcement action that will result from this proposed rule change, the application of the control device temperature requirement during periods of SSM will provide thousands of temperature deviations and subsequent NOVs and fines for regulated landfills. Inclusion of SSM events in the 3-hour block averages will lead to numerous temperature deviations due to low temperature at almost all landfills. When a control device goes off-line for SSM events, the temperature will drop to ambient levels (versus operating levels over 1400 o F for flares), and when this is averaged, deviations will inevitably exist. Some flares require the temperature of the flare to return to ambient prior to restarting the device. This can take up to 15 to 30 minutes for enclosed flares. This temperature issue becomes exacerbated when flares are back-up to complex energy systems. Starting up a landfill-fired engine or boiler, for instance may require many require very gradual increases or fluctuations in

load causing flare temperature to also fluctuate until the primary energy system operation is stabilized.

The time required to restart the control device would result in a temperature deviation for almost any SSM event of more than a few minutes in duration and leave landfill owners at the mercy of state and local regulators who could take enforcement action regardless of whether SSM plans were implemented or not. As a specific example, if a flare normally operates and is tested at 1500 o F, then its minimum temperature for compliance would be 1450 o F per the rule. During an SSM event, the flare temperature would drop quickly toward the ambient temperature of the surrounding area. It is not uncommon for flare temperatures to drop below 500 o F within minutes. Assuming an SSM event of 10 minutes (common automatic restart cycle for many flares) and an average temperature during the SSM event of 500 o F, the 3-hour block average including this SSM event would be 1444 o F, which would be a deviation of the minimum temperature requirement. In this case, the flare could restart as it is designed to do, and yet a temperature deviation would still result. This is clearly an unworkable situation.

**Comment Response:**

In recognition of the unique nature of landfill emissions and consistent with the need for standards to apply at all times, including during periods of startup, shutdown and malfunction, the final rule contains a work practice standard that covers periods when the landfill's gas collection and control system and associated monitoring equipment are not operating. See, e.g., 60.763(e) and discussions in the Final Rule Preamble at Sections V.D. and VI.D. If the landfill operator complies with the work practice standard following any time period that a control device goes off line, then a deviation to the standard will not occur.

## **15.0 REPORTING AND RECORDKEEPING**

### **15.1 Approval of HOVs**

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#### **15a. Approval of HOVs**

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 14

**Comment Excerpt:**

Landfill owner/operators have been experiencing problems with HOY's since the implementation of Subpart WWW. It is critical to acknowledge that each landfill will have individual characteristics that may not be reflected when examining other facilities. This is due to many factors including (but not limited to) the local weather patterns, waste composition, and cover type employed. It is not uncommon for an HOV to be necessary at a facility, yet many landfill owner/operators have experienced difficulty obtaining approval for HOVs even after providing the justification that is outlined in Subpart WWW. Common misunderstanding has resulted in landfill owners being required to expand their LFG collection system by installing new wells to correct for temperature or oxygen exceedances when HOVs are not granted. In the case of



temperature exceedances, if the system is expanded via drilling, this course of action will not only not resolve the high temperature issue, but may increase the chance of subsurface fire by introducing additional oxygen to the waste mass during drilling activities. The preamble (p. 41819) discusses delaying the implementation of HOVs until the facility revises its design plan. The HOV process has had implementation problems; however this requirement would delay the process even further. In some cases an HOV must be implemented quickly. DSW A had an experience with high temperature wells at a facility with high LFG production. DSW A invested considerable time and money to understand and control the issue, which was pervasive throughout the facility, while being protective against subsurface fires. DSW A's experience was that not operating the high temperature wells caused the temperature to increase further. The best means of control was to continue operating the wells. Delaying this could have had substantial negative effects at the facility.

### **Comment Response:**

In the final rule, landfill owners and operators continue to have the option to request higher operating values for temperature. However, the EPA has refined the corrective action requirements to generally give owners or operators more time to investigate, determine the appropriate corrective action, and then implement that action without requiring approval by the delegated authority. The EPA believes that the refinements to the wellhead operating parameters to no longer require corrective action of oxygen/nitrogen coupled with the adjustments for the corrective action requirements will reduce the need for landfill owners or operators to request higher operating values. Under the final corrective action requirements, landfill owners or operators must conduct a root cause analysis and determine the appropriate corrective action, which can include, but is not limited to, expanding the GCCS. When it is still necessary for the owner or operator to submit a request for a higher operating value, the EPA believes that agency review of higher operating values is appropriate to minimize fires and ensure proper operation of the GCCS. Regarding the requirements for updating design plans, the EPA is not finalizing a provision that would have required the landfill owner or operator to revise a design plan and submit it prior to implementing an approved alternative operating parameter value for temperature, nitrogen, or oxygen. The EPA did not finalize this criterion in order to minimize additional burden on approving agencies and landfill owners or operators. Therefore, there would be no additional agency approval required that could cause a delay before a landfill could implement a higher operating value, once the higher operating value itself was approved. See Section VI.A.1 and Section VI.A.6 of the 2016 NSPS Final Preamble.

Regarding the delay in Administrator review of higher operating values, the EPA maintains that the state air pollution control agencies are the most appropriate reviewer of requests for higher operating values. State and local air pollution control agencies are most familiar with the landfills operating within their jurisdiction, regulations, typical operating practices, typical waste types, and climate of landfills located within the state. Thus, the state and local air pollution control agencies are in the best position to determine whether higher operating values are appropriate based on information submitted by landfill owners or operators. In the final rule, landfill owners and operators continue to have the option to request higher operating values for temperature. These delegated authorities must determine the appropriate procedures and timelines for reviewing and responding to requests for higher operating values, therefore, the EPA is not prescribing such procedures or schedules in the final rules.

See Section VI.A.1 of the 2016 NSPS Final Preamble for a discussion of the final wellhead operational standards. See Section VI.A.2 of the 2016 NSPS Final Preamble for a discussion of the final corrective action requirements.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 10

**Comment Excerpt:**

The proposed rule added demonstration criteria when requesting higher operating values which would require demonstration that a higher operating value must not cause fires and must not significantly inhibit anaerobic decomposition by killing methanogens. *The first concern with the proposed changes is with respect to temperature exceedances. Landfill gas wells commonly have temperature exceedances and there should be some standard process to deal with these exceedances. The current rule requires expansion of the GCCS as a default response to any exceedance of any parameter that cannot be corrected within 15 days, but expanding the GCCS is unwarranted and unlikely to correct the exceedance; in fact, in the case of a temperature exceedance, it is more likely that the added collection device will experience the same elevated temperature, resulting in even more exceedances. Many wells can successfully continue to generate good quality gas, even when operated outside of what are traditionally considered to be normally acceptable values. Trying to handle these common occurrences on a case-by-case basis is not efficient. It is not practical to require a facility to first request approval for a higher operating value (HOV) and then submit a revised design plan to request approval to implement the change. In discussion with colleagues from many facilities, representing experiences with many state agencies, responses to these types of requests are not timely. Forcing facilities to submit a document for approval will take additional time and will ultimately lead to prolonged operation of a well in exceedance of the performance standard.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

See response to DCN EPA-HQ-OAR-2003-0215-0079.1, excerpt number 7, under comment code 15a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 45

**Comment Excerpt:**

As noted above, Republic's experience with implementing the monitoring provisions of the existing NSPS is that states rarely have the resources to respond timely to requests for higher

operating values, resulting in inconsistent state actions and policies that lead to delayed responses or no responses at all. Without a timely and technically appropriate response from states, landfills are left in a difficult position, forced to choose between exceedances of the temperature and oxygen monitoring requirements that may not reflect any real concern, or risking exceedances of surface monitoring requirements by reducing operation of the GCCS to correct the high temperature and oxygen readings.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 130

**Comment Excerpt:**

EPA must address this problem in a practical and less burdensome manner. Consistent with the provisions of Subpart WWW, landfill owners / operators should have the ability to establish appropriate HOVs, based on a determination that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. Landfill owners/operators should be able to rely on properly established HOVs as presented to the agency in a periodic report and/or in an updated design plan submittal. Although the agency could subsequently respond to the HOV, the agency should bear the burden of refuting the demonstration made by the landfill owner/operator that the HOV met the relevant criteria.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 141

**Comment Excerpt:**

EPA must not overburden the approval process for approval of alternatives, where EPA has expressly and consistently acknowledged that alternatives are likely and flexibility is paramount. Accordingly, while the design plan must include "any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, record keeping or reporting provisions" 40 C.F.R. §60.752(b)(2)(i)(D), EPA's approval process for such alternatives cannot constitute a de facto removal of such flexibility. As noted above, EPA should give effect to the language of 40 C.F.R. §60.753(c), which provides that *[t]he owner or operator may establish a*

*higher operating temperature, nitrogen, or oxygen value at a particular well."* The proposed additional approval language in Subpart XXX Section 60.763(c) would create uncertainty, administrative burden and potential enforcement implications, to the extent that it would expressly require agency approval prior to implementation of the alternative parameter.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 7

**Comment Excerpt:**

We recommend eliminating the need to request HOVs for temperature and oxygen or nitrogen.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 36

**Comment Excerpt:**

In addition, one possible interpretation of 40 CFR §60.755(a)(5) could lead state permitting authorities to believe that landfill owners should respond to repeated oxygen or pressure exceedances by expanding the well field. However, if the gas collection system is expanded in the general area of the well experiencing an operational exceedance, it is highly likely that additional expansion well(s) would also demonstrate similar performance characteristics. Adding additional wells may also increase the air intrusion, which would not only be detrimental to the anaerobic conditions within a landfill, but could also lead to subsurface fires.

Instead of expanding the well field, landfill owners could instead close the wells experiencing the exceedances. However, decommissioning wells is often impractical in the short period of time required by the rule between monitoring events. Further, abandoning gas extraction wells is both expensive and permanent. Thus, reactivation is not an option; the landfill would have to install a new completely new well if circumstances change.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 131

**Comment Excerpt:**

If EPA determines as part of the Subpart XXX rulemaking that agency approval is required for HOVs, EPA must establish clear procedures as between EPA regions and state implementing agencies and define hard and fast timeframes for agency action in reviewing and responding to HOV submittals. In no case should use of an HOV be conditioned upon dual approvals; nor should failure of an agency to respond prevent the use of an HOV in favor of a system expansion, where the landfill owner / operator has determined that system expansion is inappropriate.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 10

**Comment Excerpt:**

The proposed requirements to submit alternative timelines requests would significantly increase the amount of paperwork for landfill owners and operators. Even though the requests would be minimized if landfills were exempt from the wellhead monitoring requirements for temperature and nitrogen/oxygen, this provision could leave most GCCS operators with compliance uncertainties because they would be tied to approval of a revised GCCS design plan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 131, under comment code 15a.

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent

**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota

**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1

**Comment Excerpt Number:** 4

**Comment Excerpt:**

The proposed NSPS for landfills places significant, new burdens on state regulators. This rule significantly increases administrative requirements for both the state agencies and the regulated community with no demonstrated air quality benefits from the added burdens. The rule proposes a multi-stage process for approving operational flexibility for gas collection systems, requiring states to engage in review and approval of requests for alternative wellhead operational values, as well as reviewing and approving amended design plans. States are already overburdened in approving design plans, permit renewals and new permit issuances for the landfill sector.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager

**Commenter Affiliation:** Burns & McDonnell

**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

The proposed rule requires that higher operating values (HOV) for temperature, nitrogen or oxygen at a well be submitted for approval. This submittal must be separate from any design plan revision.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent

**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota

**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1

**Comment Excerpt Number:** 8

**Comment Excerpt:**

The proposed rule requires that higher operating values (HOV) for temperature, nitrogen or oxygen at a well be submitted for approval. This submittal must be separate from any design plan revision.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager  
**Commenter Affiliation:** Burns & McDonnell  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1  
**Comment Excerpt Number:** 3

**Comment Excerpt:**

The landfill sector has been requesting operational flexibility to move away from the overly prescriptive wellhead standards, which hamper proper operation of gas collection and the early installation of gas collection systems that will actually reduce air emissions. The proposal makes a bad situation worse by requiring additional paperwork, and multi-step agency review and approval simply to optimize LFG collection.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director  
**Commenter Affiliation:** Ohio EPA  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1  
**Comment Excerpt Number:** 7

**Comment Excerpt:**

Significant Inhibition of Anaerobic Decomposition by Killing Methanogens, Paragraph (c). Ohio EPA questions the need for this criterion in order to establish a high operating temperature, nitrogen, or oxygen at a well. Methanogenic decomposition generates methane which is a more powerful greenhouse gas than carbon dioxide. While Ohio EPA realizes that where something (e.g., air intrusion) affects one, it often also affects the other, we are more concerned about the potential for subsurface fire than a decrease in methanogenic activity.

Should US EPA decide to retain this as a criterion, Ohio EPA recommends that significant inhibition of anaerobic decomposition by killing methanogens be defined. To our knowledge, the monitoring parameters are not usable for determining whether anaerobic decomposition has been significantly inhibited by the killing of methanogens. Ohio EPA has observed sustained temperatures up to 160°F with excellent flow and methane content. Ohio EPA has observed the presence of oxygen without a significant detriment to methane concentration. Ohio EPA has observed no oxygen with severely depressed methane content. Ohio EPA believes that a methane to carbon dioxide ratio less than 1.0 can be an indicator of poor methanogen health. In addition, high hydrogen concentrations can retard the conversion of fatty acids to acetic acid. Four landfills in Ohio have had high hydrogen concentrations in wellhead gas.

**Comment Response:**

The EPA has removed the operational standard for nitrogen/oxygen (i.e., the requirement to meet specific operating limits), but has retained the operational standard for temperature because of

concerns regarding fire hazards. See Section VI.A.1 of the 2016 NSPS Final Preamble. See Section VI.A.1 of the 2016 EG Final Preamble.

Because of the importance of preventing or identifying landfill fires and because the wellhead operational standard remains for only temperature monitoring, the EPA is retaining the provision to have the landfill provide supporting data showing that the elevated parameter value (HOV) does not cause fires. To demonstrate that the HOV will not cause fires, the landfill owners or operators may use wellhead monitoring data, carbon monoxide test results, and observational data such as no visible presence of soot/ash.

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**Commenter Name:** Comment submitted by Barry R. Stephens,  
**Commenter Affiliation:** Tennessee Department of Environment and Conservation- Air Pollution Control (TDEC-APC)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0112.1  
**Comment Excerpt Number:** 2

**Comment Excerpt:**

EPA proposes to clarify the requirements for higher operating value demonstrations by stating that such demonstrations "must include supporting data demonstrating that the elevated parameter neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens." The demonstration must meet both criteria; that is a higher operating value must not cause fires and must not significantly inhibit anaerobic decomposition by killing methanogens.

*Tennessee has no objection to the revised language, but EPA should consider defining "supporting data" by adding criteria to demonstrate that an operating value does not cause fires or inhibit anaerobic decomposition. These criteria could include data such as gas flow, methane and carbon monoxide concentrations, and visible presence of soot/ash.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0079.1, excerpt number 7, under comment code 15a.

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**Commenter Name:** Comment submitted by Curt Publow  
**Commenter Affiliation:** Decatur Hills Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1  
**Comment Excerpt Number:** 11

**Comment Excerpt:**

The prohibition against significantly inhibiting anaerobic decomposition by killing methanogens is overly broad and subjective. In many situations, this has resulted in regulatory agencies developing arduous processes which the facilities must then comply in order to justify the normal operational state of a particular well or group of wells. Still other regulatory agencies have never developed any process and facility operators are forced to continue reporting these exceedances



over and over within routine reports. Frequently resulting in facilities having to wait for prolonged periods of time and operate the wells under positive pressure, thereby resulting in increased emissions, while the administrator goes through a long process of evaluation; a process which, today, can vary significantly from state to state.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0079.1, excerpt number 7, under comment code 15a.

## 15.2 Electronic Reporting

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### 15b. Electronic Reporting

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 74

**Sort Order:** 100

**Comment Excerpt:**

EPA's effort to implement e-reporting is commendable, but warrants further evaluation to ensure any implementation difficulties, unnecessary burdens, and cost impacts are identified and resolved before EPA mandates the use of electronic reporting.

In Republic's experience, EPA e-reporting systems have often failed to function properly, for a variety of reasons. Accordingly, Republic asks EPA to address the following concerns before requiring landfills to begin reporting through an electronic system:

- Evaluate system user website availability (smaller landfills in remote areas may not have broadband internet access)
- Ensure system can manage the total number of users without crashing (especially as deadline approaches)
- Validate system reliability for uploading reports to avoid software errors
- Design system to be consistent with the landfill regulatory reporting requirements
- Finalize reporting system software forms, instructions, and user interface at least three months prior to compliance deadline.

EPA should be careful not to oversimplify the requirements of the landfill NSPS in designing its e-reporting system for landfills. The landfill NSPS is a complicated regulation, and will be even more complicated following EPA's proposed revisions. EPA must reflect that complexity in any reporting system, particularly if that system will be the only available means of reporting compliance to EPA. EPA should also avoid any attempt to apply the electronic reporting systems for other industries to landfills because, unlike other industries, landfill emissions are unique in that they are not directly proportional to an activity rate. While NMOC destruction reports might

be relatively straight forward and could be added to the Electronic Reporting Tool (ERT), annual reporting for landfills is quite distinct from that required of other industries. Current annual and semi-annual landfill NSPS reports contain narratives, background, and a rationale for landfill operations and conditions that likely will not fit well within the electronic reporting systems developed for other industries. Republic asks EPA to ensure that the electronic reporting systems continue to allow for entry of these discussions – the benefit they provide should outweigh any additional programming challenges.

The EPA indicates that electronic reporting will "save time and resources, simplify data entry, eliminate redundancies, and provide data quickly and accurately to the affected sources, air agencies, and the public." 79 Fed. Reg. at 41818 However, this statement fails to recognize that landfill personnel must learn the new reporting system and develop their own internal reporting systems to comply with EPA's electronic reporting requirement. If the electronic reporting is similar to e-GGRT reporting, it would require reporters to navigate through over a hundred web pages and enter thousands of data points.

Republic is also concerned that states will not adopt EPA's electronic reporting system, particularly in jurisdictions that have adopted regulations that are more stringent than the proposed NSPS. As a result, EPA's electronic reporting requirement could result in redundant reporting requirements, as landfills seek to report electronically to EPA and via a separate written report to state agencies. EPA's effort to require electronic reporting of greenhouse gas emissions through its e-GGRT reporting tool resulted in exactly that sort of redundant reporting, as regulated entities remained subject to state-based greenhouse gas reporting requirements as well. EPA should recognize and address the possibility that states will not adopt EPA's electronic reporting format and allow sufficiently flexibility to avoid duplicative reporting requirements.

In addition, EPA's electronic reporting requirements would preclude the aggregation of NSPS and Title V reports, which some states have allowed to minimize reporting burdens by aligning the deadlines and procedures of both programs. To the extent EPA decides to finalize its electronic reporting requirements, Republic asks EPA to consider allowing states and landfills the flexibility to continue joint reporting under both NSPS and Title V.

In summary, EPA's proposal to require electronic reporting presents significant implementation and duplication concerns that Republic asks EPA to address prior to eliminating other reporting options. Moreover, to the extent EPA requires electronic reporting from all landfills, Republic asks EPA to consider the significant potential costs associated with implementing an entirely new reporting system, which appear to be missing from EPA's cost-benefit analysis. In the meantime, we encourage EPA to make available, encourage the use, and support the development of tools for states to enhance the efficient and effective management of their programs.

#### **Comment Response:**

The EPA appreciates the support for electronic reporting in general. Electronic reporting is in ever-increasing use and is universally considered to be faster, more efficient and more accurate for all parties once the initial systems have been established and start-up costs completed. Electronic reporting of environmental data is already common practice in many media offices at the EPA; programs such as the Toxics Release Inventory (TRI), the Greenhouse Gas Reporting

Program, Acid Rain and NO<sub>x</sub> Budget Trading Programs and the Toxic Substances Control Act (TSCA) New Chemicals Program all require electronic submissions to the EPA. The EPA has previously implemented similar electronic reporting requirements in over 50 different subparts within parts 60 and 63. WebFIRE currently houses over 5000 reports that have been submitted to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI) in the EPA's Central Data Exchange (CDX). As such, the EPA has already evaluated many of the commenter's concerns.

While the EPA understands that not all areas of the country have broadband access, it is feasible to upload files and fill out forms in CEDRI using a dial-up connection. Additionally, there has never been any issues with system availability in CEDRI as deadlines approach. The system has a proven track record as demonstrated by the ability of the system to handle the initial notification of compliance status report submissions for the area source boiler category, perhaps the category with the largest number of sources. Also, unlike other reporting programs like e-GGRT, CEDRI users will not all be reporting on the same schedule; that is to say that the deadlines for each NSPS and NESHAP are unique (and can even be changed upon concurrence with the delegated authority), and as such, the EPA would never expect every CEDRI user to be reporting simultaneously.

The EPA is sensitive to the complexity of the landfill regulations. CEDRI forms are designed to be consistent with the requirements of the underlying subparts. Forms are unique to each regulation, and the EPA is avoiding cookie cutter approaches. The EPA understands that reporting forms can be complex and difficult to program, but does not believe that it is impossible to build forms that will collect the required information in a way that is sufficiently flexible for the user. CEDRI forms also contain areas to add narratives, as well as the ability to upload data for additional supporting information. The forms are reviewed multiple times before being finalized, and they are subjected to a beta testing period that allows end-users to provide feedback on issues with the forms prior to requiring their use. The EPA will strive to provide instructional materials as soon as possible prior to implementation deadlines. Also, if a form has not yet been completed by the time the rule is effective, affected facilities will not be required to use CEDRI until the form has been available for at least 90 days.

A number of air agencies have already indicated their intention of adopting the EPA's electronic reporting program. The EPA believes that more air agencies will eventually adopt the system, as the system benefits air agencies by streamlining review of data, facilitating large scale data analysis, providing accessibility to reports anywhere reviewers have access to the Internet, and providing cost savings through a reduction in storage costs. The narrative and upload fields within the CEDRI forms can be used to provide information to satisfy extra reporting requirements that states and local air agencies may impose. Additionally, where air agencies will not accept an electronic report, reports in CEDRI can be printed once they are completed; these printed reports provide a cost-effective option for satisfying a state or local air agency's request for a printed report.

If a facility has aligned reporting deadlines for different programs, there is nothing that will prevent users from accessing forms at a time that does not align with the NSPS schedule. There are no warning flags or invalidation errors in CEDRI based on reporting timeframes. The authority for determining when a report is due still lies with the air agency; the EPA is simply providing the platform for reporting the data. The EPA also believes that there would be nothing

to preclude a facility from printing out the NSPS report and including it as an attachment to the Title V report. Additionally, the EPA is evaluating the capability of applying a single report to multiple subparts, as the agency is cognizant that this will become necessary as the system grows and more subparts include a requirement to report via CEDRI.

The EPA is aware that facility personnel must learn the new reporting system, but the savings realized by simplified data entry outweighs the initial period of learning the system. Electronic reporting can eliminate paper-based, manual processes, thereby saving time and resources, simplifying data entry, eliminating redundancies, minimizing data reporting errors and providing data quickly and accurately. Reporting form standardization can also lead to cost savings by laying out the data elements specified by the regulations in a step-by-step process, thereby helping to ensure completeness of the data and allowing for accurate assessment of data quality. Additionally, the EPA's electronic reporting system will be able to access existing information in previously submitted reports and data stored in other EPA databases. These data can be incorporated into new reports, which will lead to reporting burden reduction through labor savings.

In 2011, in response to Executive Order 13563, the EPA developed a plan to periodically review its regulations to determine if they should be modified, streamlined, expanded, or repealed in an effort to make regulations more effective and less burdensome. (EPA's Final Plan for Periodic Retrospective Reviews, August 2011. Available at: <http://www.epa.gov/regdarrt/retrospective/documents/eparetroreviewplan-aug2011.pdf>.) The plan includes replacing outdated paper reporting with electronic reporting. In keeping with this plan and the White House's Digital Government Strategy (Digital Government: Building a 21<sup>st</sup> Century Platform to Better Serve the American People, May 2012. Available at: <https://www.whitehouse.gov/sites/default/files/omb/egov/digital-government/digital-government-strategy.pdf>.), in 2013 the EPA issued an agency-wide policy specifying that new regulations will require reports to be electronic to the maximum extent possible. The EPA believes that the electronic submittal of the reports addressed in this rulemaking increases the usefulness of the data contained in those reports, is in keeping with current trends in data availability, further assists in the protection of public health and the environment and will ultimately result in less burden on the regulated community. Therefore, the EPA is retaining the requirement to report these data electronically.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 30

**Sort Order:** 101

**Comment Excerpt:**

EPA's effort to implement e-reporting is commendable, but warrants further evaluation to ensure any implementation difficulties, unnecessary burdens, and cost impacts are identified and resolved before EPA mandates the use of electronic reporting. EPA should clarify exactly which reports must be submitted electronically, given that the preamble language identifies different reports than the proposed regulatory language. EPA should also recognize that any requirement

to electronically submit older reports that are not already maintained in electronic form could be particularly burdensome, and likely impossible for older reports that landfills are no longer required to maintain and that may have been discarded (e.g., site closure reports for landfills that no longer accept waste).

More generally, Republic is concerned that EPA e-reporting systems have often failed to function properly, for a variety of reasons. Accordingly, Republic asks EPA to address the following concerns before requiring landfills to begin reporting through an electronic system:

- Evaluate system user website availability (smaller landfills in remote areas may not have broadband internet access)
- Ensure system can manage the total number of users without crashing (especially as deadline approaches)
- Validate system reliability for uploading reports to avoid software errors
- Design system to be consistent with the landfill regulatory reporting requirements
- Finalize reporting system software forms, instructions, and user interface at least three months prior to compliance deadline

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, and DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 78, under comment code 15b.

The EPA does not expect facilities to submit any reports that are not required to be submitted by this subpart. The requirement for electronic reporting only applies to reports that are required to be submitted starting after the effective date of the rule. Therefore, if a report has been discarded because it would not be a requirement to submit it if the submittal were a hard copy requirement, there would be no need to submit it electronically.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 65

**Sort Order:** 102

**Comment Excerpt:**

Electronic reporting is not appropriate for certain compliance reports and can be costly if not designed properly. EPA proposes that MSW landfill owners/operators submit electronic copies of required performance test reports, NMOC emission rate reports, and annual reports by direct computer-to-computer electronic transfer using subpart specific forms in CEDRI (for NMOC reports and annual reports) and upload/submittal to EPA's Central Data Exchange (CDX). 79 Fed. Reg. at 41818; 79 Fed. Reg. at 41791. Sites would use EPA-provided ERT software to generate electronic reports of performance tests that would be uploaded into CDX using CEDRI. Further EPA proposes to eliminate the requirement to maintain hard copies of records, data and reports submitted to CDX; sites would be required to maintain electronic reports only.

EPA asserts that affected sources could reduce reporting burden and result in lower facility costs. Based on our recent experience with EPA's electronic reporting system for GHG reporting (EGGRT) we have serious concerns with EPA's claims of burden reduction and cost impacts. EPA e-reporting systems have often failed to function properly, for a variety of reasons:

- Website availability (smaller landfills in remote areas may not have broadband internet access)
- System capability/capacity to manage high volume of concurrent users, especially as a deadline approaches)
- System reliability for uploading reports to avoid software errors
- Web form and XML consistency with regulatory reporting requirements
- Validation logic for quality assurance
- Availability of web forms, software, user instructions and user interface well in advance of reporting deadlines - recommend published and posted at least three months prior to compliance deadline

WM has four years of experience reporting via EPA's electronic GHG reporting tool (E-GGRT) system. E-GGRT requires that landfills submit information to the GHG Reporting program (GHGRP) report using either the web forms or an extensible markup language (XML) file. Neither of these reporting formats is well suited to landfills. Landfill GHG reporting using the web forms requires that sites navigate through numerous web pages to input data for the reporting, while XML reporting requires landfills to generate a coded file with thousands of lines of code to a format developed by the EPA that is changed each year.

This annual change in the reporting format is extremely burdensome for the user which is compounded by EPA's late release of updated web forms, schemas and instructions every year since reporting began in 2011. EPA's release of the user reporting and assistance tools in February for reports due in March resulted in a significantly compressed timeline for facilities to calculate and report electronically report to e-GGRT. This leads to increased costs and burden for the system user.

Website availability and reliability are also significant concerns. During periods of high volume use, E-GGRT has repeatedly stalled and in some cases crashed preventing all users from accessing the system. This puts sites at compliance risk for meeting the regulatory deadline. Occasionally, the EPA takes E-GGRT offline to update and / or fix significant programming errors. Most recently, we could not submit revised reports to EPA in response to EPA's questions. Per the rule, sites must respond within 45 days but can request one 30 day extension. EPA made modifications to the e-GGRT software in late May and did not notify EGGRT users of the modifications. It took EPA four weeks to determine the cause and formulate a work-around solution so reports could be submitted, at a cost of approximately \$50,000. This significant delay created a compliance risk for reporters who had approved extensions. Almost 90 WM facilities and more than 60 individual reporters were impacted by this action. Allowing paper report submittal will prevent any such technical limitations with NSPS reporting. Hard copy or email submittal of reports may be more difficult for the EPA to process, but they are proven methods for submitting reports.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, under comment code 15b.

The EPA appreciates the commenter's experience with E-GGRT but notes that there are many differences between E-GGRT and CEDRI. The validation checks that the EPA is programming into CEDRI are only flags that provide the user areas that the user may want to double check for accuracy. The flags will not inhibit submittal, unless the user has failed to enter a data field that is required. The EPA also notes that CEDRI forms are only updated in rare cases, such as if an error is located or if the underlying rule associated with the form is changed. Because the form relies entirely upon the underlying rule, without a specific rule change, there should be no need to tweak the form, and as such, there would be no need to post new instructions, forms or schema on a yearly basis.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 67

**Sort Order:** 103

**Comment Excerpt:**

We caution EPA to not oversimplify the requirements of e-reporting for landfills. The landfill NSPS is a complicated regulation similar to the Subpart HH requirements in the GHGRP. The Subpart HH reporting system is extremely complex with many embedded logic trees. Unlike other industries, landfill operations and emissions are unique and templates developed for other industries will not be directly applicable to landfills. Annual NSPS or Title V reporting for landfills is very unique, highly variable from site to site and year to year. Annual and semiannual landfill NSPS reports contain narratives, background, and a rationale for landfill operations and conditions that do not accommodate web form format driven electronic reporting systems. It may actually be impossible from a programming standpoint, let alone the potential burden it will be for the landfill owner. WM therefore recommends EPA not require electronic submittal of annual and semi-annual landfill NSPS reports. WM recommends landfill owner/operators continue to provide paper copies or electronic copies in PDF format to EPA and state agencies.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, under comment code 15b.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 31

**Sort Order:** 104

**Comment Excerpt:**

EPA should also be careful not to oversimplify the requirements of the landfill regulations in designing its e-reporting system for landfills. EPA's emission guidelines for landfills are complicated regulations, and could be even more complicated in some ways following EPA's proposed revisions. EPA must reflect that complexity in any reporting system, particularly if that system will be the only available means of reporting compliance to EPA. EPA should also avoid any attempt to apply the electronic reporting systems for other industries to landfills because, unlike other industries, landfill emissions are unique in that they are not directly proportional to an activity rate. While some are relatively straight forward and could be added to the Electronic Reporting Tool (ERT), annual reporting for landfills is quite distinct from that required of other industries. Current annual and semi-annual landfill NSPS reports contain narratives, background, and a rationale for landfill operations and conditions that likely will not fit well within the electronic reporting systems developed for other industries. Republic asks EPA to ensure that the electronic reporting systems continue to allow for entry of these discussions – the benefit they provide should outweigh any additional programming challenges.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, under comment code 15b.

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**Commenter Name:** Comment submitted by Sheila Holman, Director, Division of Air Quality  
**Commenter Affiliation:** North Carolina Department of Environment and Natural Resources (NCDENR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0089.1

**Comment Excerpt Number:** 8

**Sort Order:** 105

**Comment Excerpt:**

Mandating reporting through the ERT could be a burden as many landfill owners or operators are not familiar with the ERT. Before implementing this requirement, EPA should provide training on how to use ERT for landfill owners and operators.

Currently, ERT is not set up to notify state agencies when reports were submitted. DAQ recommends EPA develop a program that would enable state agencies to easily access the data for a compliance purpose before mandating ER T reporting.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, under comment code 15b.

In response to the comment, the EPA is clarifying that the ERT is not a submission mechanism. The ERT is a Microsoft Office Access-based program for development of stack test reports. The files generated by the ERT are uploaded into the CEDRI portal of CDX. State and local reviewers may register with CEDRI by contacting the EPA at [cedri@epa.gov](mailto:cedri@epa.gov) and may set-up notifications for reports within their jurisdiction once registration is complete.



**Commenter Name:** Comment submitted by Barry R. Stephens,  
**Commenter Affiliation:** Tennessee Department of Environment and Conservation- Air  
Pollution Control (TDEC-APC)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0112.1  
**Comment Excerpt Number:** 6  
**Sort Order:** 106

**Comment Excerpt:**

Although Tennessee generally supports the increased use of electronic reporting, we are concerned that the requirement to use a specific format could lead to redundant reporting. Landfills currently have to submit semiannual reports to comply with Subpart WWW and 40 CFR 63 Subpart AAAA. In addition to the existing NSPS and MACT reporting requirements, affected landfills are required to submit semiannual reports to comply with the provisions of the facilities' Title V operating permits. Title V reports must be submitted to the permitting authority, must be submitted at least every 180 days, and must be certified by a Responsible Official consistent with the Title V regulations. It is not clear whether the specified electronic reporting requirements have adequately considered the potential overlap of NSPS, MACT, and Title V reporting, or whether the electronic format would be consistent with Title V reporting requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, under comment code 15b.

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**Commenter Name:** Comment submitted by Curt Publow  
**Commenter Affiliation:** Decatur Hills Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1  
**Comment Excerpt Number:** 7  
**Sort Order:** 107

**Comment Excerpt:**

The proposed rule have added electronic reporting direct to EPA through EPA's Central Data Exchange (CDX) using the Compliance and Emissions Data Reporting Interface (CEDRI). The concern with the proposed rule is that this requirement will result in unnecessary duplicate reporting for the facilities. Many states currently have delegated authority for compliance and emissions reporting and the information collected by the state agencies is shared with USEPA upon request. We request that USEPA drop this requirement from the proposed rule. In support of our request, we point to the USEPA notification regarding Reporting Requirements for Compliance Certifications that appeared in the Federal Register on Sept. 15, 2014 (FR Doc 2014-21943}. In this notice, USEPA recognizes that elimination of duplicate reporting by regulated facilities allows for EPA and delegated State agencies to meet air quality goals while streamlining reporting requirements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, under comment code 15b.

While the EPA recognizes that Title V reports contain useful compliance information, the EPA has not yet developed a system to collect these reports electronically. Because the EPA has not developed a repository for the electronic collection of the data in these reports, the use of the data is generally limited to compliance determinations, which is a function generally performed by the delegated air agency. On the other hand, the EPA has developed a repository for the data required to be submitted electronically in this rulemaking. Not only does this enhance data sharing, but by collecting the data electronically, the EPA and air agencies will be able to use the data in meaningful ways beyond determining compliance through large scale data analyses. Additionally, as a number of air agencies have already indicated their intention of adopting the EPA's electronic reporting program and the EPA believes that more air agencies will eventually adopt the system, the EPA does not believe that duplication of reporting will be a widespread issue. Where air agencies will not accept an electronic report, reports in CEDRI can be printed once they are completed; these printed reports provide a cost-effective option for satisfying a state or local air agency's request for a printed report.

Upon promulgation of these rules, submission of Title V compliance certifications to authorized state permitting authorities would no longer fulfill all reporting requirements of these rules. Specifically, reports required to be submitted electronically directly to the EPA would need to be submitted to CEDRI; submission of the Title V compliance certification would not suffice for this requirement. Subsequent to promulgation, Title V permits will need to be revised to reflect these new e-reporting requirements.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 40

**Sort Order:** 108

**Comment Excerpt:**

DSWA is in favor of electronic reporting only if there is no added burden to the regulated community. For example DSWA has sent Region 3 pdf versions of our semiannual reports in lieu of sending hard copies. We think this is a good way to reduce wasted paper and simplify the submission process. However in the preamble EPA references several federal reporting systems which seem to be much more complicated than that which has been described above. DSWA has extensive experience using the Electronic Greenhouse Gas Reporting Tool (e-GGRT). This system requires a significant time commitment from the user and "bugs" in the system have resulted in reporting difficulties or delays. DSWA is concerned about being required to learn and use another new system. We are also concerned about the possibility of being required to report separately due to different Federal and State systems.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, and DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 65, under comment code 15b.

While the EPA acknowledges that PDF versions of reports are a good way to reduce wasted paper, in general the EPA does not believe that PDF reports provide most of the benefits associated with electronic reporting. PDF reports make the data less useful because they do not allow users to download and analyze data in spreadsheet format, do not facilitate large scale data analysis, and do not streamline data review by providing a standardized format.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 69

**Sort Order:** 200

**Comment Excerpt:**

It does not appear that EPA factored the cost of expanding the electronic reporting system to accommodate Landfill NSPS reporting such as Help Desk support for completing and submitting web forms and the high volume usage specifically for annual reporting. We cannot determine the level of effort and cost analysis associated with requiring the use of web forms as these have not been prepared or provided for review in the docket. We do know based on our experience with E-GGRT and state GHG reporting programs that an electronic reporting system will increase the burden and level of effort to the landfill owner/operator and quite possibly to the state/local agencies. There will be additional burden and cost if dual reporting system exists such that states still require paper copies of reports in one format and EPA requires electronic reporting in a different format.

The EPA indicates that electronic reporting will save time and resources, simplify data entry, eliminate redundancies, and provide data quickly and accurately to the affected sources, air agencies, and the public." However, this statement fails to recognize that landfill personnel will have to learn or develop new reporting systems to comply with EPA's electronic reporting requirement. If the electronic reporting is similar to E-GGRT reporting, it will require reporters to navigate through over a hundred web pages and enter thousands of data points. EPA's electronic reporting requirement could result in redundant reporting requirements for MSW landfills. Even after EPA promulgated the GHGRP in 2009, many states continued to develop state rules for GHG reporting. Some agencies directly relied on the GHGRP and E-GGRT results; however, the agencies still required duplicate reporting of results which translates to additional cost and burden for the facility. EPA should recognize and address the possibility that states will not adopt EPA's electronic reporting format and allow sufficiently flexibility to avoid duplicative reporting requirements. In addition, EPA's electronic reporting requirements preclude the aggregation of NSPS and Title V reports, which many states allow to minimize reporting burdens by aligning the deadlines and procedures of both programs.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, and DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 65, under comment code 15b.

EPA is not required to perform a cost analysis for the burden that it inflicts upon itself. The EPA is aware that the agency will bear costs for help desk services and form development in response to the electronic reporting requirements the EPA has prescribed for this rule.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 33

**Sort Order:** 201

**Comment Excerpt:**

EPA's proposal to require electronic reporting presents significant implementation and duplication concerns that Republic asks EPA to address prior to eliminating other reporting options. Moreover, to the extent EPA requires electronic reporting from all landfills, Republic asks EPA to consider the significant potential costs associated with implementing an entirely new reporting system. In the meantime, we encourage EPA to make available, encourage the use, and support the development of tools for states to enhance the efficient and effective management of their programs.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 69, under comment code 15b.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 66

**Sort Order:** 300

**Comment Excerpt:**

EPA proposes to imbed quality assurance checks in the electronic reporting system for landfills. Per our experience with E-GGRT, such quality assurance checks result in significant quantity of validation errors because the validation settings within E-GGRT are highly sensitive. For example, the emissions calculated by the E-GGRT system compared to reports submitted by the facility differ by less than 1% solely due to rounding, yet users receive validation errors.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 65, under comment code 15b.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 68

**Sort Order:** 400

**Comment Excerpt:**

Currently, the ERT does not support any test methods prescribed by the proposed Landfill NSPS. Only Method 25A is supported by ERT and EPA proposes to remove this test method as viable test method for control devices. Methods 3C, 25, 25C and 18 used for determining NMOC in LFG as part of the NMOC Emission Rate Report and destruction efficiency (98% or 20ppm) as part of the Performance Test Reports are not supported by the ERT. Therefore EPA has not justified the proposed requirement to use electronic reporting to submit performance test and NMOC emission rate results using the ERT.

**Comment Response:**

The EPA is continually enhancing and improving the ERT, and the EPA regularly includes additional test methods as part of ERT update packages. The requirement to use the ERT to report the results of performance tests does not apply until the EPA updates the ERT to include the method that is used during the performance test. The EPA included the electronic reporting requirement in the rule in anticipation of future upgrades to the ERT.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 1

**Sort Order:** 500

**Comment Excerpt:**

In general Montauk supports the EPA's proposal to require electronic reporting of required performance test reports, non-methane organic compound (NMOC) emission rate reports and annual reports.

**Comment Response:**

The EPA appreciates the commenter's support for electronic reporting.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 78

**Sort Order:** 600

**Comment Excerpt:**

EPA must clarify electronic reporting requirements.

WM continues to believe that electronic reporting requirements beyond combustion device stack test reports is would be overly burdensome and inappropriate for the landfill category as we discussed in our previous comments and incorporate herein (Docket ID Numbers EPA-HQ-OAR-2014-0451-0037, EPA-HQ-OAR-2003-0215-0100).

Although the proposed rule language appears to only require stack test reporting to the ERT (see 60.38f(j)), the preamble contains conflicting information. EPA states in the preamble that the agency "is proposing electronic reporting of required performance test reports, NMOC emission rate reports, and annual reports." See 80 Fed. Reg. at 52111. Later on in the preamble, EPA states it is proposing that "owners or operators of MSW landfills submit electronic copies of required performance test and performance evaluation reports by direct computer-to-computer electronic transfer using the EPA-provided software". See 80 Fed. Reg. at 52127.

We are confused by what EPA means by "performance evaluation reports". We are also confused as to which reports EPA proposes to require the MSW landfill owner/operator to submit electronically. We do not support electronic submittal of compliance reports or other reports or records beyond combustion stack test reports. EPA must clarify in both the final rules and preamble that only required performance test reports are to be electronically submitted, where test methods are supported by the Electronic Reporting Tool (ERT).

**Comment Response:**

The EPA apologizes for any confusion caused by the differently worded sections of the preamble to the August 2015 proposal for the Emission Guidelines. A performance evaluation report is a report submitted for continuous emissions monitoring systems. This report type was inadvertently included in the August 2015 preamble. In the final rule, the EPA has clarified that owners and operators are required to electronically submit certain performance test reports, NMOC emission rate reports, annual reports, Tier 4 emission rate reports and information on wet landfilling practices. The EPA notes that the preambles for the July 2014 proposal for the NSPS and the August 2015 proposal for the Emission Guidelines both stated the EPA's intention of requiring electronic submittal of performance test reports, NMOC emission rate reports and annual reports. The EPA also included language in the proposed regulatory text of the Emission Guidelines that pointed to the electronic reporting regulatory text for performance test reports, NMOC emission rate reports and annual reports; however, the EPA realizes that the proposed regulatory text was ambiguous on how to electronically submit reports other than performance test reports. The EPA has clarified this language in the final rule.

The EPA also notes that in the August 2015 proposal, while the EPA did not mention Tier 4 emission rate reports in the electronic reporting section of the preamble, the EPA did include language in the proposed regulatory text of the Emission Guidelines that pointed to the electronic reporting regulatory text for Tier 4 emission rate reports; however, the EPA realizes that the proposed regulatory text was ambiguous on how to electronically submit reports other than performance test reports. The EPA has clarified this language in the final rule.

Finally, in the August 2015 proposal, the EPA solicited input on whether additional action should be taken to address emissions from wet landfills. After reviewing the comments on the proposed rule, the EPA is finalizing annual electronic reporting of data on wet landfilling practices, which may be used to inform future actions on wet landfills. The EPA believes that requiring this information to be submitted electronically is in keeping with one of the EPA's original purposes for electronic reporting, as discussed in the preamble to the August 2015 proposal - so that the EPA will have necessary data in hand for future rulemaking activities, which reduces burden on the EPA, owners and operators by reducing the number and extent of future information collection requests.

### **15.3 Design Plan Approval: General**

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#### **15c. Design Plan Approval: General**

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 38

**Sort Order:** 300

#### **Comment Excerpt:**

Regardless of whether design plans require approval, regulators retain the authority to regulate the system and enforce compliance requirements. The rule already requires the facility to keep an up-to-date as-built drawing of the GCCS on site. As-built drawings reflect current GCCS built conditions. The facility is also required to report GCCS updates in its annual compliance report. Most importantly, the rule includes operational and performance standards to verify that the GCCS is operating properly. The agencies can rely on the monthly wellhead pressure readings and quarterly surface emissions monitoring results and associated corrective actions to demonstrate that the design is sufficient. Ultimately, regulators retain tremendous authority to regulate the landfill GCCS should our recommendations be accepted.

#### **Comment Response:**

The EPA agrees with the commenter that the EPA has several means of ensuring that landfill owners and operators are complying with the Emission Guidelines, including records of an up-to-date, readily accessible GCCS plot map showing each existing and planned collector in the system, as well as records of wellhead and surface emissions monitoring.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 33

**Sort Order:** 301

#### **Comment Excerpt:**

State agencies will continue to have enforcement authority of the performance of the GCCS as they will be receiving data and information on the GCCS and surface emissions monitoring every six months as part of the semi-annual NSPS reporting.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0196, comment excerpt 38, under [comment code 15c.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 81

**Sort Order:** 302

**Comment Excerpt:**

EPA should also recognize that GCCS designs are conceptual plans prepared by a state-licensed and registered professional engineers with specific expertise in landfill gas collection and control. Once implemented, landfills must evaluate the effectiveness of the GCCS plan and report to regulatory authorities on a semi-annual basis. *See* 40 C.F.R. 60.757. These evaluations and reports already require updated GCCS as-built drawings and provide an opportunity to identify and address any operational exceedances, thus ensuring that the GCCS is well designed and operated. Accordingly, the initial approval of GCCS design plans are just one component of the regulatory process and do not represent the only means of ensuring compliance with the emission guidelines.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0196, comment excerpt 38, under [comment code 15c. The EPA agrees that owners or operators must submit information on the GCCS in the annual report in 60.767(g). The EPA also agrees that there are operational standards (temperature, negative pressure, surface emissions monitoring) and associated records and reports that will ensure that the GCCS is being operated properly. Note that only landfills that are subject to 40 CFR part 63, subpart AAAA must submit semi-annual compliance reports (see 40 CFR 63.1980).

## 15.4 Design Plan Updates

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### 15d. Design Plan Updates

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**Commenter Name:** Juene Franklin, P.E.

**Commenter Affiliation:** Franklin Engineers & Consultants, LLC

**Document Control Number:** EPA-HQ-OAR-2003-0215-0122

**Comment Excerpt Number:** 5

**Sort Order:** 100



**Comment Excerpt:**

NSPS GCCS Design Plan Updates a. Cause – We are very concerned with the following three (3) parameters that the EPA would like to employ as the criteria to require NSPS Design Plan updates: i. Within 90 days of expanding into an area not covered by the previously approved design plan;

ii. Prior to installation or expansion of the existing GCCS in a manner other than described in a previously approved plan;

iii. Prior to implementation of an alternative operating parameter value for temperature, nitrogen, or oxygen

We are concerned about the foregoing criteria for the following reasons:

i. These criteria will cause a large influx of design plans to be submitted to the regulatory agencies that may not be staffed to review and respond/approve the potential requests quickly.

ii. The NSPS GCCS Design Plan site plan drawings are usually prepared based on the final configuration of the landfill at or near final closure; however, the landfill is required by the regulations to install GCCS components into areas that are active within 5-years of initial waste placement. For this reason, there are many facilities across the country that must install a GCCS for compliance with the NSPS well before the final configuration of the landfill is achieved. The unfinished areas and dynamic nature of operations at a landfill will not allow for the installation of GCCS components in a manner that will be an exact match to the design plan; therefore, it could lead to the need for annual updates to design plans. Moreover, it is important to note that field changes are sometimes required during GCCS installation to accommodate field conditions at the time of construction. If the regulatory agency is not able to respond promptly to the update requests, the regulated entity could be in danger of being cited for a violation of the 2-year/5-year GCCS Expansion/Installation requirements.

b. Recommendation – We would like to recommend that the EPA remove the requirements to obtain approval prior to installation of a GCCS expansion that varies from the originally approved plan and prior to implementation of an alternative operating parameter, if the following items are true:

i. The area where the GCCS Expansion has occurred is included in the originally approved NSPS GCCS Design Plan.

ii. Any expansions that have occurred are included in the Semi-Annual Reports required.

iii. The alternative operating parameter has already been approved by the regulatory agency in previous correspondence.

**Comment Response:**

The EPA recognizes that the dynamic nature of operations at a landfill may not allow for the installation of GCCS components in a manner that is an exact match to the original design plan. At proposal (79 FR 41819), the EPA also recognized that 40 CFR part 60, subpart WWW, does not specify when a design plan must be updated and submitted for approval. EPA regional offices have observed situations wherein the constructed GCCS does not match the approved design plan. To address this situation and to clarify questions received during implementation on

the timing of submittals of updated design plans, the EPA proposed three criteria for updating a design plan to ensure that owners and operators modify their GCCS design plan to reflect the most recent expansions and construction of the GCCS. The EPA is finalizing the first two criteria as proposed. These two criteria provide the delegated authority the opportunity to review the design prior to the equipment being constructed and avoid scenarios where the regulatory authority decides the design is not approvable after the infrastructure has been installed.

Regarding the first criterion (update design plan within 90 days of expanding operations in to an area not covered by the previously approved design plan), if the area where the GCCS expansion has occurred was included in the originally approved NSPS GCCS design plan, then expansion into that area would not trigger the requirement to update the GCCS design plan. However, if that expansion into that area did not meet the second criteria (i.e., expansion was not done in a way that was consistent with the previous design plan), then the landfill would indeed trigger the requirement to update the GCCS design plan. For example, if any of the design plan components changed that are necessary for the GCCS to meet the operational standards in 40 CFR 60.763 (or 60.34f) or the specifications for active collection systems in 40 CFR 60.769 (or 60.40f), then the landfill owner or operator must update the design plan. Table E-1 of the MSW Landfills, Volume 1 lists 13 components that must be addressed in GCCS design plans (Municipal Solid Waste Landfills, Volume 1: Summary of Requirements for New Source Performance Standards and Emission Guidelines for Solid Waste, 1999, EPA-453R/96-004 (<https://www3.epa.gov/ttn/atw/landfill/landflpg.html>)). If any of these design plan components is not consistent with the installed GCCS, then the landfill owner or operator must update the design plan to reflect the as-built GCCS.

Regarding the third criterion (update design plan prior to implementing an approved alternative wellhead operating parameter), the EPA is not finalizing a provision that would have required the landfill owner or operator to revise a design plan and submit it prior to implementing an approved alternative operating parameter value for temperature, nitrogen, or oxygen. The EPA did not finalize this criterion in order to minimize additional burden on approving agencies and landfill owners or operators. See Section VI.A.1 and Section VI.A.6 of the 2016 NSPS Final Preamble.

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**Commenter Name:** Comment submitted by Kimberly Smelker  
**Commenter Affiliation:** Granger III and Associates, LLC  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0114.1  
**Comment Excerpt Number:** 42  
**Sort Order:** 103

**Comment Excerpt:**

EPA should eliminate the requirements for updating the design plan for every modification.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Dave Heitz  
**Commenter Affiliation:** Geosyntec Consultants  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0102.1  
**Comment Excerpt Number:** 37  
**Sort Order:** 104

**Comment Excerpt:**

EPA should: 2) eliminate the requirements for updating the design plan for every modification.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)  
**Commenter Affiliation:** Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1  
**Comment Excerpt Number:** 8  
**Sort Order:** 105

**Comment Excerpt:**

We recommend eliminating the requirement to update the design plan for each change at a facility. Changes are numerous and occur on a frequent basis. As recognized in EPA's 2006 proposed rule, many design plans are never approved (71 F.R. 53277 September 8, 2006) which leaves facilities in limbo.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 129  
**Sort Order:** 108

**Comment Excerpt:**

EPA must fix the currently broken system of approval for higher operating values. As an initial matter, WM disagrees with EPA's "confirming" in Subpart XXX that HOVs must be submitted to EPA or the delegated authority twice - first in an initial request, and second in a design plan revision. 79 Fed. Reg. at 41819. As demonstrated above, EPA cannot "confirm" any current set

of practices for HOV approval, because there is a wide range of procedures used by EPA regions and state/local agencies for review of HOVs. Further, in doing so, EPA would propose to rewrite the current standard under Subpart WWW, which provides that an owner or operator "may establish" an HOV for a particular well upon a demonstration that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. *See* 40 C.F.R. §60.653(c). In Subpart WWW, EPA firmly established the HOV determination as a function of the landfill owner / operator, likely based on its acknowledgement that site-specific factors would figure prominently in the manner in which each landfill would comply with the NSPS. By contrast, although the site-specific variability of landfills has not changed, EPA is proposing to rely on delegated agencies, rather than landfill owners/operators, to make determinations regarding appropriate operating values; as discussed above, these agencies lack the expertise to do so and tend to regulate wellheads in a manner that is both counterproductive and too prescriptive given the plain language of the rule. Unfortunately, EPA's Subpart XXX proposal would only worsen this current dynamic by now requiring dual approvals for each HOV.

**Comment Response:**

Regarding requests for higher operating values, see response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under [comment code 15a.

Regarding updates to design plans, see response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d. Regarding the demonstration that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens, see EPA-HQ-OAR-2003-0215-0079.1, excerpt number 7, under comment code 15a.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 140

**Sort Order:** 109

**Comment Excerpt:**

While WM agrees that the requirements for update and submittal of design plans should be clarified, WM is concerned that EPA's specific proposals will create additional burdens on an already broken process. As noted above, to the extent that EPA envisions a dual process for approval of alternatives prior to implementation; i.e. initial approval and approval as part of the design plan, WM strongly objects. A dual approval process, with no specific timeframes for review of such requests, will present an unreasonable obstacle to implementing such alternatives. Since most alternatives are proposed in circumstances where the presumptive remedy or requirement does not present the most effective compliance alternative or simply cannot be met, a burdensome and ill-defined approval process will delay and impede compliance, thereby interfering with the goal of a well-designed and well-maintained gas collection and control system, which is BSER.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d. For streamlining design plan approvals, see response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 27, under comment code 15e.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 39

**Sort Order:** 110

**Comment Excerpt:**

Advocacy also encourages EPA to more aggressively identify and resolve other permitting bottlenecks. For example, the NSPS discusses a situation in which:

“any alternate operating value for temperature, nitrogen, or oxygen proposed by an owner or operator according to the proposed 40 CFR 60.763(c) must be submitted to the Administrator (i.e., the EPA Administrator or delegated authority) for approval. The request may be submitted separately from a design plan revision. However, the design plan would have to be updated on the schedule described in the next section.”<sup>39</sup>

EPA should provide a mechanism by which small entities only need to submit this information once and be approved in the same process.

[Footnote 39] 79 Fed. Reg. at 41813.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager

**Commenter Affiliation:** Burns & McDonnell

**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1

**Comment Excerpt Number:** 5

**Sort Order:** 111

**Comment Excerpt:**

By requiring a separate approval for HOV followed by a design plan revision, the EPA is requiring regulators to review and approve the same information twice. A third review will also occur with each semi-annual report.

All design changes will have to be approved by the state agency prior to implementation. As such, state agencies will be receiving a significant increase in requests to decommission wells.

If a landfill must expand their system due to surface emissions exceedances, any alternative to a new well or collection device will require approval.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 52

**Sort Order:** 112

**Comment Excerpt:**

In practice, the proposed requirements will be largely duplicative of the initial approval requirement because the design changes will often be minor, to the extent any are required at all, and therefore are unlikely to provide the state with any new information that would preclude approval of a minor update to an already approved design plan. Even if the changes are more substantial, the same experts and engineers who submitted the changes will then turn around and update the plan for the changes that have already been approved by the state, suggesting that the need for further approval is likely unnecessary.

A significant concern with this proposed requirement is whether states will have sufficient resources to implement it.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

In regards to state resources, the final rule does not require the landfill owner or operator to update the GCCS design plan prior to implementing an alternative operating parameter value for temperature, nitrogen, or oxygen; therefore, there would be no additional burden associated with additional design plan reviews for that criterion.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent

**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota

**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1

**Comment Excerpt Number:** 7

**Sort Order:** 113

**Comment Excerpt:**

The proposed rule adds three criteria for when updates for design plans must be submitted and approved by state agencies. By requiring a separate approval for HOV followed by a design plan revision, the EPA is requiring regulators to review and approve the same information twice. A

third review will also occur with each semi-annual report. Additional reviews by state agencies will be required for:

- Decommissioned wells. All design changes will have to be approved by the state agency prior to implementation. As such, state agencies will be receiving a significant increase in requests to decommission wells.
- Surface emissions exceedances. If a landfill must expand their system due to surface emissions exceedances, any alternative to a new well or collection device will require approval.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 14

**Sort Order:** 114

**Comment Excerpt:**

The proposed rule adds three criteria for determining when updates for design plans must be submitted and approved by state agencies. These are:

1. Within 90 days of expanding into an area not previously approved;
2. Prior to installing or expanding the GCCS in a manner other than described in the previously approved design plan; and,
3. Prior to implementing an HOV for temperature, nitrogen, or oxygen.

By requiring a separate approval for an HOV followed by a design plan revision, EPA is requiring regulators to review and approve the same information twice. A third review will also occur with each semi-annual report. These unnecessary and duplicative efforts only serve to increase paperwork and time demands on both the regulated community and regulatory agencies. We are concerned about the potential for the industry to receive violations due to the complex administrative requirements and overlapping timelines.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Barry R. Stephens,

**Commenter Affiliation:** Tennessee Department of Environment and Conservation- Air

Pollution Control (TDEC-APC)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0112.1

**Comment Excerpt Number:** 3

**Sort Order:** 115

**Comment Excerpt:**

EPA proposes to require an affected source to update its design plan prior to implementing an alternative operating parameter value for temperature, nitrogen, or oxygen. Alternative values allowed under subpart XXX (40 CFR 60.763(c)) "should be submitted for approval by the Administrator or the delegated state authority and then, after it is approved, submitted again to the Administrator or the delegated state authority as part of a design plan revision. [emphasis added]"

*This is a redundant requirement that would result in an increased administrative burden, for which we see no environmental benefit. If an affected facility submits sufficient information to approve an alternative monitoring parameter, revision of the design plan prior to implementation is unnecessary. We would not support redundant submittal of approved alternatives unless the available evidence indicated that 1) approved alternatives are being improperly implemented by affected facilities; and 2) EPA provides a rationale for redundant submittal as a corrective measure. If EPA wants to require periodic review of a design plan to ensure that changes at the landfill have not exceeded the ability of the GCCS to collect and control landfill gas (e. g., every 5 years), such a requirement would be more sensible.*

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 19

**Sort Order:** 116

**Comment Excerpt:**

EPA should not require a two-stage review process — first for approval of the alternative value, and second to submit a design plan revision. If a state agency references the design plan in its approval of the alternative values, then that should be sufficient as a legally defensible action.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Michael Rice, Past President  
**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1  
**Comment Excerpt Number:** 28  
**Sort Order:** 117

**Comment Excerpt:**

Of most concern is the need to quickly implement design and operational changes. TXSWANA requests that the EPA not impede this process. The dual process EPA apparently envisions for approval of implementation; i.e. initial approval and then another approval as part of the design plan revision, is unnecessarily time consumptive and appears completely redundant. Most of the alternative solutions/remedies that are proposed in circumstances where time is of the essence and where the prescriptive remedy is not the most effective compliance alternative on these occasions, timely implementation of the needed changes must be performed.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Michael Rice, Past President  
**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1  
**Comment Excerpt Number:** 27  
**Sort Order:** 118

**Comment Excerpt:**

The members of TXSWANA have established a collaborative working relationship with the Texas Commission of Environmental Quality (TCEQ). As such, we do not wish to impose any additional burdens on the TCEQ by requiring additional and redundant reviews and approvals. In an effort to streamline and not complicate the review and approval process, TXSW ANA recommends that redundant reviews be removed and any changes that are needed to be made to a GCCS be performed under the direction of a third party professional engineer and documented in the NSPS report for state agency review.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter—DCN-EPA-HQ-OAR-2003-0215-0194 (page 12). This response is for both of these comments. See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 32

**Sort Order:** 119

**Comment Excerpt:**

The proposed rule adds three criteria for when updates for design plans must be submitted: 1) within 90 days of expanding into an area not previously approved; 2) prior to installing or expanding the GCCS in a manner other than described in the previously approved design plan; and 3) prior to implementing higher operating values (HOV) for temperature, nitrogen, or oxygen.

Of most concern is the need to quickly implement design and operational changes. The dual process EPA apparently envisions for approval of implementation; i.e. initial approval and then another approval as part of the design plan revision, is unnecessarily time consumptive and redundant. Where time is of the essence and the prescriptive remedy is not the most effective compliance alternative, timely implementation of alternative solutions/remedies must be performed. TxSWANA proposes that the owner or operator be allowed to establish the alternative HOV and rely on it as a compliance parameter subject to subsequent approval or denial of the parameter in the context of design plan review. This approach could also be used for alternative timeline requests.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 13

**Sort Order:** 120

**Comment Excerpt:**

EPA states, in the preamble of the proposed Subpart XXX that higher operating values (HOV) for temperature, oxygen or nitrogen, "should be submitted for approval by the Administrator or the delegated state authority and then, after it is approved, submitted again to the Administrator or the delegated state authority as part of a design plan removal." (p. 41819). Although DSWA has a good working relationship with our state Agency, we understand that, many states never issue approval of submitted design plans. Rather, the design plans are left unapproved and unresponded to. Requiring additional approvals will increase the burden on the landfill owner/operators as well as the local/regional environmental regulators.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 46

**Sort Order:** 121

**Comment Excerpt:**

Republic has previously requested assistance from EPA in addressing this concern. Unfortunately the proposed revisions to the NSPS will only make the problem worse by increasing, rather than decreasing, the regulatory burden associated with obtaining higher operating values. Specifically, EPA has proposed to require landfills to update their GCCS design plan prior to implementing any higher operating value and to seek approval for that update. By adding, rather than reducing, the paperwork associated with obtaining a higher operating value where appropriate, EPA is increasing the workload for state agencies that have already demonstrated an inability to respond in a timely fashion.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Dave Heitz

**Commenter Affiliation:** Geosyntec Consultants

**Document Control Number:** EPA-HQ-OAR-2003-0215-0102.1

**Comment Excerpt Number:** 2

**Sort Order:** 122

**Comment Excerpt:**

EPA should eliminate the requirements for updating the design plan prior to implementing an approved alternative operating parameter value for temperature, nitrogen, or oxygen, if the owner or operator has requested alternative operating parameter values according to § 60.763(c);

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Kelly Dixon, Director, Land Protection Division

**Commenter Affiliation:** Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0085.1

**Comment Excerpt Number:** 8

**Sort Order:** 123

**Comment Excerpt:**

Three new criteria have been added in Subpart XXX for when an affected source must update its design plan and submit it to the delegated authority for review and approval. The requirement for numerous plan submittals may slow the GCCS optimization process. It will also increase the administrative burden on the delegated authority.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager

**Commenter Affiliation:** Burns & McDonnell

**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1

**Comment Excerpt Number:** 2

**Sort Order:** 124

**Comment Excerpt:**

The proposed NSPS for landfills places significant, new burdens on state regulators. This rule significantly increases administrative requirements for both the state agencies and the regulated community with no demonstrated air quality benefits from the added burdens. The rule proposes a multi-stage process for approving operational flexibility for gas collection systems, requiring states to engage in review and approval of requests for alternative wellhead operational values, as well as reviewing and approving amended design plans. States are already overburdened in approving collection system design plans as fewer than 40% of submitted plans are acted upon by state agencies.

**Comment Response:**

Regarding higher operating values, see response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under [comment code 15a.

Regarding design plans, see response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 26

**Sort Order:** 131

**Comment Excerpt:**

The proposed rule would require landfills to update their GCCS design plans and submit those updates for approval in connection with any one of two possible events: (1) within 90 days of expanding operations to an area not covered by a previously approved design plan, and (2) prior to installing or expanding the GCCS in a manner other than described in the previously approved design plan. The proposed criteria requirements for updating the design plan relies on an approval process that Republic has identified as problematic in past comment letters because many landfills have submitted GCCS plans to State agencies that have never been approved.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d] for procedures on updates to design plans.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 63

**Sort Order:** 132

**Comment Excerpt:**

Independent PE certification of design plans provides necessary flexibility.

As discussed in prior sections, EPA has previously made a distinction between well "decommissioning" (an operational change) and "abandonment" "capping or removing" (a design change). These and other interpretations are critical in providing the operational flexibility necessary in areas that are experiencing declining gas production. Under EPA's current interpretation, the GCCS Design Plan must be updated and approved in order to abandon a gas extraction well.

The issues surrounding the approval of GCCS Design Plans have been discussed in the comments provided herein, as well as those submitted for proposed Subpart XXX. Requiring repeated updates to the Design Plan to address well abandonments and other system changes only serves to add additional delay and uncertainty to the efforts to achieve a well-operated system.

WM requests that EPA consider allowing independent PE certification of the system plot map (as-built drawing), which is already required to be kept updated and maintained onsite. Under this scenario, the PE would certify that the system meets the "sufficient density" of gas collectors required under the specific conditions for that site. The updated as-built drawing would reflect all abandonments and replacements of wells without requiring prior approval from EPA or state agencies. The installation and location of each new well or collector is already required to be reported in the landfill's NSPS/EG compliance report; a listing of abandoned and/or replacement wells could also be included in this report as notification.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 12

**Sort Order:** 133

**Comment Excerpt:**

The USEPA appears to be exacerbating the problem by prescribing additional iterations of a facility's design plan for what amount to fairly routine occurrences (i.e. prior to implementing an approved alternative operating value). Subpart WWW requires reporting of key operations information in the annual report, this annual report could be expanded slightly to more clearly provide the other elements which appear have become a greater concern (i.e. Higher operating values, alternative compliance timelines (less than 120 days)).

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 142

**Sort Order:** 134

**Comment Excerpt:**

The owner or operator should be allowed to establish the alternative value and rely on it as a compliance parameter subject to subsequent agency review of the parameter and demonstration that the landfill owner or operator made an incorrect determination. Alternatively, if EPA determines that advance review and approval of alternative wellhead values and timelines is required, agencies should be subject to well defined (and short) timeframes and standards for reviewing such requests. Further, such initial approval should also constitute an automatic design plan update, rather than requiring a subsequent and separate approval of the alternative via design plan submittal.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d] for procedures on updates to design plans.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 39  
**Sort Order:** 200

**Comment Excerpt:**

We noted that the proposed rule attempts to provide flexibility from the requirements by allowing project owners to request an alternative design approval from their state agency. While the intent may be helpful, the exercise of this option will often prove fruitless. Due to resource constraints and other regulatory priorities, state agencies often do not approve site design plans for gas collection and control systems (GCCS). Less than 40 percent of WM landfills have affirmative state agency approval of their GCC systems. We are concerned that states will be even less inclined to approve treatment alternatives and plan amendments than the actual GCCS design plan.

**Comment Response:**

Regarding the delay in Administrator review of design plans, the EPA maintains that delegated state air pollution control agencies are the most appropriate reviewer of design plans. State and local air pollution control agencies are most familiar with the landfills operating within their jurisdiction, regulations, typical operating practices, typical waste types, and climate of landfills located within the state. Thus, the state and local air pollution control agencies are in the best position to review whether landfill GCCS designs are appropriate based on information submitted by landfill owners or operators.

The EPA has revised the final rules to provide flexibility regarding design plan approvals. Design plans must continue to be prepared and approved by a professional engineer. The landfill owner or operator must then notify the Administrator that the plan is completed and provide a copy of the plan's signature page. The Administrator will now have 90 days to make a decision about whether the plan should be submitted for review. If the Administrator chooses to review, the approval process continues as outlined in the final rule. However, if the Administrator indicates that submission is not required or doesn't respond within 90 days, the landfill owner or operator can continue to implement the plan with the recognition that they are proceeding at their own risk.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 11  
**Sort Order:** 201

**Comment Excerpt:**

USEPA is attempting to clear up some confusion regarding design plan submittal requirements but has not addressed the well-known issue of significantly delayed design plan approvals.

**Comment Response:**

For design plan approvals, see response to EPA-HQ-OAR-2003-0215-0100.1, excerpt number 39, under comment code 15d. For streamlining design plan approvals, see response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 27, under comment code 15e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 28

**Sort Order:** 300

**Comment Excerpt:**

Re-drills are existing gas wells that are replaced. The re-drilled well may not be in the exact location, and may be based on a slightly different design, but it is functionally equivalent to the well it is replacing. The re-drilling of wells should not be considered a design change requiring update of the GCCS Design Plan. Re-drilled wells will be listed in the next semi-annual NSPS/EG compliance report and then added to the site's GCCS map, replacing the former well, but usually with a slightly different demarcation. We request that EPA add a similar definition of a re-drilled well the rule.

**Comment Response:**

The EPA agrees with the commenter that a re-drilled or replacement well is functionally equivalent to the original well it is replacing and that a re-drilled well would not trigger design plan update and approval process. While we are not defining a re-drilled well in the final rule, the description of the reason for the re-drilled well, notation of the well identifier for which the re-drilled well is replacing, and the date and location the re-drilled well was installed can be included in the annual compliance report.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 19

**Sort Order:** 301



**Comment Excerpt:**

“Well re-drills” is used in the industry to denote existing gas wells that are replaced. The redrilled well may not be in the exact location, and may be based on a slightly different design, but is functionally equivalent to the well it is replacing. The re-drilling of wells should not be considered a design change requiring an update of the GCCS Design Plan. Re-drilled wells should be listed in the next semi-annual NSPS/EG compliance report and then added to the site’s GCCS map, replacing the former well, but usually with a slightly different demarcation. We request that EPA add a similar definition of a “well re-drill” to the rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0196, excerpt number 28, under comment code 15d.

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**Commenter Name:** Comment submitted by Jeffrey Vandebusch  
**Commenter Affiliation:** Foth Infrastructure & Environment, LLC on behalf of Brown-Outagamie-Winnebago County (BOW)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0093.1  
**Comment Excerpt Number:** 1  
**Sort Order:** 302

**Comment Excerpt:**

Under section 60.767(h)(2) of the proposed rule, owners or operators are required to submit a revised design plan to the Administrator prior to installing or expanding the gas collection system in a way that is not consistent with the original design plan. The BOW Group requests further clarification as to what (specific) gas installation/collection items the Administrator may deem not part of an original design plan that constitute a submittal of revised plan. Will small changes to a design plan, such as moving the location of a well, require a revised design plan to be submitted? Foth and the BOW Group believes these small changes are outside the intent of the rule, and would unnecessarily burden both owner/operators and the EPA or other delegated authority that would have to review a revised design plan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0196, excerpt number 28, under comment code 15d.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 114  
**Sort Order:** 303

**Comment Excerpt:**

As part of routine operations, landfill owner/operators must re-drill and replace existing gas wells. The re-drilled well may not be in the exact location and may be based on a slightly different design; however it is functionally equivalent to the well it is replacing. The re-drilling of wells should not be considered a design change requiring update of the GCCS Design Plan. The site would list re-drilled wells in the NSPS/EG compliance report and the site would update the as-built drawing to identify re-drilled wells and replaced wells as required by the NSPS/EG rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0196, excerpt number 28, under comment code 15d.

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 4

**Sort Order:** 400

**Comment Excerpt:**

The Division supports EPA's proposal to require submission of a revised design plan prior to implementing an alternative operating parameter. However, the Division is concerned that allowing a MSW landfill to expand operations to an area not covered by the previously approved plan before submitting a revised design plan could allow inappropriate expansions. The Division requests that EPA require submission and approval of the updated GCCS design plan prior to expanding operations to avoid GCCS expansions that the regulating authority ultimately decides are not approvable.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d] regarding updates to the design plan prior to implementing an alternative operating parameter.

Regarding the first criterion (update design plan within 90 days of expanding operations in to an area not covered by the previously approved design plan), if the area where the GCCS expansion has occurred was included in the originally approved NSPS GCCS design plan, then expansion into that area would not trigger the requirement to update the GCCS design plan. However, if that expansion into that area did not meet the second criteria (i.e., expansion was not done in a way that was consistent with the previous design plan), then the landfill would indeed trigger the requirement to update the GCCS design plan.

**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 49

**Sort Order:** 500

**Comment Excerpt:**

The proposed rule considers two times when design plans should be updated and submitted for approval: within 90 days of expanding operations to a new area, and prior to installing or expanding GCCS in an area not covered by the design plan. We agree that the design plan should be updated, but we do not agree that they (or even the original design plan) should require approval. These proposed changes will only increase administrative burdens for the reviewing agencies and continue the existing backlog of unapproved plans.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e] for streamlining the approval process of the initial design plan. See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d] for procedures on updates to design plans.

## 15.5 Design Plan Streamlining

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### 15e. Design Plan Streamlining

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 144

**Sort Order:** 30

**Comment Excerpt:**

Alternatively or in conjunction with a defined review timeframe, EPA should consider a deemed approval process, whereby the agency's failure to act within a defined timeframe would constitute a deemed approval of the design plan. This alternative does not present a significant risk of non-conforming design plans in light of the requirement that such plans must be prepared by a professional engineer, whose obligation it is to demonstrate that the design plan either conforms to the specifications for active collection systems or that any proposed alternatives are sufficient to meet the overall BSER requirement of a well-designed and well-operated collection and control system. *See* 40 C.F.R. §60.762(b)(2)(i)(C). A similar approach would be a deemed complete approach, whereby an agency's failure to act on a design plan submittal within the specified timeframe would constitute a finding that the design plan submittal is complete and

addresses all necessary aspects of collection and control system design. Most importantly, in whatever approval process is ultimately adopted, the landfill owner/operator must not bear any risk of enforcement attendant to an agency's failure to act. Therefore, once a design plan is submitted and until a response is received from the reviewing agency, a facility that complies with the design plan as submitted should not be subject to any risk of enforcement.

**Comment Response:**

The EPA has revised the final rules to provide flexibility regarding design plan approvals. Design plans must continue to be prepared and approved by a professional engineer. The landfill owner or operator must then notify the Administrator that the plan is completed and provide a copy of the plan's signature page. The Administrator will now have 90 days to make a decision about whether the plan should be submitted for review. If the Administrator chooses to review, the approval process continues as outlined in the final rule. However, if the Administrator indicates that submission is not required or doesn't respond within 90 days, the landfill owner or operator can continue to implement the plan with the recognition that they are proceeding at their own risk.

See also response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 143

**Sort Order:** 31

**Comment Excerpt:**

On multiple occasions since 2005, WM has discussed our concerns with EPA and offered solutions on the Design Plan review and approval process (*See* Docket ID Numbers EPA-HQ-OAR-2003-0215-0003, EPA-HQ-OAR-2003-0215-0017, EPA-HQ-OAR-2003-0215-0057). There are several options for reducing the burden and backlog of this process. First, EPA could establish a defined timeline for review and approval or denial of design plan submittals. For example, the California LMR imposes a 120 day timeframe on the agency for review and action on design plan submittals. EPA could likewise establish a mandatory agency review period for design plans submittals under the Landfill NSPS. However, we recognize that not all implementing agencies may have the expertise or resources to effectively implement this approach.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 144, under comment code 15e.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 59

**Sort Order:** 32

**Comment Excerpt:**

In 2006, EPA proposed addressing an on-going issue related to design plan approvals. They proposed a "de facto" approval if a state agency did not review the design plan in a timely manner. At the time, the industry supported this proposal. In addition, based on written comments received from state agencies, it appears that there were no objections. The industry appreciated that EPA acknowledged and recognized a long-standing problem associated with design plans. At that time, the industry referenced EPA's February, 1999 document "*Municipal Solid Waste Landfills, Volume 1: Summary of the Requirements for the New Source Performance Standards and Emission Guidelines for Municipal Solid Waste Landfills*" which states the following (page 2-38):

*"The implementing agency must approve the design of a gas collection and control system prior to installation. The review and comment interval for approving a design plan is expected to take approximately 6 months from the date the plan is submitted, leaving approximately 12 months for installing the alternative gas collection and control system."*

However, the proposed rule not only does not include de facto approvals, it actually requires more design plans approvals. EPA now proposes requiring design plans for situations that had previously not required design plans, such as prior to implementing an HOV. Only 15% to less than 40% of design plans have been approved. One consultant surveyed thirty landfills and found that only five received approval. Of those, approval times sometimes exceeded ten years.

Given the difficulty of obtaining initial design plan approvals, it is unduly burdensome and unreasonable to require additional design plan approvals for intermittent issues.

Landfill owners do not have the luxury to wait for their design plans to be approved since they are still subject to the 30-month timeline requirement for GCCS installation. Without approval, landfills owners are at risk to be subject to subsequent costly changes to the GCCS.

We recommend that initial design plans have a 6-month window for de facto approvals. Amended design plans should receive de facto approvals within a shorter timeframe, such as 60 days. Finally, rather than mandating an updated design plan for HOVs that requires any approval, EPA instead should simply require HOVs to be documented in the semi-annual report.

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter—DCN-EPA-HQ-OAR-2003-0215-0196, page 15. This response is for both of these comments. Regarding the comment on de facto approval of the initial design plan, see response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 144, under comment code 15e. See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d] for procedures on updates

to design plans. Regarding the requirements for updating design plans before implementing a higher operating value, see response to 0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 73  
**Sort Order:** 33

**Comment Excerpt:**

Republic asks EPA to consider alternative approaches that would streamline the approval process. The best way to accomplish that change would be to deem control system designs approved upon submittal. This approach would not present an environmental concern because the plans must already represent the best judgment of a certified engineer, reducing the risk that the plan will be insufficient to properly manage the landfill's emissions.

In alternative, an effective approach that still allows the regulator the ability to make changes to the plan would be to use the procedures found in similar plans in the refinery NSPS 40 C.F.R. Part 60, Subpart Ja. Subpart Ja requires submittal of a flare management plan to the Administrator but does not specify a formal approval process in order to minimize the burden associated with reviewing such plans.

The required plan under Subpart Ja, like the GCCS design plan required under Subpart XXX, specifies elements that need to be addressed in order for the plan to be considered adequate and provides an opportunity for a delegated authority to find the plan not adequate if they choose to do so. Unlike the plan required under Subpart Ja, the GCCS design plans require certification by a professional engineer so any changes the Administrator later request need to be limited to the completeness of the plan and not the material content. This approach is appropriate given not all delegated authorities have the internal expertise or resources to effectively implement the GCCS design plan approval process.

This alternative approach is also consistent with EPA's longstanding policy of allowing sources to comply with permit applications that have been submitted, even while those applications remain pending, to ensure administrative delays by states or EPA do not result in unintended consequences on the regulated community. *See, e.g.*, 40 C.F.R. § 70.7(b) (“[I]f a part 70 source submits a timely and complete application for permit issuance (including for renewal), the source's failure to have a part 70 permit is not a violation of this part until the permitting authority takes final action on the permit application ...”); 40 C.F.R. § 70.5(a)(2) (“The source's ability to operate without a permit, as set forth in § 70.7(b) of this part, shall be in effect from the date the application is determined or deemed to be complete until the final permit is issued, provided that the applicant submits any requested additional information by the deadline specified by the permitting authority.”).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e] regarding the Subpart Ja approach. See response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 144, under comment code 15e] regarding de facto approvals.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 11

**Sort Order:** 34

**Comment Excerpt:**

The requirement to update the GCCS design plan prior to implementing the approved Alternate Operating Parameter is unreasonable and would be problematic for the reasons cited by SWANA (i.e. lack of agency response to design plan submittals).

However, if EPA does implement this requirement then we request that EPA not tie this request to a GCCS Design Plan revision and we concur with SWANA that a "de facto" approval should be written into the rule allowing for automatic approval of an Alternative Timeline Request if no response is received within 30 days. [See DCN EPA-HQ-OAR-2003-0215-0108.1, Excerpt 59.]

**Comment Response:**

Regarding the comment on de facto approval of the initial design plan, see response to DCN EPA-HQ-OAR-2003-0215-0100.1, comment excerpt 144, under comment code 15e. See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d] for procedures on updates to design plans.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 27

**Sort Order:** 100

**Comment Excerpt:**

Republic believes that a self-implementing GCCS design plan process could meaningfully reduce administrative burdens on state agencies and improve the ability of the regulated community to ensure that each landfill GCCS is well-designed and well-operated. A self-implementing process would require landfill owner/operators to obtain professional engineer certifications of plans that can be maintained onsite for inspection and/or submitted to the relevant regulatory authority. With the significant backlog currently awaiting initial approval, adding new approval requirements hardly seems appropriate or realistic.

This streamlined approach is similar to the procedures approved in other recently adopted NSPS rules, such as the refinery NSPS 40 CFR 60 Subpart Ja. Subpart Ja requires submittal of a flare management plan to the Administrator but does not specify a formal approval process in order to minimize the burden associated with reviewing such plans. The Subpart Ja rule, like the GCCS plan required under Subpart WWW, specifies elements that must be addressed for the plan to be deemed adequate, which provides an opportunity for regulatory authorities to identify and correct any deficiencies.

However, the self-implementing approach that Republic proposes goes a step further. Unlike the plan required under Subpart Ja, the GCCS plans would require certification by a professional engineer. As such, review of those plans by regulatory authorities can be limited to ensuring the completeness of the plan and not the substantive content—there would be no need to second-guess a plan already certified by a professional engineer.

A self-implementing approach would also be consistent in nature with EPA's longstanding policy of allowing sources to comply with the terms of submitted and complete permit applications, even while those applications remain pending, to ensure administrative delays by states or EPA do not result in unintended consequences on the regulated community. *See, e.g.,* 40 C.F.R. § 70.7(b) ("[I]f a part 70 source submits a timely and complete application for permit issuance (including for renewal), the source's failure to have a part 70 permit is not a violation of this part until the permitting authority takes final action on the permit application ..."); 40 C.F.R. § 70.5(a)(2) ("The source's ability to operate without a permit, as set forth in § 70.7(b) of this part, shall be in effect from the date the application is determined or deemed to be complete until the final permit is issued, provided that the applicant submits any requested additional information by the deadline specified by the permitting authority."). So too should landfills receive the benefit of the doubt in the event of regulatory delays, particularly given that landfill GCCS plans would already have been certified by a professional engineer with his or her professional credibility at stake.

In short, Republic supports a GCCS update and approval process that allows the plan to be kept on-site with the ability for an Agency to view the plan on-site or request a copy. EPA should abandon its proposal to impose new approval requirements that would only add administrative burden without providing any meaningful environmental benefits. The proposed changes to the approval requirements could actually increase emissions due to increasing the delays in the approvals needed to install new equipment to collect and control landfill gas. Therefore, Republic recommends that EPA consider adopting a procedure similar to that recently adopted for Subpart Ja for landfill GCCS plans. A self-implementing approach like the one described above would help resolve Republic's past requests for EPA to address the significant backlog of GCCS design submittals, with the added benefit of reducing both landfill gas emissions and administrative burden.

### **Comment Response:**

The EPA is finalizing the requirement for landfill owners and operators to revise a GCCS design plan within 90 days of expanding operations to an area not covered by the previously approved design plan, and prior to installing or expanding the gas collection system in a way that is not consistent with the design plan. In order to minimize burden on landfill owners and operators and



regulating agencies, the EPA is not finalizing the criterion to revise the design plan prior to implementing a higher operating value.

The EPA appreciates the commenter's suggestion for a self-implementing approach similar to the approach for flare management plans in 40 CFR part 60, subpart Ja. However, the EPA has revised the final rules to provide flexibility regarding design plan approvals. Design plans must continue to be prepared and approved by a professional engineer. The landfill owner or operator must then notify the Administrator that the plan is completed and provide a copy of the plan's signature page. The Administrator will now have 90 days to make a decision about whether the plan should be submitted for review. If the Administrator chooses to review, the approval process continues as outlined in the final rule. However, if the Administrator indicates that submission is not required or doesn't respond within 90 days, the landfill owner or operator can continue to implement the plan with the recognition that they are proceeding at their own risk.

A landfill may accept waste for decades and will continue to generate landfill gas for many years after it stops accepting waste. A landfill can easily generate landfill gas for 50 years or more. Given the ongoing operation and dynamic nature of filling and cover practices over years and even decades, the EPA recognizes that the location, materials, and installation of GCCS components may not be done in a manner that is an exact match to the original design plan. Therefore, the EPA is requiring the design plan to be updated prior to the following two events: expansion of operations to an area not covered by the previously approved design plan and installation or expansion of the GCCS in a way that is not consistent with the design plan. The EPA is retaining this provision in the final rule because of the importance of minimizing landfill gas emissions over time and the need to avoid GCCS expansions that the regulating authority may ultimately not approve.

See response to DCN EPA-HQ-OAR-2003-0451-0100.1, comment excerpt 39, under comment code 15d] for additional reasons why EPA is retaining approval of initial and updated design plans.

Regarding the Subpart Ja provisions for the flare management plan, the EPA notes that this plan focuses on the management and operation of the flare to ensure the system is well-operated and not the upfront design of the flare itself. Because the initial design can significantly affect the long-term operation of the landfill GCCS, and that design is site-specific, the EPA has retained the design plan approval process to provide flexibility to the sites on designing an appropriate system, while also providing a level of regulatory oversight before the system is installed in order to minimize scenarios where an improperly designed system is constructed and installed.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 53

**Sort Order:** 101

**Comment Excerpt:**

A more effective approach would be to use the procedures for similar plans found in the NSPS refinery 40 C.F.R. Part 60, Subpart Ja. The Subpart Ja requires submittal of a flare management plan to the Administrator but does not specify a formal approval process in order to minimize the burden associated with reviewing such plans. The Subpart Ja rule, like the GCCS plan required under Subpart XXX, specifies elements that need to be addressed in order for the plan to be considered adequate and provides an opportunity for a delegated authority to find the plan not adequate if they choose to do so. Unlike the plan required under the Subpart Ja, the GCCS plans require certification by a professional engineer so this approach would be even more appropriate given not all delegated authorities have the internal expertise or resources to effectively implement the GCCS design plan process.

EPA should abandon its proposal to impose new approval requirements that would only add administrative burden without providing any meaningful environmental benefits and allow GCCS plans to be submitted in a procedure similar to that required under NSPS Subpart Ja. In addition, Republic reiterates here its past requests for EPA to address the backlog of GCCS design submittals, or at least provide guidance to landfills that still do not have GCCS design plan approvals.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e] regarding streamlining the approval process. Regarding requirements for updates to design plans see response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 60

**Sort Order:** 102

**Comment Excerpt:**

An alternative approach would be to use the procedures for flare management plans found in the refinery NSPS 40 CFR 60 Subpart Ja. Subpart Ja requires submittal of a flare management plan identifying elements that the plan needs to address. The state agency is not required to approve the plan but can find the plan "not adequate." Unlike the plan required under Subpart Ja, the GCCS plans require certification by a professional engineer so any changes the Administrator later request need to be limited to the completeness of the plan and not the material content. This approach is appropriate given not all delegated authorities have the internal expertise or resources to effectively implement the GCCS design plan approval process. This is also consistent with EPA's longstanding policy of allowing sources to comply with permit applications that have been submitted, even while those applications remain pending, to ensure administrative delays by states or EPA do not result in unintended consequences on the regulated

community. *See, e.g.*, 40 C.F.R. § 70.7(b) ("[I]f a part 70 source submits a timely and complete application for permit issuance (including for renewal), the source's failure to have a part 70 permit is not a violation of this part until the permitting authority takes final action on the permit application ..."); 40 C.F.R. § 70.5(a)(2) ("The source's ability to operate without a permit, as set forth in § 70.7(b) of this part, shall be in effect from the date the application is determined or deemed to be complete until the final permit is issued, provided that the applicant submits any requested additional information by the deadline specified by the permitting authority.").

**Comment Response:**

This commenter also submitted this identical comment in their 2015 letter—DCN-EPA-HQ-OAR-2003-0215-0196, page 15. This response is for both of these comments. See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 152  
**Sort Order:** 103

**Comment Excerpt:**

As a preferred alternative to the approval options discussed above [streamlining and third party], WM urges EPA to re-examine the need for affirmative approval of design plans. The current design plan approval system is not effective, and provides little value or compliance assistance to regulated landfills. Further, we believe that within WM and across the industry, landfill facilities are well-equipped to self-implement design plan requirements. As a practical matter, each WM landfill facility works with one or more professional engineers, either on-staff or in outside consulting firms, who have a high level of familiarity with the landfill and many site-specific considerations that may affect design plan aspects. We believe that these site engineers are best equipped to establish landfill-specific design plans, and that third-party or agency review and approval is not necessary.

As an example, EPA has acknowledged in the context of the Standards of Performance for Petroleum Refineries (40 C.F.R. Part 60, Subpart Ja) that the burden associated with a formalized review process for flare management plans is not warranted. Instead, while submittal and periodic update of the plan is required, and the plan must be followed, formal approval of the plan is not required. "Rather, the rule specifies elements of the plan that need to be addressed in order for the plan to be considered adequate and provides an opportunity for a delegated authority to find the plan not adequate if they choose to do so." 77 Fed. Reg. 56422, 56446 (September 12, 2012). WM requests that EPA consider this approach in Subpart XXX, as well as in Subpart WWW/EG. We believe that this approach will adequately ensure compliance with the regulatory goal of well-designed and well-operated collection and control systems, as well as a significant reduction in burdens currently associated with delayed and inconsistent approaches by reviewing agencies.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0198  
**Comment Excerpt Number:** 61  
**Sort Order:** 104

**Comment Excerpt:**

Another federal example is EPA's Renewable Fuel Standard program. Before a facility may earn program credits (renewable identification numbers – RINs) for producing a renewable transportation fuel, a facility must be registered, with its fuel production process, feedstocks and the fuel itself reviewed and certified by a licensed PE in a document submitted to EPA. In addition, when fuel producers seek fuel pathway certifications for new renewable fuels, various documents that are included in the process must be prepared and certified by a licensed PE for submission to EPA.

EPA also implements regulatory programs that allow facility owners to self-certify regulatory documents. For example, the federal Underground Storage Tank (UST) program allows facility owners to self-certify and notify the Agency that an underground storage tank has been properly installed by using a qualified installer who follows prescribed industry codes. Furthermore, several state voluntary cleanup programs in Illinois, Ohio and Pennsylvania allow site owners to self-certify corrective action projects by submitting Site Investigation, Remedial Objectives, Remedial Action and Remedial Action Completion Reports all certified by a licensed PE.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0176  
**Comment Excerpt Number:** 2  
**Sort Order:** 105

**Comment Excerpt:**

Republic believes that EPA's efforts to revise the emissions guidelines should build on the success of the Section 111 program by providing additional flexibility to optimize the performance of GCCS and eliminates overly-prescriptive requirements. We recommend that EPA adopt a streamlined approach that eliminates the formal design plan approval process and

utilizes a root cause analysis to identify appropriate corrective actions when needed. The formal approval process currently in place has resulted in significant delays in the past because many delegated state permitting authorities lack the expertise needed to issue approvals in a timely and efficient manner. But those approvals are unnecessary because the industry relies upon licensed professional engineers who have the very expertise that so many delegated authorities lack. EPA has approved a more flexible and less prescriptive approach for other industries and should do so for landfills as well.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 29, under comment code 15h] regarding the root cause analysis approach for corrective action. See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e] for comments on a streamlined approach to design plan approval.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 72  
**Sort Order:** 106

**Comment Excerpt:**

The review and approval of the NSPS Design Plans has not been consistent from state to state, or even within the same state, or from district to district. Some states have never approved design plans, even though over 18 years has passed since the promulgation of the NSPS. As stated above, Republic has less than 40 percent of submitted GCCS design plans approved. As landfills become subject to the proposed rule, EPA needs to address the implementation of not just revisions to the GCCS but also the approval for the initial GCCS design process. The lack of response by an agency leaves landfills in an awkward compliance position. After the system is installed when there is no GCCS design plan approval it could later be deemed not acceptable and/or require costly design changes that invalidate the professional engineer's certification.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 27, under comment code 15e.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0176  
**Comment Excerpt Number:** 80  
**Sort Order:** 107

**Comment Excerpt:**

Based on Republic's internal analysis of the status of GCCS approvals, only approximately 40% of the GCCS plans submitted have been approved. That means that 60% of the landfills are still awaiting their initial approval, as well as the approval of any needed revisions to the GCCS design. As a result, many landfills will be unable to expand until the initial GCCS plan and any revisions to the plan are approved, which could delay the installation of equipment to collect and control additional landfill gas. Due to these delays, landfill gas reductions that would otherwise be achieved will be lost where State Agency approval of the required design plans cannot be obtained in a timely manner. The lack of response by an agency leaves landfills in an awkward position—if the landfill installs the needed system anyway, prior to receiving an approved GCCS design plan, the regulatory authority could later deem it insufficient, invalidating the professional engineer's certification and potentially requiring costly design changes to correct.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 27, under comment code 15e.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 51  
**Sort Order:** 108

**Comment Excerpt:**

Based on our experience, regulatory agencies have approved less than 40 percent of submitted GCCS design plans. With the significant backlog currently awaiting initial approval, adding new approval requirements hardly seems appropriate or realistic. Republic asks EPA to consider an alternative approach that would streamline the approval process.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 27, under comment code 15e.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 139  
**Sort Order:** 109

**Comment Excerpt:**

EPA must streamline the design plan update and approval process. First, under Subpart WWW and the Emission Guidelines, WM has observed a very low rate of review and approval of design plans generally, leaving affected facilities without clear comfort that the design plan requirements have been met. WM estimates that only 40% of its landfills operate pursuant to an approved current design plan. WM attributes this low action rate to a lack of experienced personnel within implementing agencies, lack of resources, and simple backlogs. Thus, although Subpart WWW requires an agency to which a design plan has been submitted to "approve it, disapprove it, or request that additional information be submitted" WM has observed that inaction is the far more likely response. *See* 40 C.F.R. §60. 752(b )(2)(i). This inaction is compounded by confusion and inconsistencies with respect to agencies' responses to requests for approval of alternative compliance measures, including wellhead operating parameters for temperature, nitrogen or oxygen.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 27, under comment code 15e.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 50

**Sort Order:** 110

**Comment Excerpt:**

Based on the low frequency with which design plans are approved by states, it is clearly a burden on them. In our comments last year, we reported that only 40% of landfills were able to receive an approval to their design plan. Therefore, we suggest that EPA allow a self-implementing process for design plans. This process would require landfills to obtain independent, professional engineer certifications to the design plans. The plan would be submitted to the regulators for their records and maintained onsite for inspection.

Use of state-licensed professional engineers would greatly simplify the process. Every state regulates the practice of engineering to ensure public safety by granting only Professional Engineers (PEs) the authority to sign and seal engineering plans, and to offer their services to the public. To use the PE seal, engineers must complete several steps to ensure their competency. Engineers seeking a state license must complete a four-year college degree, work under another Professional Engineer for at least four years, pass two intensive competency exams and earn a license from their state's licensure board. Then, to retain their licenses, PEs must continually maintain and improve their skills throughout their careers. Use of state-licensed PEs would assure EPA and state agencies that only competent, licensed professionals would certify the design plans and subsequent revisions.

There is ample precedent for use of licensed PEs to prepare and certify documents. For example, under the Federal Spill Prevention Control and Countermeasures (SPCC) program, preparation of the SPCC Plan is the responsibility of the facility owner or operator, or an engineer or consultant may prepare the plan. In either case, an independent, registered PE must certify the plan. Facilities that store less than 10,000 gallons of oil, may qualify to self-certify their SPCC Plan. By certifying a facility's SPCC Plan, the Professional Engineer, having examined the facility, attests that:

1. (s)he is familiar with the requirements of Part 112;
2. the engineer or their agent has visited and examined the facility;
3. the Plan has been prepared in accordance with good engineering practices, including consideration of applicable industry standards, and with the requirements of Part 112;
4. procedures for required inspections and testing have been established; and
5. the Plan is adequate for the facility.

Also, the NESHAP for Brick and Structural Clay Products Manufacturing Subpart JJJJJ finalized in September 2015 requires affected sources to prepare, implement, and revise as necessary an operation, maintenance and monitoring plan (OM&M Plan). While it must be available for inspection, the OM&M plan does not require prior Agency approval. The final NESHAP for Clay Ceramics Manufacturing Subpart KKKKK, also finalized in September 2015, requires the preparation, revision and implementation of OM&M plans, but again does not require Agency approval.

A third example is EPA's Renewable Fuel Standard program. Before a facility may earn program credits (renewable identification numbers – RINs) for producing a renewable transportation fuel, a facility must be registered, with its fuel production process, feedstocks and the fuel itself reviewed and certified by a licensed PE in a document submitted to EPA. In addition, when fuel producers seek fuel pathway certifications for new renewable fuels, various documents that are included in the process must be prepared and certified by a licensed PE for submission to EPA.

EPA also implements regulatory programs that allow facility owners to self-certify regulatory documents. For example, the federal Underground Storage Tank (UST) program allows facility owners to self-certify and notify the Agency that an underground storage tank has been properly installed by using a qualified installer who follows prescribed industry codes. Furthermore, several state voluntary cleanup programs in Illinois, Ohio and Pennsylvania allow site owners to self-certify corrective action projects by submitting Site Investigation, Remedial Objectives, Remedial Action and Remedial Action Completion Reports all certified by a licensed PE.

As can be seen, many federal rules allow certification using PEs. We recommend that EPA adopt a similar approach for these rules.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e.



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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 59

**Sort Order:** 111

**Comment Excerpt:**

**Use of state-licensed professional engineers would greatly simplify the process EPA outlined in the preamble and memorandum** including establishment of criteria for competence, independence, reporting and oversight. Every state regulates the practice of engineering to ensure public safety by granting only Professional Engineers the authority to sign and seal engineering plans, and to offer their services to the public. To use the PE seal, engineers must complete several steps to ensure their competency. Engineers seeking a state license must complete a four-year college degree, work under a Professional Engineer for at least four years, pass two intensive competency exams and earn a license from their state's licensure board. Then, to retain their licenses, PEs must continually maintain and improve their skills throughout their careers. Use of state-licensed PEs would assure EPA and state agencies that only competent, licensed professionals would certify the design plans and subsequent revisions.

There is ample federal and state regulatory precedent for either use of licensed PEs to prepare, review and certify regulatory documents, or a self-implementing option of preparing a plan that meets listed criteria, and having it available for inspection. For example, under the Federal Spill Prevention Control and Countermeasures (SPCC) program, preparation of the SPCC Plan is the responsibility of the facility owner or operator, or an engineer or consultant may prepare the plan. In either case, an independent, registered PE must certify the plan. Facilities that store less than 10,000 gallons of oil, may qualify to self-certify their SPCC Plan. By certifying a facility's SPCC Plan, the Professional Engineer, having examined the facility, attests that:

1. (s)he is familiar with the requirements of Part 112;
2. the engineer or their agent has visited and examined the facility;
3. the Plan has been prepared in accordance with good engineering practices, including consideration of applicable industry standards, and with the requirements of Part 112;
4. procedures for required inspections and testing have been established; and
5. the Plan is adequate for the facility.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e. The EPA agrees that professional engineers must meet significant criteria for competence, independence, and reporting in individual states and the EPA relies on the licensing

process to ensure a high level of competence by licensed professional engineers. The EPA requires that the GCCS design plan must be prepared by a professional engineer and the plan must meet the criteria outlined in the rules. In addition, the rules require collection devices within the interior must be certified to achieve comprehensive control of surface gas emissions by a professional engineer.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 60

**Sort Order:** 112

**Comment Excerpt:**

EPA recently finalized the NESHAP for Brick and Structural Clay Products Manufacturing, 40 C.F.R. Part 63, Subpart JJJJJ in September 2015. Affected sources must prepare, implement, and revise as necessary an operation, maintenance and monitoring plan (OM&M Plan). While it must be available for inspection, the OM&M plan does not require prior Agency approval. The final NESHAP for Clay Ceramics Manufacturing in 40 C.F.R. Part 63, Subpart KKKKK, also finalized in September 2015, requires the preparation, revision and implementation of OM&M plans, but again does not require Agency approval.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 47

**Sort Order:** 113

**Comment Excerpt:**

EPA could reduce these burdens on state agencies and increase the regulated community's confidence if the Agency would finalize a self-implementing process for landfills to obtain independent third-party professional engineer certifications of plans that can be submitted or maintained onsite for inspection. Use of state-licensed professional engineers would greatly simplify the process outlined in the preamble, and establish criteria for competence, independence, reporting and oversight. Every state regulates the practice of engineering to ensure public safety by granting only PEs the authority to sign and seal engineering plans and offer their services to the public. The state environmental regulatory

agencies would still be able to verify the adequacy of the GCCS design plans every six months by reviewing the required semi-annual reports and the quarterly SEM reports contained therein. The SEM reports provide the state agencies the ultimate performance review of whether or not the GCCS is adequately controlling surface emissions. Therefore there is no need for agency approval or third party verification of GCCS Design Plans as the performance of the GCCS will be provided to the regulatory agency every six months.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e.

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**Commenter Name:** Mark C. Messics, Senior Business Development Manager

**Commenter Affiliation:** Talen Renewable Energy, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0160

**Comment Excerpt Number:** 1

**Sort Order:** 114

**Comment Excerpt:**

The Proposed Revisions provide for a third-party verification program that could be utilized in lieu of the current approach of requiring EPA or state review and approval of site-specific design plans and plan revisions. We agree that the current approval system needs improvement. We routinely find ourselves receiving sub-par LFG (fuel) while our landfill hosts wait inordinate amounts of time to receive the requisite approvals before they can install new wells, etc. to correct the gas collection system problems that they identify "in the field".

Use of state-licensed professional engineers would greatly simplify the process EPA outlined in the preamble, as every state already regulates the practice of engineering to ensure public safety by granting only Professional Engineers (PEs) the authority to sign and seal engineering plans and offer their services to the public. *EPA should, thus, allow landfills to immediately proceed with gas collection system improvements once a PE has signed and sealed the appropriate gas collection system design plans.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e. See response to EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 57

**Sort Order:** 115

**Comment Excerpt:**

EPA should allow independent certification of design plans by registered PEs in lieu of Agency approval.

We agree with EPA that review and approval of design plans is clearly a burden for many states. We estimated in our comments on the proposed Subpart XXX and ANPRM EG that only 40 percent of our landfills operate pursuant to an approved design plan. WM attributes this low action rate to a lack of enough experienced personnel within implementing agencies to conduct reviews, lack of resources, and simple backlogs. We believe EPA could meaningfully reduce administrative burdens on state agencies and increase the regulated community's confidence that landfill are operating with appropriately-approved plans if the Agency would finalize a process for landfill owner/operators to obtain third-party professional engineer certifications of plans that can be maintained onsite for inspection and/or submitted to the implementing agency for its records.

Within WM and across the industry, landfill facilities are well equipped to obtain PEs to review and certify design plans and revisions. As a practical matter, each WM landfill facility works with one or more professional engineers from outside consulting firms, who have a high level of familiarity with the landfill and the many site-specific considerations that may affect aspects of the design plan. We believe that these third-party engineers are best equipped to establish landfill-specific design plans. As an alternative, it may be feasible to explore a pre-qualification program that would establish a list of presumptively qualified engineers or firms from among each state's licensed professional engineers for preparation of design plans and updates. This option would provide added comfort to the agencies while removing delays and uncertainty for affected facilities. Furthermore, EPA and the delegated state agencies' primary oversight of the GCCS system is not at the design plan stage, but rather through the permitting process once a landfill has triggered the need to install a GCCS. Landfills must apply to the regulators for a construction permit, and the state agency must permit all control devices associated with the GCCS. It is through permitting, required wellhead pressure and surface emissions monitoring and remediation and required documentation of current as-built conditions, not the review of a conceptual design that gives regulators ample oversight mechanisms to ensure the GCCS is properly installed and operated.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 8

**Sort Order:** 116

**Comment Excerpt:**

The proposed rule have added requirements for submitting an updated design plan to include: within 90 days of expansion into new areas not covered by the previously approved design plan; prior to installing or expanding the GCCS in a manner other than described in the previously approved design plan; and prior to implementing elevated parameters after they have been submitted and approved through a separate process. *USEPA is attempting to clear up some confusion regarding design plan submittal requirements but has not addressed the well-known issue of significantly delayed design plan approvals. In fact, USEPA appears to be exacerbating the problem by prescribing additional iterations of a facility's design plan for what amount to fairly routine occurrences (i.e. prior to implementing an approved alternative operating value). This will lead to delays in implementation while facilities are waiting for agency approval, which will ultimately result in increased emissions.*

*As an alternative, Subpart WWW requires reporting of key operations information in the annual report, this annual report could be expanded slightly to more clearly provide the other elements which appear have become a greater concern (i.e. Higher operating values, alternative compliance timelines (less than 120 days). The proper operation of a GCCS is basically like managing a massive scale biological process where new and different scenarios are presented and are routinely handled by seasoned operators that are well-versed in the industry. Again, the creation of additional administrative processes that take the decisions out of the hands of the operators of the facilities is completely contrary to the concepts provided in Title V of the Clean Air Act. A system should be developed which requires self-implementation and self-reporting that demonstrates how the exceedance(s) were remedied and/or expansions were completed.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e] for streamlining the approval process. See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d] for procedures on updates to design plans.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 56

**Sort Order:** 117

**Comment Excerpt:**

EPA should streamline the design plan update and approval process.

EPA's Proposed EG (80 Fed.Reg. 52111) offers two criteria for when an affected source must update its design plan and submit it to the Administrator for approval: 1) within 90 days of expanding operations to an area not previously covered by the design plan; and 2) prior to installing or expanding GCCS in a manner other than one described in a previously approved design plan. WM agrees that both circumstances should be documented in a timely manner in the

design plan, but we do not agree that these updates or even the original design plan need to be approved by EPA or a state agency. These proposed changes will only increase administrative burdens for the reviewing agencies and compound the existing backlog of unapproved plans. As EPA itself notes in the preamble to the proposed Subpart Cf, the Agency is considering concepts to reduce the burden associated with EPA or state review of design plans and revisions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e] for streamlining the approval process. See response to EPA-HQ-OAR-2003-0215-0122, excerpt number 5, under comment code 15d] for procedures on updates to design plans.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 13  
**Sort Order:** 118

**Comment Excerpt:**

Controlling a landfill is basically like operating a massive scale leak detection and repair program where new and different scenarios are presented and are routinely handled by the industry. Again, the creation of additional administrative processes that take the decisions out of the hands of the operators of the facilities is completely contrary to the concepts provided in Title V of the Clean Air Act. A system should be developed which requires self-implementation and self-reporting that demonstrates how the exceedance(s) were remedied and/or expansions were completed. The proposed approach will lead to delays in implementation while facilities are waiting for agency approval, which will ultimately result in increased emissions.

Self-implementation is exactly the process that has been implemented for the past 18 years. The industry has quite clearly proved state agencies nor USEPA regions timely reply to design plan requests or design plan revisions. The professionals who support the facilities in their on-going efforts to comply routinely make decisions that maintain collection and control regardless of the sideline interactions by regulatory personnel. In many cases, our clients have continued to submit data and information for almost a decade while the agency has never replied. Some states have implemented their own processes and procedures which request many additional data elements and USEPA has allowed these unchecked policies to be implemented which further exacerbates the problem.

A formal approval does not typically occur and these plans are already certified by Professional Engineers. USEPA should certainly adopt a policy that submittal of design plans or revisions allows the facility to self-implement the continued development of the facility. USEPA and/or state agencies always have the ability to later comment or issue notices of violation after the fact if they so desire if a facility did not follow the requirements properly. This process will give operators the ability to implement these revisions in a timely manner.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 27, under comment code 15e] for streamlining the approval process. For updates to the design plan, see response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 27, under comment code 15e.

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**Commenter Name:** Peter Zalzal

**Commenter Affiliation:** Environmental Defense Fund (EDF)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0204

**Comment Excerpt Number:** 20

**Sort Order:** 400

**Comment Excerpt:**

EPA requests comment on whether owners or operators should be required to include a description of early gas collection measures or best management practices in their GCCS design plan in order for the reviewing professional engineer or Administrator to ensure that emissions are minimized. As we have previously discussed in our comments on the NSPS for MSW Landfills and technical White Paper, there are numerous BMPs available that can ensure early collection and capture of landfill gas.<sup>68</sup> These include the accelerated installation of horizontal wells, early installation of a final cover system, and using the leachate collection and removal system to capture gas.<sup>69</sup> We support inclusion of these measures in GCCS plans.

[Footnote 68] White Paper at 12-13; Comments at 4-7.

[Footnote 69] Id. See also 80 Fed. Reg. at X.

**Comment Response:**

The EPA is not finalizing any BMPs or early gas collection measures in the final rule. See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt 53, under [comment code 5g. Although the EPA encourages the use of appropriate BMPs to ensure the best possible design and operation of each GCCS, the EPA does not consider any particular BMP to constitute BSER and, is therefore not finalizing provisions that would require the use of BMPs. Nonetheless, owners and operators may include BMPs in their GCCS design plans if the BMPs contribute to, or at least do not detract from, a well-designed GCCS.

## **15.6 Design Plan 3rd party Certs**

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### **EG12. Design Plan 3rd party Certs**

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 62

**Comment Excerpt:**

Third-party certification programs are complex to administer and expensive.

In EPA's request for input on third-party verification programs in the ANPRM, the Agency cited a report by Lesley McAllister entitled "Third-Party Programs to Address Regulatory Compliance."<sup>16</sup> In her report, Ms. McAllister recommends,

"Agencies that are considering third-party compliance assessment programs to achieve regulatory goals should compare a third-party approach with direct governmental compliance assessment and with requiring regulated entities to make a self-declaration of compliance."<sup>17</sup>

The McAllister report highlighted evaluation of third-party certification made by EPA's GHG Reporting Program. After reviewing several options with respect to the GHGRP, EPA decided not to use third-party verification due to the significant costs associated with "developing the program; approving third parties and training them; ensuring that conflicts of interest were not present; and performing ongoing oversight. In EPA's decision not to require third-party verification, EPA also emphasized that the activities necessary to set up a third-party program would "slow down implementation of the [greenhouse gas reporting] rule."<sup>18</sup>

Based on our review of EPA's approach and the supporting memorandum, we conclude that the Agency has failed to show that the specific requirements associated with verifying landfill design plans are amenable to a third-party verification approach. We also note that implementation of a third-party verification system would likely take significant time, and we are concerned that affected landfills could be in compliance jeopardy until the system was in place and working well. In addition, we are concerned that the costs of verification will be significant. A significant number of landfills are municipally-owned. These landfills are chronically under-funded and may be unable to pay for required verification services.

While the Agency stated in the ANPRM and Proposed EG that "utilizing a third-party certification program could help to standardize and expedite design plan reviews,"<sup>19</sup> we are not confident that this statement is accurate. EPA has not yet succeeded in standardizing the approaches taken by states with respect to design plan approvals and many other issues. We suspect that it may be even more difficult for EPA to ensure the consistent application of an objective process by a large number of the potential future verifiers, particularly as EPA is seeking to out-source the verification of design plans, which are site-specific and very diverse across the country.

For these reasons, we believe that EPA should abandon its idea of third-party verification for design plans. As noted herein, the current design plan, approval system is not effective, and provides little value or compliance assistance to regulated landfills. Reliance on third-party Professional Engineers would relieve administrative burdens for implementing agencies and provide compliance assurance to affected facilities. Certification of plans and plan revisions by licensed PEs would provide additional assurance to agencies. WM requests that EPA consider this type of approach in both Subpart XXX and Subpart Cf. We believe that this approach will adequately ensure compliance with the regulatory goal of well-designed and well-operated collection and control systems, as well as significantly reduce burdens associated with delayed and inconsistent approaches by reviewing agencies.

[Footnote 16] USEPA ANPRM, footnote 94, p. 100.

[Footnote 17] Report, p. 59-60.



[Footnote 18] Report, p. 59-60.

[Footnote 19] 79 Fed. Reg. at 41790.

**Comment Response:**

In the final rule, EPA is not requiring a third-party program for design plan review. The EPA agrees with commenters that third-party certification programs would be difficult and expensive to administer. Upon reviewing options for a previous third-party certification with respect to the EPA's Greenhouse Gas Reporting Program, EPA decided not to use third-party verification because EPA would need to develop the criteria and systems needed to implement that rule and ensure high quality emissions verifications. Specifically, it would take more time to conduct verification of data and perform review and consistency checks; it would require development of a system to qualify and accredit third-party verifiers, conduct oversight and ensure conflicts of interest were not present; the cost to reporters using third-party verification would have been substantial; and receipt of emissions data from reporters using third-party verification would likely be delayed due to the extra time required for third-party verification. (74 FR 56282 and 56283, October 30, 2009). For similar reasons, the EPA is not finalizing a third-party program for design plan review. The EPA acknowledges that oversight and implementation of such a program could itself be costly, administratively burdensome, take significant time to approve and train third parties, and be difficult to ensure consistent application of design plan verification.

The EPA reaffirms that the gas collection and control system (GCCS) design plan must be prepared and signed by a registered professional engineer and meet requirements described in 40 CFR 60.767(c) and 60.769; and 40 CFR 60.38f(d) and 60.40f.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 58

**Comment Excerpt:**

WM does not support EPA's proposed third party verification approach.

EPA's ANPRM for existing landfills solicited comments on the possibility of developing a third-party design plan certification program. WM commented that the discussion of this proposal was overly general. Although EPA stated that it is considering a "broad range of possible design features," it did not describe any of them. In the Proposed EG, the Agency provides more information about its goal for such a program. "The third-party program would supplement or replace the current approach of requiring EPA or state review and approval of site-specific design plans and plan revisions." EPA further states that it believes modifying the regulations to provide for the review and approval of the plans by competent and independent third-parties would reduce these burdens." (See 80 Fed. Reg. at 52138)

While WM agrees that use of independent, third-party experts, i.e., registered professional engineers to review and sign design plans in lieu of EPA or state agency approval would greatly reduce burdens for regulators, EPA does not describe such a simple and straightforward

approach in its proposal. Instead, EPA describes in the preamble and in an accompanying memorandum in the docket entitled "Using Third-party Audits to Improve Compliance," a cumbersome process of third-party site audits, and an even more complex and unwieldy description of the necessary elements for approving, qualifying and overseeing third-party auditors. **The potential third-party program described by EPA is neither comparable nor relevant to the verification or certification required for landfill design plans, nor would it reduce administrative burdens.**

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 51

**Comment Excerpt:**

The proposed rule also solicits comments on the possibility of developing a third-party design plan certification program which would supplement or replace the current approach of requiring review and approval of site-specific design plans and plan revisions to reduce administrative burdens. While we support the use of independent, registered professional engineers to develop and certify design plans as described above, this is not what is described. Instead, EPA describes a complex process for both conducting the third-party site audits and approving, qualifying and overseeing third-party auditors. We do not believe that the program described will reduce administrative burdens. Rather, we believe it will increase them.

In Lesley McAllister report, "Third-Party Programs to Address Regulatory Compliance,"<sup>1</sup> Ms. McAllister recommends,

"Agencies that are considering third-party compliance assessment programs to achieve regulatory goals should compare a third-party approach with direct governmental compliance assessment and with requiring regulated entities to make a self-declaration of compliance."<sup>2</sup>

The McAllister report highlighted evaluation of third-party certification made by EPA's GHG Reporting Program. After reviewing several options with respect to the GHGRP, EPA decided not to use third-party verification due to the significant costs associated with "developing the program; approving third parties and training them; ensuring that conflicts of interest were not present; and performing ongoing oversight. In EPA's decision not to require third-party verification, EPA also emphasized that the activities necessary to set up a third-party program would "slow down implementation of the [greenhouse gas reporting] rule."<sup>3</sup>

Based on our review, we do not believe that the Agency has demonstrated that the design plans are amenable to a third-party verification approach. In addition, implementation of a third-party verification system would likely take significant time, and affected landfills could be in

compliance jeopardy until the system was in place and working well. Last, verification costs could be significant adding costs to landfills and making them very reluctant to make any changes to the plans once they are in place.

For these reasons, we recommend relying on the third party certification using independent registered professional engineers as discussed above for design plans.

[Footnote 1] USEPA ANPRM, footnote 94, p. 100

[Footnote 2] Report, p. 59-60

[Footnote 3] Report, p. 59-60

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 145

**Comment Excerpt:**

WM does not support EPA's proposed third party verification option. EPA's ANPRM discussion of a third party certification procedure is another option that should be evaluated carefully; however, EPA's discussion of this proposal is overly general. *See* 79 Fed.Reg at 41790. Although EPA stated that it is considering a "broad range of possible design features," it did not describe any of them. It would have been far more helpful for EPA to provide more detail with respect to the issues that must be addressed when considering a third-party verification program, discuss the insights the Agency gained from the seven articles referenced footnotes at 94 -101 in the ANPRM, and share some lessons learned from the Agency's consideration of third-party verification in other regulatory proceedings.

We have reviewed all of the cited articles and websites, and we do not believe that these citations represent a thorough or appropriate review of either the literature or the significant issues that must be addressed when considering third-party verification. EPA simply dropped footnotes, and provided no information on why the cited programs or articles would be relevant to the type of program the Agency is considering. Several of the citations described programs that are not comparable to the verification required for landfill design plans.<sup>4</sup> In other cases, the information provided by EPA in the footnote led to a general website, with no guidance on what content there would be relevant.<sup>5</sup> Almost all of the rest were simply irrelevant.<sup>6</sup> EPA did provide a link to the California GHG Reporting Program's verification program, but did not offer any observations on the implications of this approach.<sup>7</sup>

[Footnotes]

(4) Footnote 96 was a report from the Missouri Dept. of Natural Resources on a new vehicle emissions monitoring program, which is not directly relevant to the Landfill NSPS or EG, as that

program has very specific technical processes that are not comparable to the review of landfill design plans. Similarly, footnote 100 took us to a description of the Massachusetts underground storage tank inspection program, which is not similar to the review of landfill design plans.

(5) Footnote 97, for example, provided a link to the main website for the Renewable Fuels Standard program, with no further direction on what part of the rule was being highlighted. We note that EPA has recently established a voluntary third-party audit program to assure verify RINs, but this type of focused and voluntary program does not appear to be a model for third-party verification of landfill design plans. Footnote 98 was a link to EPA's Wood Heater Compliance Monitoring Program. Again, we were directed to a general page on the program with no indication of what we were expected to find. There was information on third-party certification of wood heaters, which is not relevant to the landfill NSPS or EG, but mention of third party verification.

(6) Footnote 95, for example, discussed an experiment to reduce corruption in a third-party verification in India, which is neither relevant nor particularly inspiring. Footnote 101 was simply a link to companies that are licensed to conduct hazardous waste site cleanups in Massachusetts and added nothing to the discussion.

(7) USEPA ANPRM, footnote 99, p. 100.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 146

**Comment Excerpt:**

A report prepared by Lesley McAllister entitled "Third-Party Programs to Assess Regulatory Compliance" appears to be relevant.<sup>8</sup> Among other things, the report outlined the types of issues that must be addressed when evaluating whether a third-party verification program is appropriate. It also described the types of programmatic elements that are required, including processes related to accrediting and approving verifiers, the selection of verifiers by regulated entities, ensuring that all reviews are conducted in a consistent manner, determining what information must be reported to the Agency, and conducting oversight. Moreover, it notes that "regulatory third-party programs pose risks. If third party programs are not well-conceived and well-operated, they may both undermine the achievement of regulatory goals and impose high costs on regulated entities."<sup>9</sup>

Of particular relevance to EPA's request in the ANPRM, the McAllister report recommends that "Agencies that are considering third-party compliance assessment programs to achieve regulatory goals should compare this approach with others. Most importantly, the agency should compare a third-party approach with direct governmental compliance assessment and with requiring regulated entities to make a self-declaration of compliance."<sup>10</sup> With respect to this

issue, the report highlights the work of an EPA program not cited in the ANPRM: EPA's GHG Reporting Program. After reviewing several options with respect to the GHGRP, EPA decided not to use third-party verification due to the significant costs associated with "developing the program; approving third parties and training them; ensuring that conflicts of interest were not present; and performing ongoing oversight. The report also observed that, even with third-party certification, the EPA would probably need to develop specialized software to receive and review the data and accompany third parties on site visits. In EPA's decision not to require third-party verification, EPA also emphasized that the activities necessary to set up a third-party program would 'slow down implementation of the [greenhouse gas reporting] rule.'" <sup>11</sup>

[Footnotes]

(8) USEPA ANPRM, footnote 94, p. 100: McAllister, Lesley K., Third-Party Programs to Assess Regulatory Compliance, Presented at the Administrative Conference of the United States, October 22, 2012.

(9) [McAllister] Report, p. 58.

(10) [McAllister] Report, p. 59-60.

(11) [McAllister] Report, p. 59-60.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 69

**Comment Excerpt:**

**REPUBLIC OPPOSES THIRD PARTY VERIFICATION & SELF-AUDITING.**

EPA has requested comment on whether to establish a third-party GCCS design certification program. The goal of a third-party verification program would be to supplement or replace the current approach of requiring EPA or state review and approval of site-specific design plans and plan revisions. While we agree that a third-party reviewer system could reduce the burden and backlog experienced for regulatory authorities, we are concerned that the proposed third-party certification could itself be administratively burdensome and costly. Republic also believes that third party verification is unnecessary because landfills already use independent and state-registered professional engineers that are experts in landfill gas design and operation. A third party verification will simply add another layer of review to an already burdensome process known for delays, as noted elsewhere in these comments.

EPA's proposed rule preamble and its supporting memorandum entitled "Using Third-party Audits to Improve Compliance" describe a process for third-party site audits and for approving, qualifying, and overseeing third-party auditors. However, nowhere does EPA explain how these

"audit" procedures are expected to result in the timely approval of GCCS plans. Republic does not consider the proposed "audit" process to be an appropriate mechanism for reducing administrative burden. Instead, Republic believes that it will most likely increase the complexity and cost of the approval process without achieving the goal of improving the timeliness or effectiveness of the approval process. EPA also appears to have ignored the cost of this audit program, making it difficult to comment on whether EPA's audit program is reasonable.

Rather than third party verification, Republic recommends that EPA consider the streamlined approval process outlined above. We believe that third party certification implemented by a state certified professional engineers meets the intent of the rule – ensuring compliance with a well-operated and well- designed GCCS. The reporting and compliance demonstrations of the rule will provide additional assurance to EPA and regulated authorities that each GCCS meets the emission guidelines.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 34

**Comment Excerpt:**

*In the proposed rules, USEPA requested input on the possibility of establishing a third-party design plan certification program which would supplement or replace the current approach of requiring USEPA or state review and approval of site-specific design plans and plan revisions.*

We do not support replacing USEPA approval with third-party approval. This would create an additional burden on both the agency and industry as a new process would need to be outlined and implemented. In practice, we know that agency approval of design plans and plan revisions rarely occurs in a timely fashion. While using third-party verification to supplement (rather than replace) agency approval, we still believe this will be a slow process and will hold operators back from operating the GCCS as it was designed.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 148

**Comment Excerpt:**

While we agree that a third-party reviewer system could reduce the burden and backlog experienced by reviewing agencies, we are concerned that oversight and implementation of a third-party certification system could itself be administratively burdensome and costly, and will simply add another layer of review to an already burdened process. WM has experienced difficulties with third party verification programs in the context of carbon offset and greenhouse gas reporting rules. One specific concern is cost. Even where WM engages outside engineering firm assistance in developing a plan, WM has found that the cost of the verification service is often more than the initial cost of developing the plan. Thus, requiring separate third party verification could more than double the cost of design plan development without adding value. For example, in the context of commenting on EPA's Greenhouse Gas Reporting Rule in 2009, WM estimated a total annual cost of \$500,000 across WM facilities for third party verification services. In fact, WM's experiences since that time with various state GHG reporting rules (CA, MA) have shown that third party verification costs range from \$4,500 - \$10,000 per site and per report. While preparation and verification of design plans may occur on a less frequent basis than annually, we would expect that design plan verification may require more effort than greenhouse gas inventory reports.

**Comment Response:**

The EPA thanks the commenter for the additional data on costs for verification services. Regarding EPA's decision on third party program, see response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 147

**Comment Excerpt:**

The Agency must evaluate whether the specific requirements associated with verifying landfill design plans are amenable to a third-party verification approach. Implementation of a third-party verification system would likely take significant time, and we are concerned that affected landfills could be in compliance jeopardy until the system was in place and working well. We are concerned that the costs of verification will be significant. As described in other parts of these comments, a significant number of landfills are municipally owned. These landfills are chronically underfunded and may be unable to pay for required verification services.

We supported EPA's decision in the GHGRP rulemaking to conduct Federal, instead of third party, verification. The ANPRM states that that "utilizing a third-party certification program could help to standardize and expedite design plan reviews,"<sup>12</sup> but we are not confident that this statement is accurate. EPA has not yet succeeded in standardizing the approaches taken by states with respect to design plan approvals and many other issues. We suspect that it may be even more difficult for EPA to ensure the consistent application of an objective process by a large number of the potential future verifiers, particularly as EPA is seeking to out-source the verification of design plans, which are site-specific and very diverse across the country.

[Footnote]

(12) 1279 Fed. Reg. at 41790

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 150

**Comment Excerpt:**

We believe that EPA should abandon the idea of third-party verification for design plans. Should EPA proceed, however, we urge the Agency to thoroughly review the many issues that will arise, and take further notice and comment before promulgating such a program. As an alternative, it may be feasible to explore a pre-qualification program that would establish a list of presumptively qualified engineers or firms for preparation of design plans and updates. Like many state remediation programs, this option would provide added comfort to the agencies that regulatory standards are being met while removing delays and uncertainty for affected facilities.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 34

**Comment Excerpt:**

The EPA requested comments on the use of a third-party verification system for the approval of Design Plans. While we agree that a third-party review system could reduce the burdens and backlog experienced by reviewing agencies, we are concerned that oversight and implementation of a third-party certification system could itself be administratively burdensome and costly, and will simply add another layer of review to an already burdened process. Our members have experienced difficulties with third party verification programs in the context of carbon offset and greenhouse gas reporting rules. One specific concern is cost. Experience has shown that the cost of the verification service is often more than the initial cost of developing the plan. Thus, requiring separate third-party verification could more than double the cost of design plan development without adding value.

**Comment Response:**



See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 149

**Comment Excerpt:**

In a third party verification system there is a risk of disagreement among the two engineering firms, each of which may legitimately claim to be subject matter experts, but may have different perspectives on design elements and approaches. WM has also had difficulty with conflict of interest provisions in these programs. With such a wide network of operations, WM has found that it is conflicted from using most experienced industry consultants, and is thereby left with poor choices of third party verifiers that are not familiar either with the industry or with WM's business operations.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** William C. Allison V, Director, Air pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2014-0451-0163

**Comment Excerpt Number:** 4

**Comment Excerpt:**

The Division supports EPA's effort to streamline and reduce regulatory program burdens. However, the Division has concerns about a third-party design plan certification program. Moreover, the review and approval of site-specific design plans and plan revisions is not a resource intensive activity for Colorado because the Division does not receive many plans or plan revisions, and the Division has found that Colorado's landfills are competent concerning how to design an approvable GCCS plan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 4

**Comment Excerpt:**

The DEP reviews and approves the design plans for MSW landfills. Therefore, the creation of a third-party design certification program is unnecessary. While such programs are represented as reducing burdens on permitting agencies and permitting backlogs, concerns regarding the integrity of third-party programs and the potential for conflicts of interest should not be ignored. EPA's rationale for not adopting a similar program for EPA's Mandatory Greenhouse Gas Reporting Program requirements in 40 CFR Part 98 should be fully considered in this instance.

DEP believes that EPA should not adopt a third party verification program for MSW landfills. The DEP determines compliance with complex Federal and State requirements for MSW landfills and does not support EPA's proposal to establish a third party verification program, which could be administratively burdensome, especially in regards to ensuring the integrity of the program and maintaining effective oversight.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Robert H. Colby and William O'Sullivan, Co-Chairs  
**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0197  
**Comment Excerpt Number:** 21

**Comment Excerpt:**

With respect to the development and implementation of a third-party design plan certification program, NACAA appreciates that the intent of the program would be to reduce the burden on state and local regulatory agencies. However, the proposed program is not sufficiently developed to implement at this time.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity  
**Commenter Affiliation:** Friends of the Earth  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0121  
**Comment Excerpt Number:** 38

**Comment Excerpt:**

We oppose shifting plan review to private third-party reviewers.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Ben Schreiber, Climate and Energy Program Director and Vera Pardee, Attorney for Center for Biological Diversity

**Commenter Affiliation:** Friends of the Earth

**Document Control Number:** EPA-HQ-OAR-2003-0215-0121

**Comment Excerpt Number:** 52

**Comment Excerpt:**

**Third party reviews should not be implemented.** EPA recounts that the landfill industry would like to reduce the “burden” on state regulators by delegating plan review to private third-party reviewers whom the industry would pay. The potential for conflicts of interests and chicanery of all kinds is obvious. Plan review is an essential governmental oversight function and cannot be delegated. This proposal should be summarily dismissed from further consideration.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12.

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**Commenter Name:** Frank L. Kohlasch, Manager, Air Assessment Section Environmental Analysis and Outcome Division

**Commenter Affiliation:** Minnesota Pollution Control Agency (MPCA)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0197

**Comment Excerpt Number:** 6

**Comment Excerpt:**

The MPCA supports the requirements for GCCS design review and approval by the state. It is the ongoing practice of the MPCA to conduct review and approval of the design of proposed GCC systems at both closed and operating landfills. However, because agencies are frequently challenged to obtain new resources for additional regulatory oversight, the MPCA recommends that EPA develop a third party review program, and allow states to use it, or not.

**Comment Response:**

In the final rule, EPA is not requiring a third party program for design plan review. The EPA agrees with commenters that third-party certification programs would be difficult and expensive to administer. Upon reviewing options for a previous third-party certification with respect to the EPA’s Greenhouse Gas Reporting Program, EPA decided not to use third-party verification because EPA would need to develop the criteria and systems needed to implement that rule and ensure high quality emissions verifications. Specifically, it would take more time to conduct verification of data and perform review and consistency checks; it would require development of a system to qualify and accredit third party verifiers, conduct oversight and ensure conflicts of interest were not present; the cost to reporters using third party verification would have been

substantial; and receipt of emissions data from reporters using third party verification would likely be delayed due to the extra time required for third party verification. (74 FR 56282 and 56283, October 30, 2009). For similar reasons, the EPA is not finalizing a third party program for design plan review. The EPA acknowledges that oversight and implementation of such a program could itself be costly, administratively burdensome, take significant time to approve and train third parties, and be difficult to ensure consistent application of design plan verification.

The EPA reaffirms that the gas collection and control system (GCCS) design plan must be prepared and signed by a registered professional engineer and meet requirements described in 40 CFR 60.767(c) and 60.769; and 40 CFR 60.38f(d) and 60.40f.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 5

**Comment Excerpt:**

KDAQ supports the third-party design plan program as a supplement to the current approach of requiring U.S. EPA or state review. The proposal would provide both administrative burden relief and enhanced quality control. Many landfills in Kentucky already utilize third-parties to create and review their GCCS design plans prior to state review.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0197, comment excerpt 6, under comment code EG12.

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**Commenter Name:** Arielle Eiser

**Commenter Affiliation:** National Society of Professional Engineers

**Document Control Number:** EPA-HQ-OAR-2014-0451-0144

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The National Society of Professional Engineers (NSPE) commends the Environmental Protection Agency for proposing additional safety measures requiring a professional engineer to prepare site-specific gas collection and control system (GCCS) plans as part of the proposed rule *Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills*. NSPE greatly appreciates the EPA's recognition of the professional engineer's important role in protecting the public health, safety, and welfare.

As part of the proposed rule, EPA requests comments regarding the appropriate professional and educational requirements for auditors. For example, should auditors be licensed professional engineers?

NSPE strongly asserts that the auditing process is best performed by licensed professional engineers. As acknowledged in this very proposed rule, licensed professional engineers are uniquely qualified to perform the underlying compliance work. Consequently, it makes the most sense that the professional best qualified to review such work would also be a licensed professional engineer.

**Comment Response:**

In the final rule, EPA is not requiring a third party program for design plan review. However, the EPA reaffirms that the gas collection and control system (GCCS) design plan must be prepared and signed by a registered professional engineer and meet requirements described in 40 CFR part 40 CFR 60.767(c) and 60.769; and 40 CFR 60.38f(d) and 60.40f.

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 62, under comment code EG12 for EPA's decision on an auditing process.

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**Commenter Name:** Arielle Eiser

**Commenter Affiliation:** National Society of Professional Engineers

**Document Control Number:** EPA-HQ-OAR-2014-0451-0144

**Comment Excerpt Number:** 2

**Comment Excerpt:**

The EPA additionally states that it is considering allowing a person at the facility who is a registered professional engineer to conduct the audit at the facility, i.e., first party/self-auditing, instead of requiring independent third-party audits. If self-auditing is authorized, the EPA seeks comment on how best to structure it to maximize auditor independence and accurate auditing outcomes.

NSPE would strongly encourage the EPA to maintain the current system of independent third-party audits. While we understand that cost concerns are a factor, self-auditing can present a true conundrum and the short term gains are vastly outweighed by the potential downsides of abuse of such a system. Placing such a requirement on a landfill employee will inevitably create problematic conflict of interest situations. For example, consider a professional engineer assigned such an audit who also is responsible for air compliance. This could put the individual in the extremely awkward position of telling their superiors that they were not as successful in achieving their compliance goals as they would have liked. Independent third party audits are a proven method that works best and provides the best protection of the public safety and our environment.

In the future, if a self-auditing process is added to the regulation, it is NSPE's position that the report be prepared by a licensed professional engineer and follow the appropriate stamping and sealing regulations of the state where the engineer is registered.

**Comment Response:**

See response to DCN: EPA-HQ-OAR-2003-0215-0198, excerpt 62, under comment code EG12.

## 15.7 Corrective Action Timeline Requests-Approval of GCCS Expansions

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### 15g. Corrective Action Timeline Requests: Approval of GCCS Expansions

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**Commenter Name:** Comment submitted by Paul Aud, Environmental Engineering Manager

**Commenter Affiliation:** Louisville Metro Air Pollution Control District (APCD)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0091.1

**Comment Excerpt Number:** 3

**Sort Order:** 100

#### Comment Excerpt:

Subpart XXX 60.765(a)(3) and 60.765 (a)(5) both state action to correct the exceedance is required within 5 days and 15 days, and if not corrected within 15 days, the GCCS shall be expanded to correct the exceedance within 120 days of the initial exceedance. The sections also states that an alternative timeline for correcting the exceedance may be submitted to the administrator for approval, but no schedule for the submittal is stated.

The EPA's rationale for not doing so follows:

We have not proposed a specific schedule for submitting these requests for alternative corrective action timelines because investigating and determining the appropriate corrective action, as well as the schedule for implementing the corrective action, will be site specific and depend on the reason for the exceedance. We clarify that a landfill *should* submit an alternative time line request as soon as possible (i.e., as soon as they know that they would not be able to correct the exceedance in 15 days or expand the system in 120 days) to avoid being in violation of the rule.

79 Fed. Reg. 41796, 41820. (Emphasis added.) While APCD appreciates the EPA's interpretation of how the provision "should" work in principle, the agency's acknowledgement that "If the landfill waits until 120 days after the exceedance to submit an alternative time line, then by the time the regulatory agency has the chance to review the time line and determine if it is approvable, the landfill will already be in violation of the requirement to expand the system within 120 days" highlights the problem in practice. *Id.* To avoid this result and to allow the agency ample time to review the time line and determine if it is approvable, APCD recommends that the EPA revise Subpart XXX 60.765(a)(3) and 60.765 (a)(5) as follows:

Timeline variance requests should be submitted within 30 days from initial exceedance.

Recommend §60.765(a)(3), 5th sentence state: "An alternative timeline for correcting the exceedance that was not corrected within 15 days of the initial exceedance, shall be submitted to the Administrator for approval within 30 days of the initial exceedance.

Recommend §60.765(a)(5), 4th sentence state: "If the owner or operator is unable to correct an exceedance within 15 days, or does not plan to expand the collection and control system within 120 days, then the owner or operator must submit to the Administrator within 60 days of the initial exceedance (1) an alternative timeline for correcting the exceedance or (2) a plan to expand the collection and control system within 120 days for approval.

An alternative timeline request shall include, at a minimum, the reasons for the exceedance, status of the investigation, and schedule for corrective action.

**Comment Response:**

The EPA is finalizing corrective action requirements that generally give owners or operators 60 days to investigate, determine appropriate corrective action, and implement the corrective action. If an exceedance cannot be corrected within 15 days, then a root cause analysis must be conducted within 60 days of the initial exceedance. An implementation schedule is required for exceedances that will take longer than 60 days to complete the corrective action(s) as soon as practicable, but no more than 120 days. For corrective action requirements, see Section IV.B.3 of the 2016 NSPS Final Preamble and Section IV.B.3 of the 2016 Emission Guidelines Final Preamble. For the EPA's rationale on these requirements, see Section VI.A.2 of the 2016 NSPS Final Preamble and Section VI.A.2 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Comment submitted by Sheila Holman, Director, Division of Air Quality  
**Commenter Affiliation:** North Carolina Department of Environment and Natural Resources (NCDENR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0089.1

**Comment Excerpt Number:** 10

**Sort Order:** 101

**Comment Excerpt:**

40 CFR 60.765(a)(5) indicates "If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, then either the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance or an alternative timeline shall be submitted." DAQ believes that a 15-day timeline is not a sufficient time to evaluate the situation and plan for the corrective action. It is more important to assess the issue correctly and to plan for the most effective solution than to rush into a conclusion just to meet the timeline requirement. Therefore, DAQ recommends extending the timeline of the alternative correction submission.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 42

**Sort Order:** 102

**Comment Excerpt:**

However, the short timeframes for correction of the monitoring exceedances make it difficult to conduct a complete investigation and receive approval of a higher operating value to resolve the

exceedances, particularly from state agencies that are often poorly equipped to respond quickly to highly technical requests for alternative monitoring values. In fact, many states have taken the position that any exceedances that cannot be resolved within 15 days must automatically result in a requirement to expand the gas collection system.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager

**Commenter Affiliation:** Burns & McDonnell

**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1

**Comment Excerpt Number:** 7

**Sort Order:** 103

**Comment Excerpt:**

The proposed rule requires that corrective action timelines be submitted for approval if they are unable to correct an exceedance in 15 days. This will again significantly increase the amount of paperwork, review, and approval time for each state agency.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent

**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota

**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1

**Comment Excerpt Number:** 9

**Sort Order:** 104

**Comment Excerpt:**

The proposed rule requires that corrective action timelines be submitted for approval if they are unable to correct an exceedance in 15 days. This will again significantly increase the amount of paperwork, review, and approval time for each state agency.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Comment submitted by Barry R. Stephens,  
**Commenter Affiliation:** Tennessee Department of Environment and Conservation- Air  
Pollution Control (TDEC-APC)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0112.1  
**Comment Excerpt Number:** 4  
**Sort Order:** 105

**Comment Excerpt:**

*Tennessee 's own experience has been that many corrective actions extending beyond the 15-day period involve repairs to a well that require significant construction activities. We support an alternative that would allow for such construction activities within the 120-day period. Tennessee supports the alternative that extends the requirement for notification from 15 days to as soon as practicable but no later than 60 days.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Ellen Smyth, President  
**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0194  
**Comment Excerpt Number:** 4  
**Sort Order:** 106

**Comment Excerpt:**

We appreciate the clarification in the rule preamble that requirements for approval of corrective action timeline requests are limited to corrective actions exceeding 120 days. To address implementation concerns associated with the time allowed for corrective actions, the EPA requested comment on an alternative that extends the sometimes interpreted requirement for notification from 15 days to as soon as practicable, but no later than 60 days from when an exceedance is identified. The EPA also requested input on whether the 60 days is the appropriate amount of time to allow owners or operators to make the necessary repairs. Thus, by no later than day 60, the landfill would have to either have completed the adjustments and repairs necessary to correct the exceedance, or be prepared to have the system expansion completed by day 120.

We appreciate the EPA clarifying when alternative timeline requests should be submitted for approval. Although the proposed 60 days provides time to assess the problem and determine corrective actions for some situations, there are many instances where 60 days is not enough time to complete assessment and correct the exceedance, but where system expansion is not warranted. A 60-day limit to correct the exceedance is particularly problematic in Texas, where state approval, which typically takes a minimum of 60 days, is needed prior to final landfill cover

disturbance. The 60-day limit would also be problematic in other parts of the country, where, for example, the Asbestos NESHAP rule (40 CFR 61 Subpart M) requires a 45-day notification to the regulatory authority prior to initiating any excavation activity such as well or piping repair, replacement or installation, that has potential to disturb regulated asbestos containing material (RACM). As such, we request that the proposed rule continue to reflect the current practice; that owners and operators need only request additional time if the corrective action requires more than 120 days to complete.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Comment submitted by Sharon R. Frank, Manager, Environmental Compliance

**Commenter Affiliation:** Montauk Energy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0115.1

**Comment Excerpt Number:** 12

**Sort Order:** 107

**Comment Excerpt:**

We support the EPA's language to entirely remove the provisions to submit an alternative timeline for correcting the exceedance. Thus, by no later than day 90 (instead of 60 days), the landfill would have to either have completed the adjustments and repairs necessary to correct the exceedance, or be prepared to have the system expansion completed by day 120.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 13

**Sort Order:** 108

**Comment Excerpt:**

The DEP supports retention of the 15-day notification requirement for owners or operators to provide notice to Federal, State and local agencies of exceedances of emission standards, especially during malfunctions. As proposed, the alternative would extend the notice requirement from 15 days to as soon as practicable but no later than 60 days from when an exceedance is identified. This alternative approach provides the facility owner or operator too much discretion

to determine when it is practicable to provide notice of exceedances of LFG emissions including methane, benzene and other hazardous air pollutants. EPA should consider providing flexibility for regulatory agencies to provide additional time, when warranted.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Sean Alteri, Director

**Commenter Affiliation:** Division for Air Quality, Kentucky Department for Environmental Protection

**Document Control Number:** EPA-HQ-OAR-2014-0451-0146

**Comment Excerpt Number:** 7

**Sort Order:** 109

**Comment Excerpt:**

KDAQ suggests that the extension of the requirement for submittal of alternative timelines be from 15 days to as soon as practicable, but no later than 30 days, from when an exceedance is identified. KDAQ finds that 30 days, rather than the 60 days proposed by the U.S. EPA, is the appropriate amount of time to allow owners or operators to make necessary repairs.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 20

**Sort Order:** 110

**Comment Excerpt:**

WDNR supports the allowed use of 60 days (for corrective action). This would allow, for example, delivery of equipment that may not be available within a 15-day time frame.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 61

**Sort Order:** 200

**Comment Excerpt:**

The proposed rule increases the paperwork and bureaucracy associated with obtaining an alternative timeline. Rather than streamlining the process so that it provides greater flexibility, there are additional requirements for timeline requests. Although consistency is desirable, by requiring approvals for alternative timeline requests from state agencies that rarely respond to such requests, it puts the industry in a position of receiving increasing numbers of NOV's.

The lack of response by a state agency leaves landfills in awkward compliance positions. If an alternative timeline as allowed in 40 CFR §60.765(a) and (c) is requested and no written response is provided by the agency, is the facility operating in or out of compliance with NSPS? Because facilities have only two options for addressing wellhead and surface emission exceedances, i.e., expand the system within 120 days of the initial exceedance or seek approval for an alternative remedy/timeline, the facility could be considered out of compliance if the approval is never granted and the system is not expanded within the 120 day timeframe. Since expanding the system is not always the best way to correct an exceedance, and a facility may not receive approval for their alternative timeline request in a timely manner, we propose the following options to address these situations.

First, as outlined above, we request that the wellhead standards for temperature, oxygen and nitrogen be eliminated. This will, in effect, address many of the alternative timeline requests.

Secondly, if an alternative timeline request is submitted, and no response is received within 30 days, it should be considered a "de facto" approval.

**Comment Response:**

The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature. The EPA is also finalizing corrective action requirements that generally give owners or operators 60 days to investigate, determine appropriate corrective action, and implement the corrective action. An implementation schedule is required for exceedances that will take longer than 60 days to complete the corrective action(s) as soon as practicable, but no more than 120 days. See Section VI.A.1 and VI.A.2 of the 2016 NSPS Final Preamble. See Section VI.A.1 and VI.A.2 of the 2016 Emission Guidelines Final Preamble. See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 48  
**Sort Order:** 300

**Comment Excerpt:**

EPA is requesting comments on the submittal of corrective action timelines. The proposed rule presumes there is already a notification requirement for wellhead exceedances that cannot be corrected within 15 days. This approach ignores provisions finalized in the 1998 NSPS amendments that recognized expanding the gas system is not always the best remedy for addressing exceedances. The preamble to the 1998 NSPS Subpart WWW amendments provides guidance how to address the alternative timeline is in the preamble to the as cited below: Section 60.755(a)(3) is being revised to allow an alternative timeline to be proposed for correcting an exceedance in collection header pressure at each well. Consistent with 60.755(c)(4)(v), a sentence is being added to 60.755(a)(3) and 60.755(a)(5) to allow an alternative timeline to be proposed to the Administrator for correcting an exceedance. This revision makes the sections consistent. Depending on the remedy selected to correct the problem, a different timeline may be needed, but any timeline extending more than 120 days must be approved by the regulatory agency. 63 Fed. Reg. 32,748 (June 16, 1998)

EPA's position that alternative timeline requests must be made within 15 days disregards efforts by operators to systematically diagnose the cause and determine possible solutions for correcting the exceedance. EPA also fails to explain why it assumes that expansion of the GCCS is the only corrective action that should take longer than 15 days to complete without special approval. Many remedial actions, including pumping of wells, jet cleaning of force mains, blower repair, header/lateral pipe regrading, can take more than 15 days but less than 120 days to complete, and may be more appropriate than expanding the GCCS, depending on the cause of the exceedance. Republic fails to see the benefit of requiring special approval for a repair that eliminates the exceedance in 16 days, much less the draconian result of requiring an expansion of the system if the request is late or denied. Since, as noted above, GCCS expansions may not only be the incorrect response but potentially counterproductive, EPA should allow landfills and state regulators the time and flexibility to determine the appropriate response without unnecessary procedural burdens or prescriptive remedies.

EPA's proposed revision would be particularly harmful in instances that would otherwise warrant use of a higher operating value. In those cases, repairs will not resolve the exceedance within 15 days because the system is already functioning properly and the elevated readings actually reflect an appropriate operating level. However, if the landfill is unable to obtain a higher operating value from its state agency within 120 days, the landfill may be forced to either request a timeline extension (which also may not be granted in a timely fashion) or expand the GCCS—even if doing so could actually compound rather than resolve the problem. This policy results in a significant disincentive to maximize system performance based on site conditions and instead encourages landfills to reduce operations in order to comply with operating parameters that do nothing to reduce emissions or maximize gas collection.

Many delegated agencies currently follow the 1998 rule changes and do not require landfill owners or operators to submit requests if the corrective action/remedy other than expansion is completed within 120 days. This approach minimizes paperwork and the burden on state agencies. Requiring agencies to change their procedures will result in increased paperwork

burden and need for additional resources to complete the additional reviews and approvals, especially if requests must be submitted within 15 days and subsequently approved. In our experience, many requests are never approved, and the proposed change would only exacerbate that concern.

**Comment Response:**

The EPA is finalizing corrective action requirements that generally give owners or operators 60 days to investigate, determine appropriate corrective action, and implement the corrective action. The EPA believes that the refinements to the corrective action requirements will reduce the need for landfill owners or operators to submit requests for higher operating values. See Sections IV.B.3 and VI.A.2 of the 2016 NSPS Final Preamble. See Sections IV.B.3 and VI.A.2 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 28

**Sort Order:** 301

**Comment Excerpt:**

EPA specifically states in the preamble that they have not proposed a specific schedule in the rule language for submitting alternative timeline requests because investigating and determining the appropriate corrective action, as well as the schedule for implementing that corrective action, should be site specific and depend on the reason for exceedance. *See* 80 Fed. Reg. at 52126. We agree with EPA that corrective action schedules should be site specific.

However, in that same section of the preamble to its proposal, EPA requests comment on the alternative of extending the requirement for notification from "15 days" to "as soon as practicable, but no later than 60 days from when an exceedance is identified." 80 Fed. Reg. at 52126. EPA provides various other scenarios for timelines as well. Republic appreciates EPA's attempt to clarify the required correction action timing requirements, given the inconsistency in interpretation of those requirements by different regulatory authorities. But EPA's discussion of this alternative appears to inappropriately assume that all exceedances must be addressed via an expansion of the GCCS and require a 15-day notification. EPA's discussion appears to ignore the alternative expressly addressed in the 1998 NSPS Subpart WWW amendments, which provides the following guidance on alternative timelines:

*Section 60.755(a)(3) is being revised to allow an alternative timeline to be proposed for correcting an exceedance in collection header pressure at each well. Consistent with 60.755(c)(4)(v), a sentence is being added to 60.755(a)(3) and 60.755(a)(5) to allow an alternative timeline to be proposed to the Administrator for correcting an exceedance. This revision makes the sections consistent. Depending on the remedy selected to correct the problem, a different timeline may be needed, but any timeline extending more than 120 days must be approved by the regulatory agency. 63 Fed. Reg. 32,748 (June 16, 1998)*

By ignoring the possible alternative timelines made available to landfills, EPA's request for comment disregards efforts by operators to systematically diagnose the cause and determine possible solutions for correcting the exceedance. Many remedial actions, including pumping of wells, jet cleaning of force mains, blower repair, header/lateral pipe re-grading, and others can take more than 60 days but less than 120 days to complete, and may be more appropriate than expanding the GCCS, depending on the cause of the exceedance. But under the alternative described in EPA's proposal, those corrective actions requiring between 60 and 120 days would not suffice; a GCCS would be required, even if the emissions exceedances could be address before the end of 120 days, because EPA's proposal would not allow for an alternative timeline.

Republic fails to see the benefit of requiring special approval for a repair that eliminates the exceedance in 60 days, much less the draconian result of requiring an expansion of the system if the request is late or denied, when in prior rulemaking actions EPA recognized that correcting an exceedance within 120 days should be sufficient with proper approval. Since, as noted above, GCCS expansions may not only be the incorrect response but potentially counterproductive, EPA should allow landfills and state regulators the time and flexibility to determine the appropriate response without unnecessary procedural burdens or prescriptive remedies.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 48, under comment code 15g.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 13

**Sort Order:** 302

**Comment Excerpt:**

*The second concern with the proposed rule deals with oxygen exceedances. It is our experience that oxygen exceedances often result from physical issues with the well. Temperature and oxygen exceedances should not be lumped together regarding how to handle exceedances. They are not caused by the same issues and should be addressed separately in the rules. Wells with oxygen exceedances often require a physical correction to resolve the issue; expansion of the GCCS generally will not correct the problem and therefore should not be the default response to the exceedance that cannot be corrected within 15 days. The proposed rule should focus on getting the GCCS back to its original design as outlined in the facility's design plan, not simply expanding the well field. A facility should be given the opportunity to repair a well so that it can return to its original state and collect landfill gas as it was designed. Therefore, the proposed rule should allow an expanded timeline, beyond the current 15 days, to allow for correction or repair to return the GCCS to its original design plan before requiring expansion of the GCCS. The existing requirement of quarterly surface emissions monitoring routinely serves as an indicator of the need to expand the GCCS. The design plan spells out the operating parameters by which a facility will meet the performance standard, including the density of the collection*

*elements. Expansion undertaken as a default response to every exceedance that cannot be corrected within 15 days will not correct any hidden deficiencies in the design plan. Many factors and physical forces impact the landfill GCCS.*

*Furthermore, the 1996 draft rule showed expansion of the well field as a solution for pressure exceedances only. The 1998 rule added the expansion solution for oxygen and temperature exceedances as well. This would make it seem temperature and oxygen were thrown in as an afterthought because industry questioned what solution the rule offered to remedy temperature and oxygen exceedances.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 48, under comment code 15g.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 132

**Sort Order:** 303

**Comment Excerpt:**

EPA's current proposal is inconsistent with its 1998 rule revisions, ignores other federal requirements, creates additional paperwork and compliance uncertainty, and ultimately negatively impacts system performance. The Landfill NSPS was amended on June 16, 1998 to allow the following:

*"Section 60.755 (a)(3) is being revised to allow an alternative timeline to be proposed for correcting an exceedance in collection header pressure at each well. Consistent with 60.755(c)(4)(v), a sentence is being added to 60.755(a)(3) and 60.755(a)(5) to allow an alternative timeline to be proposed to the Administrator for correcting an exceedance. This revision makes the sections consistent. Depending on the remedy selected to correct the problem, a different timeline may be needed, but any timeline extending more than 120 days must be approved by the regulatory agency." (emphasis added) 63 Fed. Reg. 32743, 32748 (June 16, 1998).*

The Agency in 1998 correctly recognized that expanding the gas collection system is not always the best response to an exceedance, which cannot be corrected within 15 days and therefore clarified corrective action timelines exceeding 15 days, but that are less than 120 days do not require regulatory agency approval. In proposed Subpart XXX EPA would ignore the 1998 rule revisions and disregard efforts by operators to systematically diagnose the cause and determine possible solutions for correcting the exceedance. Recent agency determinations actually prohibit sites from including time to diagnose the cause and determine appropriate corrective action in the alternative timeline request; these steps must be completed before submitting the request. There is no regard for proper operation or system performance, which has been determined to constitute the NSPS BSER. There is also a significant disincentive to maximize system



performance based on site conditions and instead reduce operations in order to comply with operating parameters that do nothing to reduce emissions or maximize gas collection.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 48, under [comment code 15g.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 73

**Sort Order:** 304

**Comment Excerpt:**

EPA's current proposal for alternative timelines is still inconsistent with its 1998 rulemaking and ignores other Federal requirements.

According to the Subpart Cf preamble, EPA has not proposed a specific schedule in the rule language for submitting alternative timeline requests because investigating and determining the appropriate corrective action, as well as the schedule for implementing corrective action, will be site specific and depend on the reason for exceedance. *See* 80 Fed. Reg. at 52126.

Contrary to this statement, EPA requests comment on an alternative that extends the requirement for notification from 15 days to as soon as practicable, but no later than 60 days from when an exceedance is identified. *Id.* EPA states that if it were to extend the time period to as soon as practicable, but no later than 60 days, then the EPA is also considering the removal of the provision to submit an alternative timeline for correcting the exceedance. The EPA is also requesting input on whether 60 days is the appropriate amount of time to allow owners or operators to make the necessary repairs. Thus, by no later than day 60, the landfill would have to either have completed the adjustments and repairs necessary to correct the exceedance, or be prepared to have the system expansion completed by day 120.

We support EPA's attempt to clarify when alternative timeline notifications should be submitted, because state/local agency interpretation widely varies. EPA clearly states in the preamble that specific schedules, such as limiting a site to 60 days to diagnose and complete corrective action, are not feasible because diagnosing and determining appropriate corrective action are site specific. Therefore, up to 120 days is needed to properly diagnose and determine corrective actions as previously stated in our September 15, 2014 comments (see Docket ID Nos. EPA-HQ-OAR-2014-0451-0037 and EPA-HQ-OAR-2003-0215-0100), and as described below.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 48, under [comment code 15g.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 74

**Sort Order:** 305

**Comment Excerpt:**

**EPA's current proposal is still inconsistent with its 1998 rulemaking.** The Landfill NSPS was amended on June 16, 1998 to allow the following:

*Section 60.755(a)(3) is being revised to allow an alternative timeline to be proposed for correcting an exceedance in collection header pressure at each well. Consistent with 60.755(c)(4)(v), a sentence is being added to 60.755(a)(3) and 60.755(a)(5) to allow an alternative timeline to be proposed to the Administrator for correcting an exceedance. This revision makes the sections consistent. **Depending on the remedy selected to correct the problem, a different timeline may be needed, but any timeline extending more than 120 days must be approved by the regulatory agency.***

*(emphasis added)* 63 Fed. Reg. 32743, 32748 (June 16, 1998).

The Agency in 1998 correctly recognized that expanding the gas collection system is not always the best response to an exceedance, which cannot be corrected within 15 days and therefore clarified corrective action timelines exceeding 15 days, but that are less than 120 days do not require regulatory agency approval. EPA appears to recognize in the preamble discussion to proposed Subpart Cf that diagnosis, corrective actions and associated timelines are site specific; however, EPA in its request for comments continues to ignore the 1998 rule revisions and disregards efforts by operators to systematically diagnose the cause and determine possible solutions for correcting the exceedance.

Many delegated agencies currently follow the 1998 rule changes and do not require the landfill owner or operator to submit a request if the corrective action/remedy other than expansion is completed within 120 days. For example, Region I clarified in its September 21, 2010 letter to Chicopee Landfill that the site had up to 120 days to correct the exceedances without requiring approval of alternative timeline (*See* Attachment 14 of Docket ID Number EPA-HQ-OAR-2014-0451-0037 ). This limits the burden of requesting and approving alternative timelines to the few instances when more than 120 days is necessary to complete repairs or system expansion. If repair or expansion beyond 120 days is necessary, then the site would submit request for alternative timeline as soon as possible but not later than 120 days after the initial exceedance.

The site's paperwork is minimized and required only for instances where the site needs additional time beyond 120 days to complete the corrective action. Agencies in turn have significantly fewer requests to review and approve. Requiring agencies to change their procedures will result in increased paperwork burden. Further, our experience to date is that many requests are never approved; there should be a period after which absent any agency approval, the request shall be deemed complete.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 48, under [comment code 15g.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 135

**Sort Order:** 306

**Comment Excerpt:**

EPA's proposal perpetuates compliance uncertainty. Regulators continue to interpret the timeline for requesting an alternative timeline without consideration of the 1998 Landfill NSPS amendments. The EPA ADI is replete with alternative timeline requests, most asking for less than 120 days to correct the exceedance, without expanding the collection system. Most notable is USEPA Region 5's most recent determinations, which require sites submit an alternative timeline letter no later than 15 days after the initial exceedance. If the site does not meet this Region 5-imposed deadline, the agency will not approve the alternative timeline request, which makes appropriate corrective action difficult if not impossible.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 48, under [comment code 15g.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 136

**Sort Order:** 307

**Comment Excerpt:**

By stating in writing that these timelines must be submitted before the 15th day, agencies are implying that not submitting the timeline request by the 15th day would make the uncorrected exceedance a "deviation" for Title V purposes (since timelines submitted after this date would not be approved), when in fact, the NSPS preamble would suggest that the timeline requests aren't even needed unless the corrective action would exceed 120 days. Moreover, these determinations are reflective of agency and regional approaches that are not only inconsistent with other regions and agencies, but are internally inconsistent when viewed over time. To illustrate our concern with compliance uncertainty due to constantly changing interpretations, we have summarized Region 5's response to alternative timeline requests below:

- On 3/22/12, Region 5 issued a letter to Settler's Hill (ADI Control Number 1200054) in response to a 2/14/12 request, stating that no alternative timeline is needed for cover repairs performed to address SEM exceedances identified during the 11/29/11 SEM event, since cap repairs were completed within 120 days of the initial exceedance. (<http://cfpub.epa.gov/adi/pdf/adi-nsps-1200054.pdf>)
- On 6/28/12, Region 5 issued a letter to Settler's Hill (ADI Control Number 1200055) in response to 6/12/12 request stating that no alternative timeline is needed for the blower upgrade and wellfield tuning performed to address SEM exceedances identified during the 3/3/12 SEM event since this remedy would be completed within 120 days of initial exceedance. (<http://cfpub.epa.gov/adi/pdf/adi-nsps-1200055.pdf>)
- On 12/6/12, Region 5 issued a letter to Settler's Hill (ADI Control Number 1400008) in response to a 9/20/12 request. EPA approved alternative remedy (GCCS dewatering, other improvements) for initial SEM exceedances which occurred during the 6/7/12-6/8/12 SEM event. Remedy was proposed to be completed within 180 days after initial exceedance. EPA approved the remedy *"on the condition that all subsequent SEM, beginning December 6, 2012, is below the 500 ppm regulatory threshold."/*(<http://cfpub.epa.gov/adi/pdf/adi-nsps-1400008.pdf>).
- On 1/17/2013, Region 5 issued a letter to Hoffman Road Landfill. The site requested in its 11/29/12 letter an alternative timeline of 175 days to complete header repairs to GCCS to correct oxygen or pressure exceedances monitored on 9/24/2012 at 22 wells. EPA states the NSPS does not require the site to request an alternative timeline to repair the GCCS. Region 5 further states they coordinated this response with OAQPS (*See Attachment 10 [to DCN EPA-HQ-OAR-2003-0215-0100.1]*).
- On 4/9/13 Region 5 issued a letter to Livingston Landfill (ADI1400013) denying the site's 2/21/13 request for an alternative compliance timeline to replace one well that had monitored oxygen exceedance on 2/7/13 "because it was requested solely because of the *potentiality* that is cannot be repaired within 120 days ... ". The agency would only grant a *new* request if the site could establish that forces beyond its control prevented on-time compliance. (<http://cfpub.epa.gov/adi/pdf/adi-nsps-1400013.pdf>)
- On 1/14/14 Region 5 issued a letter to Livingston Landfill in response to site's 3/29/13 request. EPA states that alternative compliance timeline requests must be submitted as soon as it knows it cannot correct exceedance within 15 days and expansion is unwarranted or expansion cannot be completed within 120 days. EPA now appears to adopt Ohio EPA guidance as regulatory requirement for what sites must include in requests to obtain alternative timelines (*See Attachment 11 [to DCN EPA-HQ-OAR-2003-0215-0100.1]*).
- On 2/3/2014, Region 5 issued a letter to Roxana Landfill in response to the site's 8 separate letter requests for alternative timelines. EPA denied the requests because the requests must identify the problem and contain a detailed narrative of corrective measures and substantial reasons beyond the control of the facility as to why exceedances could not and cannot be completed within 15 days. Also alternative timelines do not provide for diagnosing or identifying cause of exceedance. (*See Attachment 12 [to DCN EPA-HQ-OAR-2003-0215-0100.1]*).
- On 4/3/14, Region 5 issued a letter to Settler's Hill in response to 2/5/14 and 3/5/14 requests. EPA reiterates that alternative compliance timeline requests must be submitted as soon as it

knows it cannot correct exceedance within 15 days and expansion is unwarranted or expansion cannot be completed within 120 days. EPA continues to adopt Ohio EPA guidance as regulatory requirement for what sites must include in requests to obtain alternative timelines and again will not approve alternative timelines requests if the root cause of the exceedance has not been determined. The alternative timeline request was denied solely because the site could not definitely diagnose the cause of the exceedance. The site believed the underground piping was compromised but could not confirm within 15 days of the initial exceedance due to extreme winter weather conditions (frozen ground) and other federal rules that actually prohibit excavation within 15 days. (See Attachment 13 [to DCN EPA-HQ-OAR-2003-0215-0100.1])

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 48, under [comment code 15g.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 137  
**Sort Order:** 308

**Comment Excerpt:**

Industry and some delegated agencies have and continue to interpret the rule to allow sites up to 120 days to complete system expansions as well as repairs to correct exceedances. For example, Region I clarified in its September 21, 2010 to Chicopee Landfill that the site has up to 120 days to correct the exceedances without requiring approval of alternative timeline (See Attachment 14 [to DCN EPA-HQ-OAR-2003-0215-0100.1]). This limits the burden of requesting and approving alternative timelines to the few instances when more than 120 days is necessary to complete repairs or system expansion. If repair or expansion beyond 120 days is necessary, then the site would submit request for alternative timeline as soon as possible but not later than 120 days after the initial exceedance.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 48, under [comment code 15g.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1  
**Comment Excerpt Number:** 138  
**Sort Order:** 309

**Comment Excerpt:**

WM recommends that corrective action timelines exceeding 15 days but less than 120 days do not require agency approval; agency approval should only be required when additional time beyond 120 days is necessary to correct a problem. Remedies other than LFG system expansion can also be implemented in the 120-day window without agency approval, with approval only necessary if the remedy will take more than 120 days.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, excerpt number 48, under [comment code 15g.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 133

**Sort Order:** 500

**Comment Excerpt:**

EPA fails to consider other applicable federal requirements that directly impact GCCS corrective action timelines. The Asbestos NESHAP rule (40 CFR 61 Subpart M) requires a 45-day notification to the regulatory authority prior to initiating any excavation activity such as well or piping repair, replacement or installation, that has potential to disturb regulated asbestos containing material (RACM). RACM disposal locations are documented upon disposal as required; however, over time due to routine waste settlement, RACM may shift from initial documented location. Potential exists for possible disturbance of RACM during excavation such as well drilling and collection system repair. Therefore, sites cannot diagnose or complete repairs/corrective actions within 15 days that may disturb RACM otherwise they risk compliance with 40 CFR 61 Subpart M.

**Comment Response:**

The EPA is finalizing corrective action requirements that generally give owners or operators 60 days to investigate, determine appropriate corrective action, and implement the corrective action. Therefore, the final corrective action procedures should not conflict with the Asbestos NESHAP. See Sections IV.B.3 and VI.A.2 of the NSPS Preamble. See Sections IV.B.3 and VI.A.2 of the Emission Guidelines Preamble.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 83

**Sort Order:** 501

**Comment Excerpt:**

A good example of the potential pitfalls associated with requiring notification of alternative timeline request arises in the context of asbestos. The Asbestos NESHAP (40 CFR 61 Subpart M) requires a 45-day notification to the regulatory authority prior to initiating any excavation activity at a landfill, such as well or piping repair, replacement, or installation, that has potential to disturb regulated asbestos containing material (RACM). RACM disposal locations are documented upon disposal as required; however, over time, due to routine waste settlement, RACM may shift from initial documented location. Potential exists for possible disturbance of RACM during excavation such as well drilling and collection system repair. Therefore, sites may not be able to determine within 60 days whether an alternative timeline request will be necessary to ensure sufficient time remains to provide the notification required by the Asbestos NESHAP. State final landfill cover disturbance requirements can further delay identification of circumstances warranting an alternative corrective action timeline.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 133, under [comment code 15g.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 75

**Sort Order:** 502

**Comment Excerpt:**

EPA continues to ignore other federal requirements that restrict when a landfill can initiate diagnoses and/or corrective action.

As previously stated in our September 15, 2014 comments, the Asbestos NESHAP rule (40 CFR 61 Subpart M) requires a 45-day notification to the regulatory authority prior to initiating any excavation activity such as well or piping repair, replacement or installation, that has potential to disturb regulated asbestos containing material (RACM). RACM disposal locations are documented upon disposal as required; however, over time due to routine waste settlement, RACM may shift from initial documented location. Potential exists for possible disturbance of RACM during excavation such as well drilling and collection system repair. State final landfill cover disturbance requirements can further delay any diagnoses. Well drilling and collection system repair are significant construction activities that cannot usually be completed in 60 days especially when such diagnoses and construction require excavation that cannot commence due to the 45 day asbestos notification requirement. Therefore, sites likely cannot diagnose or complete repairs/corrective actions within 15 let alone 60 days that may disturb RACM otherwise they risk compliance with 40 C.F.R. Part 61, Subpart M.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0100.1, excerpt number 133, under [comment code 15g.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0176  
**Comment Excerpt Number:** 82  
**Sort Order:** 600

**Comment Excerpt:**

EPA's proposal requests comments on the submittal of corrective action timelines. EPA is also "clarifying that 'expansion' of the GCCS means a *permanent* change that increases the capacity of the GCCS, such as increasing the size of the header pipes, increasing the blower sizes and capacity, and increasing the number of wells." 80 Fed. Reg. at 52126 (emphasis added). Although overall these changes are generally acceptable, Republic is concerned that the term "permanent" could be viewed as ambiguous in the context of any components of a GCCS that must be replaced at some point during the life of the system. To avoid confusion, we request EPA remove the term "permanent" from the clarification regarding the meaning of a landfill "expansion."

**Comment Response:**

Under the final corrective action requirements, landfill owners or operators must conduct a root cause analysis and determine the appropriate corrective action, which can include, but is not limited to, expanding the GCCS. In the 2015 proposed Emission Guidelines, the EPA clarified that "expansion" means a permanent change that increases the capacity of the GCCS, such as increasing the size of header pipes, increasing the blower sizes and capacity, and increasing the number of wells. The EPA made this clarification to distinguish between a permanent change to the GCCS that would correct an exceedance over the long term, versus a temporary change that may correct an exceedance in the short term. The EPA recognizes that some "permanent" components of the GCCS may need to be replaced over the course of the lifetime of the GCCS.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 14  
**Sort Order:** 601

**Comment Excerpt:**

The existing and proposed rules do not clearly define "Expansion" in the context correction of exceedances. However, at times, USEPA and state agencies have sometimes asserted that "Expansion" means a new well or collection device as is written in the SEM section of the rule. A definition of "Expansion" is necessary to prevent future questions regarding this issue.

**Comment Response:**



See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 82, under [comment code 15g.

## **15.8 Corrective Action Timeline Requests-Alternative Approach**

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### **15h. Corrective Action Timeline Requests: Alternative Approach**

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 29

#### **Comment Excerpt:**

Many regulatory authorities currently follow the 1998 rule changes and do not require landfill owners or operators to submit alternative timeline requests if the corrective action or remedy other than expansion can be completed within 120 days. This approach minimizes paperwork and the burden on state agencies while recognizing that the schedule for implementing the corrective action will be site-specific and depend of the nature of the exceedance. Requiring state and local authorities to change their procedures will result in increased paperwork burden and will increase the need for additional resources to complete the additional reviews and approvals, especially if requests must be submitted within 15 days and subsequently approved. In our experience, many requests are never approved, and the proposed change would only exacerbate that concern.

In light of the concerns identified above, Republic recommends that EPA only require landfill owners or operators to submit an alternative timeline request for approval as soon as practicable and only in circumstances in which a system expansion or alternative corrective action will require more than 120 days to complete, consistent with the 1998 preamble and rule provisions. This alternative approach would address all the issues simultaneously by providing landfills sufficient time to complete a root cause analysis to determine the cause of any exceedances and identify appropriate case-specific corrective actions in a way that minimizes the need for state or EPA approval and the inevitable delays associated with that process. This approach will provide sufficient compliance assurance to the agency and an incentive for landfills to complete corrective actions (other than expansion) within 120 days.

A good example of this type of policy can be found in the refinery NSPS that EPA adopted in 2008 and amended in 2012. *See* 40 C.F.R. Part 60, Subpart Ja. Whereas the current landfill NSPS requires special approval for a landfill to avoid a default corrective action (GCCS expansion), the refinery NSPS adopts a common sense approach that requires a root cause analysis to identify the appropriate corrective action, without identifying a default approach. *See* 40 C.F.R. § 60.103a(c)-(e). Because no special approval is needed for the corrective action identified by the refinery as appropriate; the refinery must simply develop an implementation schedule to complete, as soon as practicable, any corrective actions that cannot be fully implemented within 45 days. Refineries must then include that schedule in the facility's annual report. *See* 40 C.F.R. § 60.103a(e). Without the threat of a default corrective action, refineries are free to properly

assess the most effective (and cost-effective) means of ensuring good air pollution control is maintained.

This approach to exceedances is particularly appropriate for landfills. Unlike refineries, which are subject to specific emission limits, the exceedance of which suggests the possibility of an immediate impact to the environment, landfills are only subject to operating requirements that do not necessarily involve increased emissions when exceeded. For example, a monitoring event that indicates that a landfill gas collection well has lost negative pressure does not provide any actual information regarding the amount landfill gas emitted to the atmosphere. In fact, there are many possible explanations for an exceedance of the negative pressure parameter, and many of those explanations would suggest that EPA's default corrective action, GCCS expansion, would be inappropriate, and perhaps even counterproductive. Thus, given the likely absence of any immediate risk of environmental harm, and the many possible explanations for an exceedance of monitored parameters in a GCCS, a root cause analysis and corrective action procedure—without a default corrective action—appears particularly well-suited to landfills. Republic recommends that EPA consider this approach in lieu of the unnecessarily prescriptive rules that impose deadlines and the default corrective action that are found in the Subpart Cf proposal.

**Comment Response:**

The EPA is finalizing corrective action requirements that generally give owners or operators 60 days to investigate, determine appropriate corrective action, and implement the corrective action. If an exceedance cannot be corrected within 15 days, then a root cause analysis must be conducted within 60 days of the initial exceedance. An implementation schedule is required for exceedances that will take longer than 60 days to complete the corrective action(s) as soon as practicable, but no more than 120 days. If the exceedance cannot be corrected within 120 days, then the owner or operator must submit a root cause analysis, corrective action plan, and implementation timeline to the Administrator for approval. See Section VI.A.2 of the 2016 NSPS Final Preamble. See Section and VI.A.2 of the 2016 Emission Guidelines Final Preamble. See response to DCN EPA-HQ-OAR-2003-0215-0091.1, excerpt number 3, under comment code 15g.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 39

**Comment Excerpt:**

Republic asks EPA to consider an alternative approach to wellhead monitoring and corrective action because the current monitoring provisions of Subpart WWW have proven to be the most arbitrary and complicated elements of the NSPS. The sections that follow provide specific comment on the issues identified within the proposed rule, but as an initial matter Republic asks EPA to consider an alternative approach that would address all the issues simultaneously by providing landfills sufficient time to determine the cause of any exceedances and identify the proper corrective action in a way that minimizes the need for state or EPA approval and the inevitable delays associated with that process. Republic specifically asks EPA to consider

replacing the overly-prescriptive requirements in the current NSPS with a new policy that focuses on a root cause analysis and case-specific corrective actions.

An example of this type of policy can be found in the refinery NSPS that EPA adopted in 2008 and amended in 2012. See 40 C.F.R. Part 60, Subpart Ja. Whereas the current landfill NSPS requires special approval for a landfill to avoid the default corrective action—GCCS expansion—in the event repairs cannot be completed within 15 days (40 C.F.R. § 60.755(a)(3) & (5)), the refinery NSPS adopts a common sense approach that requires a root cause analysis to identify the appropriate corrective action, without identifying a default approach (40 C.F.R. § 60.103a(c)-(e)). No special approval is needed for the corrective action identified as appropriate by the refinery; the refinery must simply develop an implementation schedule to complete, as soon as practicable, any corrective actions that cannot be fully implemented within 45 days and include that schedule in the facility's annual report. (40 C.F.R. § 60.103a(e)). Without the threat of a default corrective action, refineries are free to properly assess the most effective (and cost-effective) means of ensuring good air pollution control is maintained.

This approach to exceedances is particularly appropriate for landfills. Unlike refineries, which are subject to specific emission limits, the exceedance of which suggests the possibility of an immediate impact to the environment, landfills are only subject to operating requirements that do not necessarily involve increased emissions when exceeded. For example, a monitoring event that indicates the temperature of a landfill gas collection well has risen above 131° F provides no actual information regarding the level of emissions to the atmosphere from the landfill itself, as compared to an exceedance of the SO<sub>2</sub> emission limit for a refinery flare that triggers the refinery NSPS root cause analysis procedure. In addition, there are many possible explanations for an exceedance of the parameters that landfills must monitor, and many of those explanations would suggest that EPA's default corrective action—GCCS expansion—would be inappropriate, and perhaps even counterproductive. Thus, given the likely absence of any immediate risk of environmental harm and the many possible explanations for an exceedance of monitored parameters in a GCCS, a root cause analysis and corrective action procedure appears particularly well-suited to landfills. Republic recommends that EPA consider this approach in lieu of the unnecessarily prescriptive rules that impose deadlines and the default corrective action that are found in both the current Subpart WWW and EPA's proposed Subpart XXX.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 29, under comment code 15h.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 49

**Comment Excerpt:**

Rather than increasing the number of procedural requirements that are already too prescriptive to allow landfills to select the right corrective action on a case-by-case basis, EPA should consider a more flexible approach that minimizes state approval requirements and contemplates a wide

variety of scenarios. We recommend any exceedances that last beyond the 120 day limit should implement the alternative approach similar to the NSPS Subpart Ja as proposed above.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 29, under comment code 15h.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 5

**Comment Excerpt:**

We also recommend that EPA allow for alternative remedies to correct exceedances. An automatic default to gas system expansion may actually be contrary to proper system operation. As such, given that system expansion may not be the appropriate corrective action to address an exceedance, we request that the rules allow the landfill owner/operator, in lieu of expanding the gas system, to propose an alternative remedy. We further request that alternative remedies be allowed during the 120-day window without written approvals.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 29, under comment code 15h.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 6

**Comment Excerpt:**

We appreciate the clarification in the preamble that requirements for approval of corrective action timeline requests are only required for corrective actions exceeding 120 days. To address implementation concerns associated with the time allowed for corrective action, EPA requests comment on an alternative that extends the requirement for notification from the often misinterpreted 15 days, to as soon as practicable, but no later than 60 days from when an exceedance is identified. EPA is also requesting input on whether 60 days is the appropriate amount of time to allow owners or operators to make the necessary repairs. Thus, by no later than day 60, the landfill would have to either have completed the adjustments and repairs necessary to correct the exceedance, or be prepared to have the system expansion completed by day 120.

We support EPA's attempt to clarify when alternative timeline requests should be submitted for approval as state/local agency interpretations vary widely. However, up to 120 days is needed to properly diagnose and determine corrective actions in some cases. Although the proposed 60 days provides time to diagnose the problem and determine corrective action for some situations, there are many instances where 60 days is not enough time to complete diagnoses and correct the exceedance.

The Landfill NSPS was amended on June 16, 1998 to allow the following:

Section 60.755(a)(3) is being revised to allow an alternative timeline to be proposed for correcting an exceedance in collection header pressure at each well. Consistent with 60.755(c)(4)(v), a sentence is being added to 60.755(a)(3) and 60.755(a)(5) to allow an alternative timeline to be proposed to the Administrator for correcting an exceedance. This revision makes the sections consistent. *Depending on the remedy selected to correct the problem, a different timeline may be needed, but any timeline extending more than 120 days must be approved by the regulatory agency.*" (emphasis added) (63 FR 32743, 32748).

In 1998, EPA also clarified that corrective action timelines exceeding 120 days require regulatory agency approval, in effect allowing that those less than 120 days did not require it.

Many delegated agencies currently follow the 1998 rule changes and do not require landfills to submit requests if the corrective action/remedy (other than expansion) is completed within 120 days. The site's paperwork is minimized and required only for instances where the site needs additional time beyond 120 days to complete the corrective action. Agencies in turn have significantly fewer requests to review and approve.

We request that the rule reflect the current practice that landfills need only make a request when corrective action requires greater than 120 days to complete. Requiring agencies to change their procedures will result in increased paperwork burdens. Further, our experience to date is that many requests are never acted upon – neither approved nor denied; therefore we request that, absent any agency approval, the request shall be granted.

For example, as previously stated in our 2014 comments, the Asbestos NESHAP rule (40 CFR 61 Subpart M) requires a 45-day notification to the regulatory authority prior to initiating any excavation activity such as well or piping repair, replacement or installation, that has potential to disturb regulated asbestos containing material (RACM). RACM disposal locations are required to be documented upon disposal; however, over time, due to routine waste settlement, RACM may shift from the initial documented location. Therefore, the potential exists for possible disturbance of RACM during excavation such as well drilling and collection system repair and, sites may not be able to determine within 60 days whether an alternative timeline request will be necessary. State final landfill cover disturbance requirements can further delay any diagnoses.

There are instances where diagnoses, repairs or expansion cannot be completed within 120 days. We recommend the rules continue to require an alternative timeline request where corrective actions and/or system expansion will require more than 120 days, consistent with the 1998 preamble and rule provisions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 29, under comment code 15h.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 7

**Comment Excerpt:**

We also recommend that EPA allow for alternative remedies to exceedance corrections. An automatic default to gas system expansion may actually be contrary to proper system operation. In fact, system expansion is the correct remedy in only a small percentage of exceedances. System expansion may not be the appropriate corrective action to address exceedances due to certain causes. For example, if pressure exceedances are due to header line flooding or freezing (or other vacuum restrictions) the appropriate remedy is to repair the line to remove the obstruction to vacuum; expanding the GCCS will not correct the problem. The rules already allow for alternative remedies to correct surface emissions monitoring exceedances. The rules should allow landfills, in lieu of expanding the GCCS, to submit a notification to the agency that identifies and describes an alternative remedy and reasons why a system expansion is not appropriate to correct the exceedance. However, we request that this only be required if the alternative remedy will require time beyond 120 days. Many jurisdictions currently allow alternative remedies between 15 and 120 days without any unnecessary paperwork. Since in the majority of cases GCCS expansion is not the correct remedy, we request that alternative remedies be allowed during the 120-day window without written approvals. Instead, these instances would be documented in semi-annual NSPS reports.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 29, under comment code 15h.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 76

**Comment Excerpt:**

For the reasons described above and in our September 15, 2014 comments (see Docket ID Nos. EPA-HQ-OAR-2014-0451-0037 and EPA-HQ-OAR-2003-0215-0100), **we recommend that the rules require an alternative timeline request for agency approval as soon as practicable where system expansion or alternative remedy for corrective action will require more than 120 days, consistent with the 1998 preamble and rule provisions.**

Although the proposed 60 days provides time to diagnose the problem and determine corrective action for some situations, there are many instances where diagnoses, repairs or expansion cannot be completed within 60 or even 120 days. This is especially relevant when weather conditions (frozen ground during winter months) prevent/delay the site from excavating buried piping to diagnose and repair the collection system components. An automatic default to gas system expansion may not be the appropriate corrective action and actually could be contrary to proper system operation.

At least 120 days and sometimes additional time is needed to submit asbestos notifications, prepare the area for construction, contract for and mobilize construction equipment/crew and complete the corrective action. Weather conditions can also impact the schedule to complete corrective action, especially if frozen ground prevents excavation activities (to repair damaged piping). The 120 day requirement to complete corrective action already encourages the landfill to complete corrective action as soon as practicable to maintain compliance.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 29, under comment code 15h.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 23

**Comment Excerpt:**

*In the proposed rules USEPA requested comments on an alternative that extends the requirement for notification of an Alternative Compliance Timeline from 15 days to as soon as practicable, but no later than 60 days.*

The original rule never anticipated notification and a request for an ACT within 15 days. This was an interpretation was created by USEPA after promulgation. First, it is illogical to assume that a facility can identify, diagnose and remedy all potential underlying reasons for the exceedance within 15 days. Landfills contain miles of interconnected piping that is constantly being subjected to harsh environmental conditions. Second, if the facility does diagnose and remedy the issue within 60 days by returning the GCCS to proper design function within 60 days no further action should be required. Obviously, it should be noted that a surface scan will be conducted routinely to demonstrate the landfill is maintaining control. We support extending the notification timeframe to allow facilities to investigate the cause of the issue before having write a letter to a regulatory authority to allow them to try corrective actions and develop a solution. The USEPA should continue to require reporting of each well that was in exceedance for greater than 15 days. However, for those that were corrected in less than 60 days a brief summary of the actions taken to correct the exceedance should be provided only. Those wells that cannot be corrected within 60 days would have an associated ACT request to allow a longer timeframe. This will allow facilities to repair their wellfields to the original designed collection efficiency to correct the issue rather than force the facility to unnecessarily expand the wellfield.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 29, under comment code 15h.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 77

**Comment Excerpt:**

To demonstrate good faith effort to comply with the 120 day corrective action schedule, the rules could clarify that the landfill owner/operator is required to submit a notification to the agency that identifies and describes the diagnosis performed, the results of the diagnosis, identifies corrective measure / alternative remedy to be implemented and reason(s) why system expansion is not appropriate to correct the exceedance. Under such an approach, corrective measures other than expansion that take 0-60 days to complete from the initial exceedance would not require any notification or approval but they would be documented in the annual compliance report. For corrective actions other than expansion that take longer than 60 days but less than 120 days to complete, the landfill owner/operator would notify the agency by day 75 from the date of the initial exceedance. This would allow 45 days for the agency to review and comment, and such notification would not require agency approval so as not to delay the site from proceeding with and completing the corrective action, as long as the corrective actions are completed within the 120 day timeframe. We believe this is beyond the intent of the 1998 rulemaking but could provide additional compliance assurance to the agency and incentive to owner or operator to complete corrective actions other than expansion within 120 days.

We also recommend that the rules require the landfill owner or operator submit an alternative timeline request for agency approval as soon as practicable where system expansion or alternative remedy for corrective action will require more than 120 days to complete, consistent with the 1998 preamble and rule provisions. EPA should also clarify that significant construction activities such as re-drilling a well or repairing/replacing buried collector piping are considered system expansion.

**Comment Response:**

The EPA is finalizing corrective action requirements that generally give owners or operators 60 days to investigate, determine appropriate corrective action, and implement the corrective action. If an exceedance cannot be corrected within 15 days, then a root cause analysis must be conducted within 60 days of the initial exceedance. An implementation schedule is required for exceedances that will take longer than 60 days to correct. See Section VI.A.2 of the 2016 NSPS Final Preamble. See Section VI.A.2 of the 2016 Emission Guidelines Final Preamble.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC



**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 15

**Comment Excerpt:**

We would propose a solution where the facilities are required to take action to correct the operational state and return it to the state where it is operating consistently with the design plan while maintaining surface emissions below the 500 ppm threshold. As long as the corrective action is completed within the expanded timeline and the exceedance was in fact corrected, then the facility would not be required to "expand" the GCCS. This would alleviate the current situation where a facility may request an alternative timeline, but may not have a response from the regulatory agency before the default GCCS expansion deadline is imminent. A facility that delays corrective action while waiting for the agency to get around to responding to a request risks non-compliance with the 120 day deadline. In instances where exceedances have occurred and the landfill must expand the GCCS, it should be separated by what parameter has the exceedance, as discussed in #6 above. Oxygen is generally either a physical issue or an area where there really is no gas. There are ways to prove there is no gas through investigation of the well with various instruments. After any physical issues are ruled out, the facility should be able to simply abandon or decommission (Please note neither term has ever been properly defined by regulation) the well and continue to complete required quarterly surface emission scans in the area.

Again, the quarterly surface emission scans are the true measure of collection. All the steps occurring throughout the operation of the GCCS cannot escape the leak detection and repair program simplicity. Additionally, USEPA has conducted their own surface scans at certain facilities to determine if facilities are adequately performing repairs. Cornerstone does not see the reason why so many steps are required by the regulation when the surface emission scans are the defacto highest level of assurance that a facility is complying with the regulation.

**Comment Response:**

The EPA is finalizing corrective action requirements that generally give owners or operators 60 days to investigate, determine appropriate corrective action, and implement the corrective action. Corrective action is determined by the landfill owner or operator and does not necessarily require expansion of the GCCS. See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 29, under comment code 15h.

The EPA agrees that surface emissions monitoring, when conducted according to the rule, are a good indicator of emissions. However, the EPA chose in the final rule to revise the corrective action procedures to give landfill owners more flexibility in terms of schedule and timing to determine the most appropriate corrective action.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 14

**Comment Excerpt:**

The proposed rule discusses the requirements of GCCS expansion and requesting alternative timelines. *We would propose a solution where the facilities take action to correct the operational state and return it to the state where it is operating consistently with the design plan. As long as*

*the corrective action completed within the expanded timeline and the exceedance was in fact corrected, then the facility would not be required to expand the GCCS. This would alleviate the current situation where a facility may request an alternative timeline, but may not have a response before the default GCCS expansion deadline is imminent. A facility that delays corrective action while waiting for the agency to get around to responding to a request risks non-compliance with the 120 day deadline. In instances where exceedances have occurred and the landfill must expand the GCCS, it should be separated by what parameter has the exceedance, as discussed in #6 above. Oxygen is generally either a physical issue or an area where there really is no gas. There are ways to prove there is no gas through investigation of the well with various instruments. After any physical issues are ruled out, the facility should be able to simply abandon or decommission (Please note neither term has ever been properly defined by regulation) the well and continue to complete required quarterly surface emission scans in the area.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, comment excerpt 29, under comment code 15h.

See response to DCN EPA-HQ-OAR-2014-0451-0180, comment excerpt 15, under comment code 15h.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 29

**Comment Excerpt:**

It is TXSWANA's proposal that the owner or operator should be allowed to establish the alternative HOV and rely on it as a compliance parameter subject to subsequent approval or denial of the parameter in the context of design plan review. This approach could also be used for alternative timeline requests.

**Comment Response:**

This comment excerpt is no longer relevant because the EPA is not finalizing a provision that would have required the landfill owner or operator to revise a design plan and submit it prior to implementing an approved alternative operating parameter value for temperature, nitrogen, or oxygen. The EPA did not finalize this criterion in order to minimize additional burden on approving agencies and landfill owners or operators.

See response to DCN EPA-HQ-OAR-2003-0215-0122, comment excerpt 5, under comment code 15d.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 12

**Comment Excerpt:**

*We suggest adding a requirement under 60.767(f) which would allow the facility to demonstrate acceptable methane production at any well which is operated outside of the normal limits within the context of the annual report which is already required. The standard should be changed to more clearly define the criteria a facility must meet and the "demonstration" should be submitted within the annual report (actually required semi-annually by the NESHAP). For instance, a self-implementing process could be developed for all wells that are greater than 55 degrees C but less than a higher threshold of (say 65 degrees C), as long as the certain criteria are met (methane quality, CO2/Methane ratio, etc.). For collectors exhibiting greater than the secondary threshold, an actual higher operating value request would still need to be submitted. Establishing this additional criteria will undoubtedly reduce paperwork and will result in reducing the paperwork and true practical knowledge burden placed upon the regulatory agencies. This would be a self-implemented process under the guidance of existing USEPA ADIs. Similarly, facilities can add discussion of HOVs for temperature into their design plan, which would include procedures for monitoring and management of wells with elevated temperature.*

**Comment Response:**

The EPA appreciates the commenter's suggestions for addressing higher operating values. However, in the final rules, the EPA has refined the corrective action requirements to generally give owners or operators more time to investigate, determine the appropriate corrective action, and then implement that action without requiring approval by the delegated authority. The EPA believes that the refinements to the wellhead operating parameters to no longer require corrective action of oxygen/nitrogen coupled with the adjustments for the corrective action requirements will reduce the need for landfill owners or operators to request higher operating values.

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 47

**Comment Excerpt:**

EPA should allow landfills to prepare broadly applicable plans containing best practices and appropriate corrective actions in the event of a temperature or oxygen exceedance. Such plans would allow landfills to move more quickly to respond to exceedances, implement the technically correct action instead of the regulatory defaults that often times are not appropriate, and minimize the unnecessary paperwork burden on state agencies and the landfills. Republic also again requests assistance from EPA in developing additional policies to streamline the process for obtaining a higher operating value.

**Comment Response:**

The EPA is finalizing the removal of the operational standards for nitrogen/oxygen, but not temperature. Landfill owners or operators must take corrective action for exceedances of temperature and negative pressure. The EPA recognizes that appropriate corrective action is site-

specific and is therefore providing flexibility for landfills to determine the appropriate course of action based on a root cause analysis. See Section VI.A.1 and Section VI.A.2 of the 2016 NSPS Final Preamble. See Section VI.A.1 and VI.A.2 of the 2016 Emission Guidelines Final Preamble.

## **15.9 Other - Recordkeeping and Reporting**

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### **15z. Other - Recordkeeping and Reporting**

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 2

**Sort Order:** 100

#### **Comment Excerpt:**

USEPA is proposing to add many levels of administrative details and requirements to the landfill gas collection rules. Each added administrative requirement has no impact on actual emissions from landfills. Cornerstone provides services to hundreds of landfills across the United States and we are heavily involved in providing air compliance services at many of these landfills. The solid waste industry began implementing the steps required in the original EG/NSPS in 1999. Hundreds of landfills never received replies from USEPA or state agencies regarding various submittals required by the NSPS. In fact, regulators rarely observe Tier 2 testing nor do most regulators understand the Tier 2 sampling requirements, regulators rarely observe control device performance testing, higher operating value and alternative compliance timeline requests sometimes lay dormant for years or are never answered, and routine reports are rarely responded to by regulators. Therefore, adding more reports and requests will only result in more pending requests. Conversely, the proposed rules will serve to create a much greater burden upon facilities and will reduce the ability for facilities to continue to act on exceedances without being concerned with unknowns created by submitting additional reports for review and/or approval.

#### **Comment Response:**

The EPA has revised the landfills NSPS and Emission Guidelines to further reduce landfill gas emissions. To ensure that landfills are complying with the regulations, the EPA requires recordkeeping and reporting. The level of recordkeeping and reporting is commensurate with the emission reduction and other requirements of the final NSPS and Emission Guidelines. Many reports will be submitted via the EPA's Central Data Exchange (CDX). The EPA believes that the electronic submittal of the reports addressed in this rulemaking will increase the usefulness of the data contained in those reports, is in keeping with current trends in data availability, will further assist in the protection of public health and the environment and will ultimately result in less burden on the regulated community. Electronic reporting can also eliminate paper-based, manual processes, thereby saving time and resources, simplifying data entry, eliminating redundancies, minimizing data reporting errors and providing data quickly and accurately to the affected facilities, air agencies, the EPA and the public.

The EPA believes that air agencies will benefit as a result of the standardization of the electronic reporting system NSPS reporting forms. Standardizing the reporting format will require the reporting of specific data elements, thereby helping to ensure completeness of the data and allowing for accurate assessment of data quality. As such, air agencies could benefit from more streamlined and automated review of the electronically submitted data. Having reports and associated data in electronic format will facilitate review through the use of software “search” options, as well as the downloading and analyzing of data in spreadsheet format. Additionally, air regulatory agencies would benefit from the reported data being accessible to them through the EPA’s electronic reporting system wherever and whenever they want or need access (as long as they have access to the Internet). The ability to access and review air emission report information electronically will assist air regulatory authorities to more quickly and accurately determine compliance with the NSPS.

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**Commenter Name:** Kelly Dixon, Director

**Commenter Affiliation:** Land Protection Division, Oklahoma Department of Environmental Quality (DEQ)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0195

**Comment Excerpt Number:** 7

**Sort Order:** 101

**Comment Excerpt:**

Surface emissions monitoring, wellhead and control system monitoring requirements, recordkeeping requirements and reporting requirements, including requirements for updating the design plan, are proposed to be increased for MSW landfills affected by Subpart Cf.

Surface emissions monitoring changes include adding integrated surface emissions monitoring criteria of an average methane emission rate of 25 ppm over background over a 50,000 square foot grid. These changes are in addition to the 500 ppm methane instantaneous measure currently used. Reducing the walking pattern interval for traversing the landfill during surface monitoring from 30 meters to 25 feet does not provide a methane emission reduction that corresponds to the additional monitoring costs. Average wind speed must be determined using an onsite anemometer with a continuous recorder during the monitoring event. All of the data collected must be recorded, stored and reported to DEQ.

If a MSW landfill is required to install a GCCS, then additional monitoring, recordkeeping, and reporting requirements ensue. For a GCCS, annual operation, monitoring and maintenance costs are estimated by EPA as \$2,500 per well, \$50,000 in electricity per blower and \$5,000 per flare (2015 \$s).

Wellhead monitoring requires landfills to monitor each well for pressure, temperature, nitrogen and oxygen values at the wellhead. All of the data collected must be recorded, stored and reported to DEQ. If the MSW landfill requests an alternative monitoring parameter temperature, nitrogen or oxygen, it must demonstrate that the alternative parameters will not cause fires and will not be detrimental to methanogenic bacteria. The design plan must be updated and approved prior to implementing an alternative operating parameter value for temperature, nitrogen or oxygen.

For MSW landfills installing a non-enclosed flare as the control device, the landfill must install, calibrate, maintain and operate a heat sensor or thermocouple to ensure the flame is operational, and the landfill must install, calibrate, maintain and operate a gas flow rate measuring device to record the flow every 15 minutes and must inspect the bypass line valve to ensure it is closed. All of this data must be recorded, stored and reported to DEQ.

DEQ is concerned the financial impact of these monitoring, recordkeeping and recording requirements will be acutely felt by the MSW landfills owned and operated by municipal or county governments or public authorities and small independently owned landfills in this state.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0180, comment excerpt 2, under comment code 15z.

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**Commenter Name:** Comment submitted by Charlie Sedlock, Director

**Commenter Affiliation:** Hamm, Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0084.1

**Comment Excerpt Number:** 3

**Sort Order:** 102

**Comment Excerpt:**

We believe that the paperwork in the existing rule is too much and should be minimized. EPA should have the ability to monitor stack emissions from the control device and fugitive emissions from the landfill surface to reassure it that landfill gas emissions are appropriately controlled. This should not require the amount of information and level of detail that the proposed rule includes.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0180, comment excerpt 2, under comment code 15z.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager

**Commenter Affiliation:** Cornerstone Environmental Group, LLC

**Document Control Number:** EPA-HQ-OAR-2014-0451-0180

**Comment Excerpt Number:** 6

**Sort Order:** 103

**Comment Excerpt:**

State agencies are burdened with rapidly expanding rules and regulations at a time when budgets are shrinking. The state agencies are doing the best they can with what resources they have available. Adding more prescriptive requirements and more information they must turn around and approve within a reasonable timeframes is simply not going to happen and more documents will remain on the shelves without review.

Therefore, Cornerstone suggests the USEPA selectively review the proposed administrative reporting and update requirements and convert the vast majority of them to self-implementing processes which the facilities can implement similarly to the self-implementation of startup, shutdown, and malfunction (SSM) plans and the recent Greenhouse Gas (GHG) reporting rules. Subject facilities are Title V facilities which are already required to submit various reports which redundantly regurgitate exceedances and related corrective actions several times a year. In short, USEPA should focus on the main goal of the regulation which is minimizing and preventing surface emissions. Everything else that is being proposed simply adds details, but does not provide meaningful results.

**Comment Response:**

See responses to DCN EPA-HQ-OAR-2014-0451-0180, comment excerpt 2, under comment code 15z and DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, under comment code 15b.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 112

**Comment Excerpt:**

It also appears that EPA may require sites to re-report historical reports and/or prepare updates to historical reports. This is unnecessary for sites that are already subject to GCCS installation and operation requirements as applicability of rule requirements has already been documented and implemented. We understand that updated reports (i.e., NMOC emission rate report) would be required where a site has not triggered applicability thresholds and must re-affirm applicability.

NMOC sampling results used for Tier 2 and Tier 3 demonstrations are valid for five years from the sampling date, as stated in §60.35f(a)(3)(iii). Results obtained prior to the effective date of the rule that are within this 5-year period are valid and acceptable for use in demonstrating applicability with XXX, Cf and future state plan requirements.

**Comment Response:**

The EPA notes that it has worked to minimize the submittal of information that has previously been submitted by the owner or operator. For example, in the equipment removal report, we have removed the requirement to submit the initial performance test report if this report was previously submitted to the Central Data Exchange (CDX). Instead, the owner or operated would submit identifying information so that the review could locate the report in WebFIRE. This change was also made to the initial annual report.

## 16.0 RULE LANGUAGE CORRECTIONS

### 16.1 Rule Language: Definitions (existing)

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**Commenter Name:** Robert H. Colby and William O’Sullivan, Co-Chairs

**Commenter Affiliation:** National Association of Clean Air Agencies (NACAA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0197

**Comment Excerpt Number:** 20

**Comment Excerpt:**

NACAA recommends that the definition of design capacity be revised to acknowledge that both air and waste regulators can be responsible for limiting the amount of waste a landfill can accept. We propose the following (the addition is underlined for clarity):

*Design Capacity* means the maximum amount of solid waste a landfill can accept as indicated in terms of volume or mass in the most recent permit issued by the state, local, or Tribal air or waste agencies responsible for regulating the landfill, plus any in-place waste not accounted for in the most recent permit.

**Comment Response:**

EPA is not making the change suggested by the commenter. EPA believes that the existing language encompasses both air and waste agencies responsible for regulating landfills. It also encompasses other agencies, e.g., a health department, which has such responsibility. As such, the commenter's suggested change would actually narrow the definition.

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**Commenter Name:** Comment submitted by Catharine Fitzsimmons, Chief, Air Quality Bureau

**Commenter Affiliation:** Iowa Department of Natural Resources (DNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0078.1

**Comment Excerpt Number:** 1

**Sort Order:** 200

**Comment Excerpt:**

The DNR recommends that EPA clarify in the preamble of the final rule that if a state issues an air construction permit that limits the maximum amount of waste that a landfill can accept (either in terms of mass or volume), this air permit can be used to limit the design capacity of the landfill.

EPA proposes to include in new Subpart XXX the same definition of *design capacity* as currently defined in Subpart WWW (60.761 at page 41831):

*Design Capacity* means the maximum amount of solid waste a landfill can accept as indicated in terms of volume or mass in the most recent permit issued by the state, local, or Tribal agency responsible for regulating the landfill, plus any in-place waste not accounted for in the most recent permit.



In EPA guidance and applicability determinations, EPA has provided references to permit limits from solid waste permits, but not to permit limits from air permits.<sup>1</sup> State air agencies are also responsible for regulating landfills. In the 1990's when Subpart WWW was being developed, it may not have been as common as it is today for a landfill to have an air permit that would have restrictions on capacity.

[Footnote 1] See page 16, EPA document Municipal Solid Waste Landfill NSPS and EG – Questions and Answers, November 1998 and Control # 1000047 from the Applicability Determination Index – 09/29/10 letter to S. Lee Johnson regarding Marquette County Solid Waste Landfill.

#### **Comment Response:**

EPA is not making the suggested change. EPA believes that the existing definition encompasses both air and waste agencies responsible for regulating landfills. It also encompasses other agencies, e.g., a health agency, which may have such responsibility. EPA believes that it is important to refer to agencies generically as which agency or agencies has responsibility for regulating landfills varies from state to state.

This commenter also submitted this identical comment in their 2015 letter—DCN-EPA-HQ-OAR-2003-0451-0162 (page 1). This response is for both of these comments.

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**Commenter Name:** Comment submitted by Dave Heitz

**Commenter Affiliation:** Geosyntec Consultants

**Document Control Number:** EPA-HQ-OAR-2003-0215-0102.1

**Comment Excerpt Number:** 7

**Sort Order:** 201

#### **Comment Excerpt:**

According to §60. 760, *"Design capacity means the maximum amount of solid waste a landfill can accept, as indicated in terms of volume or mass in the most recent permit issued by the state, local, or Tribal agency responsible for regulating the landfill, plus any in-place waste not accounted for in the most recent permit..."* The phrase *"most recent permit issued"* has been interpreted differently between agencies.

Typically a landfill's initial solid waste permit is issued for the life of the site. Depending on the permitting agency, there may be a second step that is required prior to disposing of waste in any particular cell or area. This may be considered a construction permit, authorization to place waste, or other term. For calculating the design capacity, an agency may take the "life of site" capacity or only the areas that have completed the second step of being allowed to place waste in a new area. The difference between these two methods of determining the design capacity can make a significant difference in the timing of the various requirements of Subpart XXX (or Subpart WWW).

The preamble of the rulemaking (63 F.R. 32744 , 16 June 1998) that discussed the reasoning of the addition of the term "modification" stated, *"Equipment at a landfill is essentially the landfill itself and while production can be roughly equated to the amount of waste placed in the landfill, total 'production' for the entire life of the facility is controlled through the amount of design*

*capacity specified in the permit. Although the amount and character of waste present at any given time may vary within the design capacity constraints set forth in the permit, emissions over the total life of the facility depend on the amount of waste a landfill can accept pursuant to its permitted design capacity.* " This language implies that the design capacity relates with the permitted capacity for the entire/total life of the facility. Along with making a determination on the design capacity thresholds , it would be beneficial to add clarification on the " design capacity" term.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0078.1, excerpt number 1, under comment code 16a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 61

**Sort Order:** 300

**Comment Excerpt:**

EPA should further clarify the definitions of household waste.

Republic supports EPA's decision to clarify that the term "household waste," used in Subpart WWW to define the scope of the key term "MSW landfill," was not intended to apply to segregated yard waste or a combination a segregated yard waste and non-household waste, such as "construction and demolition waste." We agree that revision will help ensure that landfills that only receive construction and demolition waste, even if some of that waste originates from a household, will not trigger the requirements of either Subpart WWW, Subpart XXX, or Subpart Cf. However, to further support that clarification, and in recognition that some construction, renovation or demolition wastes can originate from a "household" as EPA has defined that term, Republic asks EPA to consider the following additional revision to the definition of the term "household waste."

Household waste means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including, but not limited to, single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas). Household waste does not include fully segregated yard waste.

Segregated yard waste means vegetative matter resulting exclusively from the cutting of grass, the pruning and/or removal of bushes, shrubs, and trees, the weeding of gardens, and other landscaping maintenance activities. Household waste does not include construction, renovation, or demolition wastes **even if originating from a household.**

**Comment Response:**

Consistent with the September 8, 2006 proposed amendments, we are finalizing the definition of "household waste" and adding a definition of "segregated yard waste" in subpart XXX (40 CFR 60.761) to clarify our intent regarding the applicability of the landfills NSPS to landfills that do not accept household waste, but accept segregated yard waste. In addition, the EPA added the

phrase as suggested by the commenter to clarify that household waste does not include construction, renovation, or demolition wastes even if originating from a household.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 3

**Sort Order:** 301

**Comment Excerpt:**

Segregated Yard Waste. Ohio EPA suggests that since ‘segregated yard waste’ is used only once in the rule, in the definition of household waste, move this definition to the household waste definition. The revised definition would be:

*Household waste* means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including, but not limited to, single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas). Household waste does not include fully segregated yard waste. Segregated yard waste is vegetative matter resulting exclusively from the cutting of grass, the pruning and/or removal of bushes, shrubs, and trees, the weeding of gardens, and other landscaping maintenance activities.

Solid Waste. In the definition, the source of sludge is included. This is redundant with the definition of sludge. Suggest deleting the redundant description. The revised definition would be:

*Solid waste* means any garbage, sludge and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permits under 33 U.S.C. 1342, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (42 U.S.C 2011 et seq.).

**Comment Response:**

The EPA is updating the definition of sludge and solid waste to reference the terms as defined in 40 CFR 258.2 for consistency with the terms as defined in RCRA. See Section VI.F.6 of the 2016 NSPS Final Preamble.

We are also finalizing the proposed definition of segregated yard waste in subpart XXX (40 CFR 60.761) to clarify our intent regarding the applicability of the landfills NSPS to landfills that do not accept household waste, but accept segregated yard waste.

See also the response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 61, under comment code 16a.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 62

**Sort Order:** 302

**Comment Excerpt:**

EPA should further clarify the definition of MSW landfill.

Republic also asks EPA to consider conforming revisions to the term "Municipal solid waste landfill or MSW landfill" and to further confirm that a landfill must receive household waste to qualify as an MSW landfill, regardless of what other types of waste it may receive. Specifically, Republic recommends that EPA consider adopting the following revisions to the definition of the term "MSW landfill":

*Municipal solid waste landfill or MSW landfill* means an entire disposal facility in a contiguous geographical space where household waste is placed in or on land. **In addition to household waste, a An** MSW landfill may also receive other types of RCRA Subtitle D wastes (§ 257.2 of this title) such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, **and** industrial solid waste, **and construction, renovation, or demolition wastes even if originating from a household.** Portions of an MSW landfill may be separated by access roads. An MSW landfill may be publicly or privately owned. An MSW landfill may be a new MSW landfill, an existing MSW landfill, or a lateral expansion.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 61, under comment code 16a.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 107

**Sort Order:** 303

**Comment Excerpt:**

In the Preamble, EPA states it proposes to revise the definition of "Household waste" and to add a definition of "Segregated yard waste" to make clear the applicability of proposed 40 CFR part 60, subpart Cf.

We support EPA clarifying that the original definition of "household waste" was not intended to apply to landfills that accept only segregated yard waste or a combination a segregated yard waste and non-household waste such as construction and demolition waste. We request that EPA clarify that household waste would exclude construction, renovation and demolition waste originating from a household. We also recommend that EPA tighten up the language of "Municipal solid waste landfill or MSW landfill" in conjunction with the clarification because

there are still agencies who may question such applicability. In order for a landfill to be an MSW landfill, it must already accept household waste. If other types of waste are received, in order to be considered a MSW landfill it must take household waste in addition to any other waste. Accordingly, we recommend the following definition to be incorporated into the final NSPS / EG rule:

*Municipal solid waste landfill or MSW landfill means an entire disposal facility in a contiguous geographical space where household waste is placed in or on land. [add bolded text] In addition to household waste, MSW landfill may also receive other types of RCRA Subtitle D wastes (§ 257.2 of this title) such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste, construction, renovation, or demolition wastes even if originating from a household. Portions of an MSW landfill may be separated by access roads. An MSW landfill may be publicly or privately owned. An MSW landfill may be a new MSW landfill, an existing MSW landfill, or a lateral expansion.*

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 61, under comment code 16a.

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**Commenter Name:** Comment submitted by William C. Allison V., Director, Air Pollution Control Division

**Commenter Affiliation:** Colorado Department of Public Health and Environment

**Document Control Number:** EPA-HQ-OAR-2003-0215-0082.1

**Comment Excerpt Number:** 10

**Sort Order:** 304

**Comment Excerpt:**

According to EPA's GHGRP for MSW landfills (40 CFR Part 98, Subpart HH), garden waste has the third highest methane generation rate (k-value). The Division is concerned that, due to this proposed exclusion, landfills accepting only segregated yard waste and other non-household waste will have high methane emissions but will not require control because the landfill would not be subject to Subpart XXX. If EPA elects to finalize this proposed exclusion, the Division requests that EPA include clear standards for identifying and labeling waste streams to assist in determining the amount of degradable carbon.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 61, under comment code 16a.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 68

**Will be summarized and responded to in the preamble:**

**Sort Order:** 305

**Response Status:** Final

**Comment Excerpt:**

The industry appreciates the modifications proposed to the definition of household waste. By expanding the definition to exclude segregated yard waste, greater clarity is given that the intent of the rule to regulate typical MSW waste.

The preamble also clarifies that construction and demolition (C&D) waste was not intended to be included in the definition of household waste. However, the verbiage in the rule does not include it. For clarity, we recommend adding an exclusion of C&D waste to the definition of household waste. Without this additional exclusion of C&D waste from the definition of household waste, C&D landfills could inadvertently become subject to regulation under these rules.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 61, under comment code 16a.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 64

**Sort Order:** 306

**Comment Excerpt:**

The industry appreciates the modifications proposed to the definition of household waste. By expanding the definition to exclude segregated yard waste, greater clarity is given that the intent of the rule is to regulate typical MSW waste.

The preamble also clarifies that construction and demolition (C&D) waste was not intended to be included in the definition of household waste. However, the verbiage in the rule does not include this important exclusion. For clarity, we recommend adding an exclusion for C&D waste to the definition of household waste. Without this additional exclusion, C&D landfills could inadvertently become subject to regulation under these rules.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 61, under comment code 16a.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 11

**Sort Order:** 307

**Comment Excerpt:**

TXSWANA agrees that changes to the definition of household waste are needed and supports the proposed change. The problem with the present definition in WWW is that it is too inclusive. It covers any waste that comes from a household. The problem is that a construction and demolition (C&D) landfill in Texas could find itself subject to the NSPS rules if it accepted a load of shingles or inert materials from the demolition of a house. Remediating this problem appears from the preamble to be the goal of the redefinition. TXSWANA requests that the language of the rule also clarify that C&D waste is excluded from the definition of household waste.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 61, under comment code 16a.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 45

**Sort Order:** 308

**Comment Excerpt:**

TxSWANA agrees with the proposed changes to the definition of "household waste." The clarification language that construction and demolition (C&D) waste is excluded from the definition of household waste is very important to avoid inadvertently requiring C&D landfills to comply with these proposed rules.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 61, under comment code 16a.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 56

**Sort Order:** 309

**Comment Excerpt:**

NWRA and SWANA support the proposed changes to the definition of household waste. The clarification language that construction and demolition (C&D) waste is excluded from the definition of household waste is very important to avoid inadvertently requiring C&D landfills to comply with these proposed rules.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0176, excerpt number 61, under comment code 16a.

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**Commenter Name:** Ellen Smyth, President

**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0194

**Comment Excerpt Number:** 27

**Comment Excerpt:**

As a matter of clarity, we suggest that the term “non-producing” be changed to “lowproducing” as most areas produce some amount of LFG. The only truly nonproducing areas are those with inert materials only, and those are already exempt from GCCS coverage.

**Comment Response:**

The “non-producing” does not appear in the final preambles or rules. However, the EPA is retaining the term “nonproductive” area in the final rules, consistent with 40 CFR part 60, subpart WWW. The term applies to areas that are not expected to produce gas because of the age of the material, for example. Nondegradable materials are identified with the term “nondegradable.”

## 16.2 Rule Language: Definitions (new)

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Fire. The rule provides no definition of fire. As a result, Ohio EPA has had some difficulty in implementing the NSPS provisions in an efficient way. Ohio EPA will approach a landfill operator with a concern that a smoldering fire is occurring within the municipal solid waste if carbon monoxide exceeds 1000 ppmv or if waste temperature exceeds 170° F. Because gas temperature at the wellhead will be less than waste temperature, Ohio EPA is unlikely to entertain a higher operating value for temperature above 170° F.



The FEMA document Landfill Fires Their Magnitude, Characteristics, and Mitigation (May 2002) {[www.usfa.dhs.gov/downloads/pdf/publications/fa-225.pdf](http://www.usfa.dhs.gov/downloads/pdf/publications/fa-225.pdf)} and the California Integrated Waste Management Board Landfill Fires Guidance Document (January 2007) {[www.calrecycle.ca.gov/swfacilities/Fires/LFFiresGuide/default.htm](http://www.calrecycle.ca.gov/swfacilities/Fires/LFFiresGuide/default.htm)} identify six indicators that generally confirm a subsurface fire. These are:

- Substantial settlement over a short period of time.
- Smoke or smoldering odor emanating from the gas extraction system or landfill.
- Elevated levels of CO in excess of 1,000 parts per million (ppm).
- Combustion residue in extraction wells or headers.
- Increase in gas temperature in the extraction system (above 140°F).
- Temperatures in excess of 170°F.

**Comment Response:**

The EPA appreciates the information submitted by the commenter. This commenter and others suggested parameters that could indicate the presence of a landfill fire, however, the suggested parameters and thresholds varied. Because of the varied parameters and levels of parameters for identifying fires, the EPA did not add a definition of fire in the final rule.

Instead of defining fire, the final rules require owners and operators to monitor the wellhead temperature on a monthly basis and to report temperature exceedances in the annual report. Owners or operators may request higher operating values for temperature and must demonstrate that the higher operating value does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens, but it is up to the regulatory authority to approve or disapprove the request. To demonstrate that the HOV will not cause fires, the landfill owners or operators may use wellhead monitoring data, carbon monoxide test results, and observational data such as no visible presence of soot/ash. As a regulatory authority, the commenter may consider the six indicators that it provided in evaluating the landfill's request for a higher operating value and supporting information.

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**Commenter Name:** Comment submitted by Paul Aud, Environmental Engineering Manager

**Commenter Affiliation:** Louisville Metro Air Pollution Control District (APCD)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0091.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

"Expansion" - should be defined to mean "a permanent modification that increases the capacity of the gas collection and control system (GCCS), such as increased header pipe sizes, increased blower sizes and capacity, increased number of gas wells that remain in operation and are not temporary modifications." Under this definition, reworking a blower on the gas collection system, repairing existing equipment, or replacing a gas well with an exceedance that is part of the design plan, would not be considered an "expansion" since doing so would not increase the capacity of the GCCS.

As an alternative, EPA could develop guidance to clearly explain the difference between GCCS expansion due to an increase in the design of a landfill and a GCCS expansion as a result of corrective actions taken pursuant to 60.765(a)(5). The guidance should also explain what an increase in the capacity of GCCS includes when expanding due to corrective actions. It should also clarify whether expansion includes increasing the capacity of the actual GCCS or does it include accessories that allow the GCCS to operate as design and more efficiently? For example, adding or replacing with a larger sump pump at a collection well removes water from the collection area allowing the well to function as designed. EPA should also clearly state that dewatering a collection well does not increase the capacity of the GCCS because it simply allows the collection well to operate as designed.

**Comment Response:**

The EPA has not added a definition of expansion to the final rules because the context of the term “expansion” has been revised in the final rules. Specifically, the EPA has revised the corrective action procedures in 40 CFR 60.765(a)(5) to allow the landfill owner or operator to conduct a root cause analysis to determine the most appropriate course of action, instead of requiring the owner or operator to expand the GCCS. Because of this change, there is no need to define expansion in the final rules.

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 28

**Sort Order:** 300

**Comment Excerpt:**

Removing or capping (as discussed above) an active gas extraction well may also be an option. However, it is operationally a last resort option as it results in permanent removal of the well. Circumstances may change that would warrant reactivating the well at some future point in time (e.g., surface emissions monitoring indicate additional collection is needed).

A landfill that experiences declining flows may need to take a well off-line permanently (abandon a well). In this case, the well is disconnected from the vacuum but may or may not be physically removed or drilled out and capped, depending on access or site conditions. Once a well is abandoned it is not part of the NSPS/EG collection and control system. Well abandonment records would be kept for the required rule timeframe. As long as SEM requirements are met in the area of the abandoned well, the abandonment should not be considered a design change requiring a revision to the GCCS Design Plan. Abandoned wells will be listed in the NSPS/EG compliance report and the as-built drawing would be updated to remove abandoned wells as required by the NSPS/EG rule. We request EPA include a definition of abandoned well in the NSPS/EG rule, as follows:

*An abandoned well or collector means a well or collector that has been permanently disconnected from the gas collection system.*

**Comment Response:**

The EPA did not add a definition of “abandoned well” to the final rules. However, the EPA agrees that owners or operators may need to take a well off-line permanently to address declining gas flows. The owner or operator would continue to keep an up-to-date plot map showing each existing and planned collector in the system with a unique identification location label for each collector, including wells that have been permanently abandoned. The entire GCCS, including wells that have been permanently abandoned, would continue to be subject to quarterly surface emissions monitoring.

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**Commenter Name:** Ellen Smyth, President**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)**Document Control Number:** EPA-HQ-OAR-2003-0215-0194**Comment Excerpt Number:** 18**Sort Order:** 301**Comment Excerpt:**

Well “abandonment” is used in the industry when a well is taken off-line permanently. The well is disconnected from the vacuum source but may or may not be physically removed or drilled out and capped, depending on access or site conditions. Once abandoned, the well would not be part of the NSPS/EG compliance system. Past records would be kept for the required timeframe. As long as SEM requirements can be met in the area of the abandoned well, the abandonment should not be considered a design change to the GCCS Design Plan. Abandoned wells should be listed in the next semi-annual NSPS/EG compliance report and then taken off of the site’s GCCS map. We request that EPA add a similar definition of “well abandonment” to the rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, excerpt number 28, under comment code 16b.

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**Commenter Name:** Ellen Smyth, President**Commenter Affiliation:** Lone Star Chapter of the Solid Waste Association of North America (TxSWANA)**Document Control Number:** EPA-HQ-OAR-2003-0215-0194**Comment Excerpt Number:** 17**Comment Excerpt:**

To make the above procedure effective, some additional definitions should be added to the rule. In the industry, “well decommissioning” is used to denote the taking of a well off-line temporarily to address operational or maintenance issues. As noted, decommissioned wells should continue to be monitored monthly to determine whether they can be brought back on-line; however, during this time, they should not be subject to wellhead standards. Further, decommissioning should not be considered a design change to the GCCS Design Plan.

Decommissioning a well should not require agency approval, however, they should be included in the semi-annual NSPS/EG compliance reports. We request that EPA add a similar definition of “well decommissioning” to the rule.

**Comment Response:**

The EPA did not add a definition of “well commissioning” to the final rules. However, regarding well decommissioning, the EPA has expanded the GCCS removal or capping criteria to also cover well decommissioning. The EPA has provided an opportunity for landfills to demonstrate to the regulatory agency that the GCCS will be unable to operate due to declining gas flows. See Section V.C of the 2016 NSPS and Emission Guidelines Final Preambles for additional discussion about addressing non-productive areas.

The owner or operator would continue to keep an up-to-date plot map showing each existing and planned collector in the system with a unique identification location label for each collector, including wells that have been decommissioned. The entire GCCS, including wells that have been decommissioned, would continue to be subject to quarterly surface emissions monitoring.

### 16.3 Rule language Excluding Definitions

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 103

**Sort Order:** 100

**Comment Excerpt:**

WM requests EPA clarify its regulatory language relating to "bypass" as it relates to open flare, enclosed combustor and gas treatment system operations. EPA's proposed language in §60.37f(b)(2) and §60.766(b)(2) deviates slightly from Subpart WWW language and in doing so creates confusion. Whereas Subpart WWW allowed an owner/operator to either monitor flow to the control device *or* secure the bypass line in a closed position with a lock and key configuration and conduct monitoring to ensure that no gas is diverted through the bypass line, Subparts Cf and XXX would require *both* flow and bypass monitoring. A requirement to meet both requirements is practically infeasible for landfill gas control devices, because they are not designed with a bypass vent.

For typical industrial operations, bypass means diverting contaminants from the air pollution control device to the atmosphere. When systems in other industries have "loads" or "exhausts" that don't meet intended control system design and operational standards, then these industries have to *bypass* the control system or device to prevent harm to the control device. The *bypass* is most often another stack to atmosphere that *bypasses* the control device. For example, a facility may have to *bypass* a baghouse to prevent hotter than normal gases from being run though it so the bags don't burn, thus preventing unnecessary downtime or worse, system malfunction.

For Landfill GCCS operations there is no bypass of the air pollution control device (open flare, combustion device) or treatment system. As part of normal/routine operation, **landfill gas may be re-routed from one control device to another control device or to a treatment system**, but this is part of an **enclosed loop system with no bypass to atmosphere**. There is no design or operation of bypass to atmosphere of landfill gas, therefore the requirement to monitor bypass flow is irrelevant and unnecessary so long as control devices are designed to prevent bypass.

Below are examples of two recent EPA rulemakings that include bypass requirements for typical industrial operations. According to §63.8420 (d) of the final Brick NESHAP Rule (40 C.F.R. Part 63, Subpart JJJJ), the bypass requirements are as follows:

*(d) If you own or operate an affected kiln that is subject to the emission limits specified in Table 1 to this subpart and must perform routine maintenance on the control device for that kiln, you may bypass the kiln control device and continue operating the kiln subject to the alternative standard established in this paragraph upon approval by the Administrator and provided you satisfy the conditions listed in paragraphs (d)(1) through (5) of this section.* [emphasis added]

As another example, the September 29, 2015 Final Petroleum Refinery MACT (40 C.F.R. Part 63, Subpart CC) discusses bypass requirements in the Preamble and includes specific requirements for bypass of a control device in the rule language. See excerpts below [emphasis added]:

*"In response to public comment, we are also clarifying changes to remove the proposed reference to air intrusion and **specifying that reporting of bypasses is only required when "regulated material" is discharged to the atmosphere as a result of a bypass of a control device.**"*

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**§63.644 (c)** *The owner or operator of a Group 1 miscellaneous process vent using a vent system that contains bypass lines that could divert a vent stream away from the control device used to comply with paragraph (a) of this section either directly to the atmosphere or to a control device that does not comply with the requirements in §63.643(a) shall comply with either paragraph (c)(1) or (2) of this section. Use of the bypass at any time to divert a Group 1 miscellaneous process vent stream to the atmosphere or to a control device that does not comply with the requirements in §63.643(a) is an emissions standards violation.*

**(1)** *Install, calibrate and maintain a flow indicator that determines whether a vent stream flow is present at least once every hour. A manual block valve equipped with a valve position indicator may be used in lieu of a flow indicator, as long as the valve position indicator is monitored continuously. Records shall be generated as specified in §63.655(h) and (i). The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream away from the control device to the atmosphere; **or***

**(2)** *Secure the bypass line valve in the non-diverting position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the non-diverting position and that the vent stream is not diverted through the bypass line. [September 29, 2015 Pre-publication version, Pages 34, 347-348 of 745]*

Only if and when true bypass of the control device or treatment system could occur should the landfill owner/operator be subject to the bypass monitoring and inspection provisions. We recommend EPA revise Cf as well as XXX language to be consistent with the current language in Subpart WWW, as follows:

§ 60.37f (b) *Each owner or operator seeking to comply with § 60.33f(c) using an enclosed combustor must calibrate, maintain, and operate according to the manufacturer's specifications, the following equipment:*

\*\*\*\*\*

§ 60.37f (b) (2) *A device that records flow to or bypass of the control device. The owner or operator must either:*

*(i) Install, calibrate, and maintain a gas flow rate measuring device that must record the flow to the control device at least every 15 minutes; or*

*(ii) Secure the bypass line valve in the closed position with a car-seal or a lock and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.*

\*\*\*\*\*

§ 60.37f (c) *Each owner or operator seeking to comply with § 60.33f(c) using a nonenclosed flare must install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:*

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§ 60.37f (c) (2) *A device that records flow to or bypass of the flare. The owner or operator must either:*

*(i) Install, calibrate, and maintain a gas flow rate measuring device that must record the flow to the control device at least every 15 minutes; or*

\*\*\*\*\*

§ 60.37f (g) *Each owner or operator seeking to demonstrate compliance with the control system requirements in § 60.33f(c) using a landfill gas treatment system must calibrate, maintain, and operate according to the manufacturer's specifications a device that records flow to or bypass of the treatment system.*

*The owner or operator must either:*

*(1) Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes; or*

*(2) Secure the bypass line valve in the closed position with a car-seal or a lock and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.*

**Comment Response:**

The EPA thanks the commenter for the input. The EPA has added the phrase "as applicable" to the regulation to acknowledge that not every system will have a bypass.

The flow monitor on the bypass is used to demonstrate that no gas is bypassing the control device. This monitoring requirement is consistent with the requirements for flares in the chemical and petroleum sectors. If a bypass exists, it must be monitored for flow. If the system is designed such that there is no physical means to bypass the control device, only the flow to the control device needs to be monitored.

In the case described by the commenter, if the "bypass" is actually a re-reroute to a different control device, the flow to each of the control devices should already be monitored, and as such, the "bypass" would already have a flow monitor.

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**Commenter Name:** Sharon H. Kneiss, President & CEO and David Biderman, Executive Director & CEO

**Commenter Affiliation:** National Waste & Recycling Association (NWRA) and Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0196

**Comment Excerpt Number:** 54

**Sort Order:** 101

**Comment Excerpt:**

We request EPA clarify "bypass" with respect to the LFG control device or treatment system. Typical industrial operations may include a bypass that diverts contaminants from the air pollution control device to the atmosphere (§63.8420 (d) and Table 2 of the final Brick NESHAP Rule, 40 CFR 63 Subpart JJJJ):

"(d) If you own or operate an affected kiln that is subject to the emission limits specified in Table 1 to this subpart and must perform routine maintenance on the control device for that kiln, you may bypass the kiln control device and continue operating the kiln subject to the alternative standard established in this paragraph upon approval by the Administrator and provided you satisfy the conditions listed in paragraphs (d)(1) through (5) of this section..."

Only bypasses that emit to the atmosphere should require monitoring and inspection provisions. However, a GCCS does not have a bypass of the air pollution control device. Any bypass of a control device exists simply to route landfill gas to another control device or to a treatment system, but this is part of an enclosed loop system with no bypass to atmosphere. Since there is no design or operation of bypass to atmosphere of landfill gas, any requirement to monitor bypass flow is unnecessary. We recommend EPA revise Cf and XXX language for open flares, enclosed combustors and treatment systems to be consistent with the current language in Subpart WWW, as follows:

*"A device that records flow to or bypass of the control device. The owner or operator shall either:*

*(1) Install, calibrate, and maintain a gas flow rate measuring device that must record the flow to the control device at least every 15 minutes; and or"*

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0198, excerpt 103 under comment code 16c.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 53

**Sort Order:** 102

**Comment Excerpt:**

By adding the word "and" at the end of 40 C.F.R. § 60.37f(c)(2)(i), indicating that landfills must separately comply with both 40 C.F.R. § 60.37f(c)(2)(i) and (ii), EPA appears to have assumed that all flares have a "bypass." However, that approach would make little sense for landfills because they do not have a "bypass" within the typical meaning of that term.

For most industrial sources of air emissions, "bypass" refers to a separate point of conveyance to the atmosphere that allows emissions to be routed around pollution control devices. Landfills do not have a "bypass" in that sense. The only "bypass" employed by landfills would be one that routes emissions from one control device to another control device capable of achieving the same level of emissions reduction. In other words, landfills do not bypass uncontrolled emissions to the atmosphere; all landfill gas is routed through a control device that, if operating properly, will reduce emissions in accordance with EPA's emission guidelines. If a control device must be shutdown and an alternative device is not available, the control device and the gas mover equipment are shut down, and all valves to the atmosphere are closed—no landfill gas is "bypassed" to the atmosphere.

Given that landfills do not have a "bypass" within the typical meaning of that term, EPA's proposal to require monitoring of bypass flow is unclear, and appears irrelevant and unnecessary. Unless EPA can clarify that requirement in a way that is relevant to landfills, Republic asks EPA to retain the current provision from Subpart WWW regarding requirements for "bypass" by making the following changes to the proposed emission guidelines:

40 C.F.R. § 60.37f(c)(2)

A device that records flow to or bypass of the flare. The owner or operator must *either*:

(i) Install, calibrate, and maintain a gas flow rate measuring device that must record the flow to the control device at least every 15 minutes; **and or**

(ii) Secure the bypass line valve in the closed position ....

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0198, excerpt 103 under comment code 16c.

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**Commenter Name:** Comment submitted by Curt Publow  
**Commenter Affiliation:** Decatur Hills Inc.  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1  
**Comment Excerpt Number:** 20

**Comment Excerpt:**

The proposed rule changes the wording from "A device that records flow to or bypass of the control device" to "A device that records flow to and bypass of the control device." *This wording change is a big change and it appears the change was made without any background discussion being provided. The rule language is basically now requiring flow to be measured. Flow was not required to be monitored by this rule before ... if there was no bypass; there was no way for the gas to exit without going through the control device. Therefore, it did not matter whether flow was measured or not (there are other rules and requirements that may make it reasonable to measure flow BUT this rule has been changed remarkably by this revision). This would require a flow meter on the flare and on any bypass of the flare. Other performance standards within the rule demonstrate ongoing requirements are met and that the available landfill gas is being collected. Flow is not required to demonstrate this fact.*

**Comment Response:**

The EPA always intended for the flow to control devices to be monitored. To avoid the confusion caused by the previous wording, as demonstrated by this comment, the EPA changed the wording in the new regulation. The flow monitor on the line to the control device is used to determine whether the design flow rate to the control device is exceeded. The flow monitor on the bypass line is used to determine the status of the bypass line and to demonstrate that no gas is bypassing the control device. This is consistent with the requirement for bypass lines in the chemical and petroleum sectors.

If a bypass exists, it must be monitored for flow. If the system is designed such that there is no physical means to bypass the control device, only the flow to the control device needs to be monitored. The EPA has added the phrase "as applicable" to the regulation to acknowledge that not every system will have a bypass.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch  
**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0156  
**Comment Excerpt Number:** 6

**Comment Excerpt:**

The proposal defines a series of exceedances but does not make those exceedances reportable under §60.39f(c)(1). The following exceedances are defined in the proposal but are not explicitly reportable:

"For the purpose of demonstrating whether the gas collection system flow rate is sufficient with §60.33f(b)(2)(iii), the owner or operator must measure gauge pressure in the gas collection header applied to each individual well monthly. If a positive pressure exists, action must be initiated to correct the exceedance within 5 calendar days, except for the three conditions

allowed under §60.34f(b). If negative pressure cannot be achieved without excess air infiltration within 15 days of the first measurement, the gas collection system must be expanded to correct the exceedance within 120 days of the initial measurement of positive pressure. Any attempted corrective measure must not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the Administrator for approval." [Page 52153 §60.36f(a)(3) for gauge pressure readings from gas collection systems]

"Each owner or operator seeking to comply with §60.33f(c) using a non-enclosed flare must install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment: (1) a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate continuous presence of a flame. (2) a device that records flow to or bypass of the flare..." [from Page 52155 §60.37f(c) related to open flares]

"Each owner or operator seeking to demonstrate compliance with the control system requirements §60.33f(c) using a landfill gas treatment system must calibrate, maintain, and operate according to the manufacturer's specifications a device that records flow to or bypass of the treatment system..." [from Page 52155 §60.37f(g) related to treatment systems]

"Any reading of 500 parts per million or more above background at any location must be recorded as a monitored exceedance and the actions specified in paragraphs (c)(4)(i) through (v) of this section must be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of §60.34f(d)." [from Page 52155 §60.36f(c)(4) related to surface emission monitoring]

Georgia EPD recommends the addition of the following reportable exceedances consistent with the above referenced sections of the proposal. These would be incorporated in §60.39f(c)(1) of the proposal:

**For collection systems, whenever a positive gauge pressure in the gas collection header is not corrected in the timeframe defined in §60.36f(a)(3).**

**For non-enclosed flares, the duration of time when a flare receives gas flow and the presence of a flame is not detected.**

**For treatment systems, the duration of time when monitoring parameters identified in the site-specific treatment system monitoring plan are out of range.**

**For surface emissions monitoring, any reading of 500 parts per million or more above background at any location for which specified actions in §60.36f(c)(4)(i) through (v) were not taken.**

#### **Comment Response:**

The exceedances identified by the commenter are explicitly reportable in 40 CFR 60.38f(h). As part of the annual report in 40 CFR 60.38f(h)(1), the owner or operator must report the value and length of time for exceedances of the following monitoring parameters:

§ 60.37f(a)(1) negative pressure; (b) combustion device temperature; (c) heat sensing device and flow; (d) parameters for a device other than a non-enclosed flare or an enclosed combustor or a

treatment system; and (g) parameters identified in the site-specific treatment system monitoring plan.

In addition, as the annual report 40 CFR 60.38f(h)(5), the owner or operator must report the location of each exceedance of the 500 parts per million methane concentration as provided in 40 CFR 60.34f(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch

**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0156

**Comment Excerpt Number:** 11

**Comment Excerpt:**

The preamble section I.B. (Page 52102 – Wellhead Operational Standards) of the proposal states that it:

"proposes to remove the operational (standards (*i.e.*, the requirement to meet operating limits) for temperature and nitrogen/oxygen at the wellheads. Landfill owners or operators would not be required to take corrective action based on exceedances of specified operational standards, but they would continue to monitor temperature and oxygen/nitrogen levels at wellheads in order to inform any necessary adjustments to the GCCS and would maintain records of monthly readings. The operational standard, corrective action, and corresponding recordkeeping and reporting remain for maintaining negative pressure at the wellhead"

EPA in its preamble Section IV.B.1 (Page 52111 – Wellhead Monitoring) states that it:

*Wellhead Monitoring.* The EPA proposes to remove the operational standards (*i.e.*, the requirement to meet operating limits) for temperature and nitrogen/oxygen at the wellheads and is thus removing the corresponding requirement to take corrective action for exceedances of these two parameters as discussed in section VI.B of this preamble. These adjustments to the wellhead monitoring parameters would apply to all landfills. Monthly monitoring of oxygen/nitrogen and temperature would still be required; however, fluctuations/variations in these parameters would no longer be required to be identified as exceedances in the annual reports. Instead, the landfill would maintain the records of this monthly monitoring on site and use the monitoring to inform any necessary adjustments to the GCCS and make them available to the Administrator[emphasis added] (EPA Administrator or administrator of a state air pollution control agency or his or her designee) upon request.

In keeping with EPA's intent as described in the preamble of the proposal, Georgia EPD recommends the following modifications to the paragraph on Page 52159 §60.39f(e) of the proposal to more clearly define when and which monitoring records are to be kept:

(e) Except as provided in §60.38f(d)(2), each owner or operator subject to the provisions of this subpart must keep for at least 5 years up-to-date, readily accessible **monthly** records of all collection and control system **monitoring records required in §60.37f and corrective action records required in §60.36f** ~~exceedances of the operational standards in §60.34f, the reading in~~

the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

**Comment Response:**

In the final Emission Guidelines, the EPA revised the recordkeeping requirements in 60.39f(e) to include exceedances of the wellhead monitoring parameters. Final 60.39f(e) requires records of wellhead monitoring exceedances, as well as records of corrective actions.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch  
**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0156  
**Comment Excerpt Number:** 15

**Comment Excerpt:**

Georgia EPD recommends removing the language "unless an alternative test method is established as allowed by §60.38f(d)(2)" from paragraphs §60.37f(a)(2)(i) and §60.37f(a)(2)(ii) (Page 52154) of the proposal, because leaving the language in could lead to a variety of proposed alternative methods in the landfill's site specific monitoring design plan, including calibration according to manufacturer's specifications, that are not as rigorous as an EPA approved reference method.

**Comment Response:**

The GCCS design plan must be prepared by a professional engineer and must be submitted to the regulatory authority for approval. Allowing for any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions gives the owner or operator flexibility to propose alternatives based on site-specific conditions. The alternatives will be reviewed by the regulatory authority and the regulatory authority will determine whether the alternatives are acceptable. Therefore, the EPA is retaining in the final rules the flexibility to include alternatives in the GCCS design plan.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 5

**Comment Excerpt:**

Applicability determinations completed by USEPA have sometimes provided contrary decisions to those written previously and the written replies seldom provide the industry with meaningful information which can be used in the future because USEPA does not provide the request which resulted in the applicability determination.

For instance, USEPA and state agencies have replied to various Tier 2 demonstration stating that as long as all of the intervening compliance obligations are fulfilled within the compliance timelines, a facility can update its Tier 2 as many times as they would like to try to show they are

under the 50 Mg/year threshold. However, the proposed regulation still remain silent regarding this fact. Great flexibilities could be written into various parts of that section of the rule alone to remove unnecessary steps and deadlines which are meaningless. The 30-month deadline for placing the system into operation is the only requirement that has been maintained. Therefore, USEPA should remove the intervening steps and simply require an annual report by a certain date for all landfills instead of the ambiguity that currently exists and allow all facilities to complete their Tier 2 sampling during the months of the year which is reasonable for sample collection. The current rule establishes a much more confusing timeline which is always the subject of many conversations to determine the actual meaningless "deadline". The rules are riddled with these unanswered conundrums.

**Comment Response:**

The final rules retain the Tier 1, Tier 2, and Tier 3 provisions. However, the EPA restructured the rules to provide a clear path for following each tier, including the requirement to recalculate the NMOC rate on an annual basis. When following Tier 2 for example, the owner or operator must recalculate the NMOC emission rate, using the site-specific NMOC concentration, on an annual basis, and must submit the results electronically within 60 days after the date of completing each performance test.

For new landfills, the initial NMOC emission rate report is due (A) 90 days after the date the final rule is published in the Federal Register, for landfills that commenced construction, modification, or reconstruction after July 17, 2014, but before the date the final rule is published in the Federal Register], or (B) 90 days after the date of commenced construction, modification, or reconstruction for landfills that commence construction, modification, or reconstruction after the date the final rule is published in the Federal Register.

For new landfills, the 1 year to submit a GCCS design plan and the 30 months to install and operate a GCCS begins upon the date an NMOC emission rate report shows NMOC emissions equal or exceed 34 Mg/yr.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 4

**Comment Excerpt:**

Protecting the Landfill Liner. To protect the landfill liner from puncture by vertical gas wells, Ohio EPA recommends adding a minimum separation of 15 feet from the liner to the bottom of the well. Ohio EPA has had incidents where wells were drilled to the liner and where wells have dropped eight feet in elevation over a one-year period. Because the majority of gas wells are installed pursuant to compliance with the NSPS, Ohio EPA believes this issue is best addressed in the NSPS rather than under the RCRA Subtitle D requirements. Suggested language: §60.762(b)(2)(ii)(A)(new 2) Be designed to maintain the integrity of the landfill liner system. At a minimum, the design shall provide for a 15 foot separation between the liner and the bottom of the well. §60.762(b)(2)(ii)(B)(1) Comply with the provisions specified in paragraphs (b)(2)(ii)(A)(1), (new 2), (2), and (2)(ii)(A)(4) of this section.

**Comment Response:**

The EPA disagrees that this issue is best addressed in the landfills regulations. RCRA subtitle D addresses the requirements for installing the landfill liner system. Any breach in the liner due to the installation of a GCCS well would not be consistent the requirements of RCRA subtitle D. The landfill owner or operator must design and install the GCCS such that the GCCS meets the requirements of all applicable regulations.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 8

**Comment Excerpt:**

Paragraph (c). Ohio EPA recommends inserting the concept that the need for a higher operating value is not the result of malfunction. The revised paragraph would be:

(c) Operate each interior wellhead in the collection system with a landfill gas temperature less than 55 °C and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration must be submitted to the Administrator for approval and must include supporting data demonstrating that the elevated parameter causes neither fires nor significantly inhibits anaerobic decomposition by killing methanogens, and must also demonstrate it is not due to poor maintenance or careless operation. The demonstration must satisfy all the criteria in order to be approved.

**Comment Response:**

Under the general provisions at 60.11(d), the landfill owner or operator has the general duty to operate the landfill and GCCS in a manner that minimizes emissions: (d) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. If the landfill owner or operator requests an HOV that is the result of poor maintenance or careless operation, then the owner or operator is not meeting 60.11(d). Therefore, there is no need to modify the landfill regulations to address this issue. The regulatory authority, however, may evaluate the need for a higher operating value based on the information provided by the landfill owner or operator.

See response to DCN EPA-HQ-OAR-2003-0215-0113.1, excerpt number 14, under comment code 15a for a discussion of the regulatory authority's review of HOV requests.

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**Commenter Name:** Comment submitted by Craig W. Butler, Director

**Commenter Affiliation:** Ohio EPA

**Document Control Number:** EPA-HQ-OAR-2003-0215-0079.1

**Comment Excerpt Number:** 17

**Comment Excerpt:**

Paragraph (a)(1). This paragraph begins with the phrase ‘The collection devices within the interior and along perimeter areas...’. Perimeter areas are mentioned without explanation. If these are interior wells, then the phrase is not necessary. If these are exterior wells, how close or far away are these wells to be considered along the perimeter area and thus subject to this paragraph? If these are exterior wells and distance doesn’t matter as long as they are connected with the gas collection and control system, then this paragraph should be applicable to all collection devices associated with the active collection system.

Paragraph (a)(1). This paragraph lists issues to be addressed by the design. Ohio EPA recommends inserting the concept of the ability to isolate a well or section and still be able to operate the remainder of the active collection system.

**Comment Response:**

The EPA has removed the phrase “perimeter areas” to avoid confusion and added a phrase to 40 CFR 60.769(a)(1) based on the commenter’s recommendations to ensure that GCCS design allows for the ability to isolate a well or section and still be able to operate the remainder of the active collection system. See Section VI.F.3 of the 2016 NSPS Final Preamble.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch

**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0156

**Comment Excerpt Number:** 2

**Comment Excerpt:**

One area of the proposal mistakenly requires landfills to install a GCCS when Tier 4 surface monitoring shows methane emissions are below 500 ppm instead of when methane emissions are **500 ppm or greater**.

On page 52148 §60.33f(b)(1)(iii) of the proposal, EPA erroneously states that a landfill must install and startup a collection and control system that captures landfill gas within 30 months after:

"The Tier 4 surface emissions report shows that surface methane emissions are below 500 parts per million methane for four consecutive quarters, as specified in § 60.38f(c)(5)(iii)"

**Comment Response:**

The EPA thanks the commenter for this information and has made this correction in the final rule.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch

**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0156

**Comment Excerpt Number:** 3

**Comment Excerpt:**

Throughout the proposal the EPA uses the terms "CNMOC" and "CNMOC" interchangeably to describe the concentration of non-methane organic compound (NMOC) expressed in parts per million by volume as hexane. Georgia EPD recommends a consistent use of the term "CNMOC" throughout the proposal as used in other landfill rules such as 40 CFR 60 Subpart WWW (New Source Performance Standards for Municipal Solid Waste Landfills).

Georgia EPD is providing a list of areas in the proposal where EPA uses the term "CNMOC" instead of "CNMOC":

- Page 52150 §60.35f(a)(1) – last sentence
- Page 52151 – first sentence
- Page 52152 §60.35f(b)(2) – last sentence
- Page 52160 §60.40f(a)(3)(iii) – entire paragraph

**Comment Response:**

The EPA thanks the commenter for this information and has made these corrections in the final rule.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director  
**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1  
**Comment Excerpt Number:** 41

**Comment Excerpt:**

At 60.765(c)(5), WDNR supports the requirement for monthly monitoring of cover integrity and implementation of cover repairs, but some provision needs to be made to allow repairs to be deferred in cold-climate states to the next non-winter season, when snow cover and frozen ground will no longer affect excavation and compaction of soils and repair to geosynthetics, and when wet seasonal rainfall has reduced to allow for good traction by construction equipment.

**Comment Response:**

The EPA maintains the provision on 60.765(c)(5) The owner or operator must implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

The EPA recognizes that landfills are located throughout the United States and that environmental conditions vary widely from state to state and season to season. If it is not practical for the owner or operator to implement cover repairs on a monthly basis due to weather conditions, then the owner or operator must implement the cover repairs as soon as practicable. To demonstrate that implementing cover repairs cannot be made immediately, the owner or



operator could document why repairs cannot be made immediately, but this is not required by the final rules.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 38

**Comment Excerpt:**

At 60.763(b)(3), the last sentence about design changes to be approved by the Administrator is out of place. It should be either deleted or moved to the section dealing with the design plan.

**Comment Response:**

The EPA disagrees that the sentence is out of place and has retained its location, which is consistent with 40 CFR part 60, subpart WWW.

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**Commenter Name:** Comment submitted by Bart Sponseller, Air Management Program and Ann Coakley, Waste and Materials Management, Director

**Commenter Affiliation:** Wisconsin Department of Natural Resources (WDNR)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0088.1

**Comment Excerpt Number:** 39

**Comment Excerpt:**

At 60.762(c), the last sentence is redundant, given the structure of the previous sentence. It should be deleted, and instead revert to the wording in s. 60.753(c).

**Comment Response:**

The EPA disagrees and believes the last sentence of 60.762(c) is essential to determining when the requirements of §§ 70.5(a)(1)(i) or 71.5(a)(1)(i) apply.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 19

**Comment Excerpt:**

The proposed rule expresses temperature limits expressed in Celsius. *Based on conversations with colleagues, we are not aware of ANY facility that expresses temperature in terms of Celsius at their flare. In the proposed rule, USEPA is now quoting temperatures for treatment systems in English units. The rule should be made consistent and changed to ALL English units at this point.*

**Comment Response:**

The EPA has revised the final rules to include both Celsius and Fahrenheit units of measure for wellhead monitoring. The final rules do not have temperature requirements for landfill gas treatment.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 21

**Comment Excerpt:**

The proposed rule has a typo at the end of 60.766{c}{1} *allows for the use of "A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot flame or the flame itself to indicate the continuous presence of flame." We request that USEPA correct the typo. It should read "pilot flame or the flare flame is absent" instead of "pilot flame of the flare flame is absent."*

**Comment Response:**

The EPA thanks the commenter for this information and has made these corrections in the final rule.

## 16.4 Other - Rule Language Corrections

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch

**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0156

**Comment Excerpt Number:** 4

**Comment Excerpt:**

Georgia EPD is providing a list of areas in the proposal where mathematical exponents are not written correctly:

- Page 52151 – 1st sentence: the expression of conversion factor should be " $3.6 \times 10^{-9}$ " instead of " $3.6 \times 10 - 9$ "
- Page 52151 §60.35f(a)(1)(ii)(A): the second equation in the proposal should read " $MNMOC = 2LoR (e - kc - e - kt) CNMOC (3.6 \times 10^{-9})$ " instead of " $MNMOC = 2LoR (e - kc - e - kt) CNMOC (3.6 \times 10 - 9)$ ".
- The second (Page 52151) and fifth (Page 52153) equations in the proposal should define the time since closure as " $c = \text{Time since closure, years (for an active landfill } c = 0 \text{ and } e - kc = 1)$ " instead of " $c = \text{Time since closure, years (for an active landfill } c = 0 \text{ and } e - kc = 1)$ ".

**Comment Response:**

The EPA has corrected these typographical errors in the final rule.

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**Commenter Name:** Karen D. Hays, chief, Air Protection Branch  
**Commenter Affiliation:** Georgia Environmental Protection Division (EPD)  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0156  
**Comment Excerpt Number:** 5

**Comment Excerpt:**

Georgia EPD respectfully requests that EPA number all equations (1 through 7) to make it easier to reference them in the future.

**Comment Response:**

The EPA has numbered the equations in both subparts Cf and XXX for easier referencing and cross referencing.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 4

**Comment Excerpt:**

The USEPA has rarely applied the lessons learned during the history of the NSPS. Few definitions have been revised or added and gaping holes continue to exist for questions that have been asked repeatedly by the industry to reduce unknowns.

**Comment Response:**

The final subparts Cf and XXX address many questions raised during implementation, including ones covered in the May 23, 2002 (67 FR 36475) and September 8, 2006 (71 FR 53271) proposed amendments to the Emission Guidelines and NSPS. As part of the final rule, the EPA is finalizing several definitions to address implementation concerns, including the definition of household waste, modification, segregated yard waste, sludge, solid waste, treated landfill gas, and treatment system. The EPA is also making clarifications regarding test methods and sampling and how to calculate design capacity. Many of these changes are the direct result of questions raised by landfill owners or operators and implementation concerns identified by regulating agencies and the EPA Regional offices.

## **17.0 EXECUTIVE ORDERS**

### **17.1 EO 12866-Regulatory Planning and Review**

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number: 89**

**Comment Excerpt:**

Executive Order ("EO") 12866 requires EPA and other executive agencies to prepare a regulatory impact analysis of an administrative rulemaking that meets the EO's definition of "significant regulatory action." Significant regulatory action is defined under EO 12866 to mean, among other things, a rulemaking that will have an annual effect on the national economy of "\$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities." EPA has noted that it did not prepare a regulatory impact analysis for the proposed rule because the rule is not an "economically significant regulatory action under Executive Order 12866 because it is not likely to have an annual effect on the economy of \$100 million or more." 79 Fed. Reg. at 41799.

Given its error in identifying the number of sites that will become subject to Subpart XXX, EPA has failed to explain its basis for concluding that the proposed rule is not likely to have an annual impact on the economy of \$100 million or more. Thus, EPA has no sound basis to conclude that EO 12866 does not require a regulatory impact analysis. After EPA reconsiders the economic impact of the proposed rule, as the Agency's obligation to engage in reasoned decision making requires, EPA must conduct a regulatory impact analysis if the costs of the rule are anticipated to be \$100 million or more.

**Comment Response:**

The EPA provided a basis for concluding that the proposed rule is not likely to have an annual impact on the economy of \$100 million or more. The associated annualized net cost of the baseline is estimated to be \$2.7 million (\$2012) in 2023 (79 FR 41799). The EPA accounted for sites that will become subject to subpart XXX in the supplemental notice for the NSPS (80 FR 52162).

The EPA has prepared a regulatory impact analysis (RIA) in conjunction with final subparts XXX and Cf. The RIA is in the docket for both rules.

## **17.2 Unfunded Mandates Reform Act (UMRA)**

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 5

**Comment Excerpt:**

TXSWANA makes the observation that the EPA has failed to include those EG facilities that will expand and be covered by the proposed requirements in Subpart XXX in its cost estimates.

EPA based its cost estimate on only greenfield sites. As a result of omitting the significant number of EG expansions planned in the next five years, EPA's cost estimates are grossly understated. TXSWANA urges the EPA to include those existing landfills that will modify their sites and then recalculate its cost estimate for implementation of this rule. The omission of these additional landfills mandates that EPA completely rethink the benefits and costs it is obligated to balance in proposing the NSPS rule. TXSWANA believes that the inclusion of the costs associated with the expansion of the control systems at these omitted landfills will exceed \$100M annually thereby triggering the requirements of the Unfunded Mandates Reform Act.

**Comment Response:**

In August 2015, the EPA issued a supplemental proposal to take into account landfills that will expand or modified in the next 5 years. In the final NSPS, we have estimated that 123 landfills will modify and become subject to the requirements in the final subpart XXX. The impacts of the final rule do not exceed \$100 million. See the 2016 NSPS preamble section VIII.D. for more information.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 5

**Comment Excerpt:**

Based on the analysis that EPA performed, considering "green field" sites only, EPA determined that neither Regulatory Flexibility Act (RF A) nor the Unfunded Mandates Reform Act (UMRA) was applicable to the proposed rule. As stated above, we are concerned that the analysis did not consider the number of existing NSPS sites this rule would apply to and therefore, that the RF A and UMRA decision may need further consideration.

**Comment Response:**

See response to DCN: EPA-HQ-OAR-2003-0215-0117.1, excerpt 5, under comment code 17e.

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**Commenter Name:** Comment submitted by Keith R. Connor, P.E., BCEE, Project Manager

**Commenter Affiliation:** Burns & McDonnell

**Document Control Number:** EPA-HQ-OAR-2003-0215-0104.1

**Comment Excerpt Number:** 4

**Comment Excerpt:**

The EPA determined this action does not result in expenditures in excess of \$100 million in any one year, therefore the action is not subject to the Unfunded Mandates Reform Act (UMRA). However, in assessing potential costs, EPA only considered new "green field" landfills that open

in 2014 or later. Existing landfills that expand would also be subject to the proposed rule. Thus, the vast majority of landfills that will be subject to the rule were not accounted for in the EPA's cost analysis.

**Comment Response:**

See response to DCN: EPA-HQ-OAR-2003-0215-0117.1, excerpt 5, under comment code 17e.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent

**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota

**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1

**Comment Excerpt Number:** 6

**Will be summarized and responded to in the preamble:**

**Sort Order:** 103

**Response Status:** Final

**Comment Excerpt:**

The EPA determined this action does not result in expenditures in excess of \$100 million in any one year, therefore the action is not subject to the Unfunded Mandates Reform Act (UMRA). However, in assessing potential costs, EPA only considered new "green field" landfills that open in 2014 or later. Existing landfills that expand would also be subject to the proposed rule. Thus, the vast majority of landfills that will be subject to the rule were not accounted for in the EPA's cost analysis.

**Comment Response:**

See response to DCN: EPA-HQ-OAR-2003-0215-0117.1, excerpt 5, under comment code 17e.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 33

**Will be summarized and responded to in the preamble:**

**Sort Order:** 200

**Response Status:** Final

**Comment Excerpt:**

The cost impact of such a mandated shift to enclosed flares would need to also be included in the Unfunded Mandate Act calculations as they have obviously been omitted to date.

**Comment Response:**

The landfill rules do not specify a specific control technique to reduce landfill gas emissions. Landfills are able to chose to control via a nonenclosed flare, enclosed combustion device, or

treat the landfill gas for subsequent sale or other beneficial use. There is no requirement to use a nonenclosed flare.

### 17.3 RFA/SBREFA

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 25

#### **Comment Excerpt:**

On August 28, 2013, EPA advised Advocacy of its intent to convene a SBREFA panel.<sup>16</sup> The scope of this panel included revisions to both the NSPS and the Emission Guidelines. EPA hosted a meeting with small entity representatives (SERs) on October 30, 2013, in advance of convening the panel.<sup>17</sup> After EPA convened the panel on December 5, it hosted a second meeting with SERs on December 19. During both of these meetings, SERs provided oral comments in response to the information EPA presented and then provided written comments.<sup>18</sup>

In general, SERs opposed changes to the NSPS and Emission Guidelines because they were very costly and had not been demonstrated to lead to emissions benefits. To the contrary, SERs suggested additional flexibilities that would improve landfill operations while maintaining the emissions reductions achieved under the current rules.

[Footnote 16] 5 U.S.C. § 609(b)(1).

[Footnote 17] *See Summary of Small Entity Outreach*, Regulations.gov Document ID EPA-HQ-OAR-2003-0215-0051

[Footnote 18] *Id.*

#### **Comment Response:**

The EPA originally convened a panel to obtain advice and recommendations from small entity representatives potentially subject to this rule's requirements. EPA carefully considered the small business representatives comments and opinions in developing the proposed and final rules. As the commenter notes, a copy of the "Summary of Small Entity Outreach, 2014" is included in Docket ID No. EPA-HQ-OAR-2003-0215 (Document ID EPA-HQ-OAR-2003-0215-0051). Further, in July 2015 the EPA issued the final report of the Small Business Advocacy Review Panel on EPA's Planned Proposed Rules – Standards of Performance for Municipal Solid Waste Landfills and Review of Emissions Guidelines for Municipal Solid Waste Landfills (Document ID EPA-HQ-OAR-2003-0215-0140).

EPA determined that both the proposal and supplemental proposal NSPS would not have a significant economic impact on a substantial number of small entities. For additional information on the final landfills NSPS, see the Regulatory Impact Analysis for the Final

Revisions to the Emissions Guidelines for Existing Sources and the New Source Performance Standards in the Municipal Solid Waste Landfills Sector.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy  
**Commenter Affiliation:** SBA Office of Advocacy  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1  
**Comment Excerpt Number:** 26

**Comment Excerpt:**

On March 28, 2014, the White House released the "Climate Action Plan: Strategy to Reduce Methane Emissions," which announced that EPA would issue a proposed rule for the NSPS and an ANPRM for the Emission Guidelines.<sup>19</sup> EPA published these notices on July 17, 2014, without completing a SBERFA panel report, as required by statute.<sup>20</sup>

[Footnote 19] Available at [http://www.whitehouse.gov/sites/default/files/strategy\\_to\\_reduce\\_methane\\_emissions\\_2014-03-28\\_final.pdf](http://www.whitehouse.gov/sites/default/files/strategy_to_reduce_methane_emissions_2014-03-28_final.pdf) . See pp. 4-5.

[Footnote 20] See 5 U.S.C. § 609(b)(5).

**Comment Response:**

The EPA certified its action as no significant impact on a substantial number of small entities (no SISNOSE); however the Small Business Panel was completed on July 21, 2015. A proposal for the Emission Guidelines and a Supplemental Proposal for the NSPS were issued on August 27, 2015.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy  
**Commenter Affiliation:** SBA Office of Advocacy  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1  
**Comment Excerpt Number:** 30

**Comment Excerpt:**

It is unclear how these additional small entities would be affected by revisions to the NSPS. While the proposed revisions would require GCCS installation earlier for entirely new facilities, expanded facilities are more likely to exceed immediately the current threshold. This would mean that the marginal impact of the rule change is the extended lifetime of the GCCS (see above), and this additional impact is not adequately explored in EPA's analysis.

The RFA provides that EPA is not required to conduct a SBREFA panel and prepare an Initial Regulatory Flexibility Analysis "if the head of the agency certifies that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."<sup>31</sup> EPA's guidance implementing this provision recognizes that the absolute number of affected



small entities is not the sole factor to consider.<sup>32</sup> The guidance identifies three factors to consider:

- "(1) magnitude of economic impact that may be experienced by regulated small entities;
- (2) total number of regulated small entities that may experience the economic impact; and
- (3) percentage of regulated small entities that may experience the economic impact."<sup>33</sup>

EPA relies too heavily on the second factor to justify its certification.

For the first factor, the magnitude of cost impact for one of four small entities is almost 12 percent of annual revenues in two consecutive years. The second of four small entities would experience an impact of over 2 percent of revenue in at least one year.<sup>34</sup> These are large impacts for small entities, even if their precise identity is unknown.

EPA discusses how averaging over 30 years affects this impact. "One landfill has impacts of up to 12 percent (as described above), but impacts of this magnitude only occur in two years of the 30 years. In general, average impacts over the 30-year timeframe are approximately 1 percent or less and maximum impacts are less than 3 percent."<sup>35</sup> This however is not a factual basis upon which to certify. First, EPA has not shown that small landfills can finance such costs over an extended period of time. Second, EPA assumes the discretion to adjust fees to completely cover costs, something it recognizes as challenging due to a highly competitive market.<sup>36</sup>

The third factor clearly weighs against certification. EPA recognizes that half of the small entities affected by the rule would experience a significant economic impact in two consecutive years.

[Footnote 31] 5 U.S.C. § 605(b).

[Footnote 32] Regulatory Management Division, EPA Office of Policy, *EPA's Action Development Process: Final Guidance for Rulewriters: Regulatory Flexibility Act, as amended by the Small Business Regulatory Enforcement Fairness Act*, (November 2006), p. 23.

[Footnote 33] *Id.*

[Footnote 34] *See EIA*, Table 4-1.

[Footnote 35] 79 Fed. Reg. at 41829

### **Comment Response:**

The EPA originally convened a panel to obtain advice and recommendations from small entity representatives potentially subject to this rule's requirements. EPA carefully considered the small business representatives comments and opinions in developing the proposed and final rules. A copy of the "Summary of Small Entity Outreach, 2014" is included in Docket ID No. EPA-HQ-OAR-2003-0215 (Document ID EPA-HQ-OAR-2003-0215-0051). Further, in July 2015 the EPA issued the final report of the Small Business Advocacy Review Panel on EPA's Planned Proposed Rules – Standards of Performance for Municipal Solid Waste Landfills and Review of Emissions Guidelines for Municipal Solid Waste Landfills (Document ID EPA-HQ-OAR-2003-0215-0140).

In addition to finalizing the report from the Small Business Advocacy Review Panel, in the regulatory impact analysis for the supplemental proposal for the landfills NSPS the EPA assessed the potential impact of the proposal on small entities, including small businesses and small governmental jurisdictions. This screening assessment concluded that only 13 small entities were projected to be impacted by the proposal. In addition, the impact to those entities was not significant because only two entities were estimated to have impacts greater than one percent of sales, and only one of the two entities was estimated to have impacts greater than three percent of sales. These results were summarized in Table 7-8 of the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector. For additional information on the results of the screening assessment prepared for the final landfills NSPS, see the Regulatory Impact Analysis for the Final Revisions to the Emissions Guidelines for Existing Sources and the New Source Performance Standards in the Municipal Solid Waste Landfills Sector.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 31

**Comment Excerpt:**

Advocacy suggests that EPA give greater consideration to the burdens this proposed rule imposes on small entities. If EPA promulgates this rule as proposed, Advocacy's preferred solution would be for EPA to exempt small entities from any reduction in the emissions threshold.

Otherwise, Advocacy believes that the certification lacks a factual basis and that EPA must complete the SBREFA panel and develop and issue an IRFA for public comment prior to promulgation of the final rule.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0080.1, excerpt 30, under comment code 17f regarding the certification of no SISNOSE.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 27

**Comment Excerpt:**

Advocacy has significant concerns about the factual basis for EPA's certification. First, EPA's cost analysis does not account for the effect of lowering the cutoff on the lifetime costs of the GCCS. Second, EPA has not considered the class of small entities currently excluded from the NSPS or Emission Guidelines, but likely to be subject to the NSPS in the future. Third, Advocacy disagrees that EPA can certify simply on the basis that there are only two small entities that would be affected by the rule.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0080.1, excerpt 30, under comment code 17f regarding the certification of no SISNOSE.

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**Commenter Name:** Claudia R. Rodgers, Acting Chief Counsel  
**Commenter Affiliation:** Small Business Administration  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0155  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

Advocacy disagrees with EPA's certification under section 605(b) of the Regulatory Flexibility Act of the proposed NSPS and recommends that EPA provide more small business flexibilities recommended by the Small Business Regulatory Enforcement and Fairness Act (SBREFA) panel, convened for these rulemakings. Advocacy appreciates the small entity outreach conducted for the Emission Guidelines NPRM and the small entity flexibilities proposed. Advocacy recommends some changes that will further help small entities consistent with the intent of the rulemaking.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0080.1, excerpt 30, under comment code 17f regarding the certification of no SISNOSE.

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**Commenter Name:** Claudia R. Rodgers, Acting Chief Counsel  
**Commenter Affiliation:** Small Business Administration  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0155  
**Comment Excerpt Number:** 2

**Comment Excerpt:**

Although EPA has updated its small entity analysis, it certifies in part by asserting that 13 small entities is not a substantial number, and that impacts are not significant because only two of the 13 have annualized costs exceeding one percent of revenue. Advocacy has the same concerns about this certification as in the proposed rule. EPA should not assert that 13 small entities is not a substantial number because EPA projects that those 13 entities represent the universe of regulated small entities. EPA is projecting that 18 percent of regulated small entities for which is

has data – a substantial number – will incur a significant economic impact as a result of this rule, and therefore should not have certified under section 605(b). In addition, EPA should not assume that small entities can annualize costs via financing or fee hikes to show no significant economic impact when the small entities are faced with significant startup and shutdown costs.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0080.1, excerpt 30, under comment code 17f regarding the certification of no SISNOSE.

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**Commenter Name:** Comment submitted by Winslow Sargeant, Chief Counsel for Advocacy and David Rostker Assistant, Chief Counsel Office of Advocacy

**Commenter Affiliation:** SBA Office of Advocacy

**Document Control Number:** EPA-HQ-OAR-2003-0215-0080.1

**Comment Excerpt Number:** 33

**Will be summarized and responded to in the preamble:**

**Sort Order:** 400

**Response Status:** Final

**Comment Excerpt:**

Advocacy recommends that EPA consider adopting many of the policy recommendations the SERs made during the SBREFA panel outreach process. These recommendations include:

- Maintain existing numerical thresholds and timeframes for GCCS installation and operation;
- Maintain existing monitoring requirements;
- Remove wellhead operational standards; and
- Allow LFG treatment to meet the specifications required by equipment in use or LFG purchasers rather than impose one-size-fits-all numerical standards.

SERs believe that they can achieve the current level of emissions reductions more effectively with greater flexibility than the current rules allow.<sup>37</sup>

[Footnote 37] *See, e.g.*, Appendix, No. 4 (Letter from Michael Michels), pp. 4-5.

**Comment Response:**

The EPA has revised the proposed requirements in the final NSPS to reflect some of the recommendations made by the SERs during the SBREFA panel discussions. The EPA has chosen to lower the NMOC emission threshold to 34 Mg/yr in order to obtain additional reductions of emissions. See section IV.A of the final NSPS Preamble for discussion of this lower threshold. Additionally, the EPA has clarified the surface monitoring requirements to include monitoring around the entire perimeter of the landfill, at 30-meter intervals across the entire surface of the landfill, and at all cover penetrations or areas where visual observations indicate the presence of potential LFG emissions. Finally, the EPA has removed the wellhead operational standards for nitrogen/oxygen but maintained the standards for temperature and negative pressure as discussed in section VI.A.1 of the final NSPS Preamble.

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**Commenter Name:** Claudia R. Rodgers, Acting Chief Counsel  
**Commenter Affiliation:** Small Business Administration  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0155  
**Comment Excerpt Number:** 3

**Comment Excerpt:**

The supplemental proposal does not address the significant concerns small entities had with the reduced emission thresholds, LFG treatment, more aggressive monitoring, and other changes that would increase the costs of compliance without a demonstrated emissions benefit. Advocacy reiterates its recommendation that EPA adopt the flexibilities proposed by the SERs and incorporated into the SBREFA panel report. In the absence of these flexibilities, Advocacy continues to recommend that small entities be exempted from reductions in the emissions thresholds.

**Comment Response:**

The EPA has finalized the lower emission threshold of 34 Mg/yr NMOC as proposed in the supplemental NSPS proposal in order to achieve additional emission reductions as discussed in the section VI.A of the preamble to the final NSPS. Regarding the concerns on LFG treatment, the EPA has revised the final NSPS to define LFG treatment as filtering, de-watering, and compression as discussed in section VI.E of the final NSPS preamble. The final NSPS reflects several of the recommendations proposed by the SERs and contained in the SBREFA panel report.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)  
**Commenter Affiliation:** Solid Waste Association of North America (SWANA)  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1  
**Comment Excerpt Number:** 12

**Comment Excerpt:**

Under the Regulatory Flexibility Act (RFA), EPA is required to prepare an initial regulatory flexibility analysis unless it can certify that the rule will not have a significant economic impact on a substantial number of small entities. Additionally, expenditures in excess of \$100 million in any one year are subject to the Unfunded Mandates Reform Act (UMRA). EPA prepared documents establishing the number of landfills that would be subject to the rule and their associated costs. As a result of their analyses, EPA determined that neither RFA nor UMRA was applicable to the proposed rule.

In reviewing the number of landfills impacted by the proposed rule and the associated costs of compliance, EPA considered only new "green field" landfills opening in 2014 or later. However, landfills that are modified or reconstructed on or after July 17, 2014 would also be subject to the

proposed rule. Thus, the vast majority of landfills and associated costs subject to the rule were not accounted for in EPA's cost analysis.

**Comment Response:**

The EPA does not agree with the premise asserted by the commenter that EPA determined neither the RFA nor the UMRA were applicable due to consideration of the 'green field' sites only. As discussed in the proposal for the emission guidelines, the EPA certified that the final Emission Guidelines will not have a Significant Impact on a Substantial Number of Small Entities (SISNOSE), because the guidelines will not impose any requirements on small entities. Specifically, Emission Guidelines established under CAA section 111(d) do not impose any requirements on regulated entities and, thus, will not have a significant economic impact upon a substantial number of small entities. After the emission guidelines are promulgated, states and U.S. territories establish standards on existing sources, and it is those requirements that could potentially impact small entities.

After considering the economic impact of the supplemental proposed NSPS on small entities, the EPA analysis indicates that this rule will not have a significant impact on a substantial number of small entities. First, the proposed revision does not impact a substantial number of small entities, since only 13 small entities are projected to be impacted by the proposed option. Additionally, the impact to these entities are not significant, because only 2 entities have impacts greater than 1 percent of sales, and only 1 of these 2 entities has impacts greater than 3 percent of sales. These results are summarized in Table 7-8 of the Regulatory Impact Analysis for the Proposed Revisions to the Emission Guidelines for Existing Sources and the Supplemental Proposal to the New Source Performance Standards in the Municipal Solid Waste Landfills Sector (proposal RIA).

With regard to Unfunded Mandates, the EPA concluded the proposed emission guidelines do not contain any unfunded mandate of \$100 million or more as described in UMRA, 2 U.S.C. 1531–1538. The proposed Emission Guidelines apply to landfills that were constructed, modified, or reconstructed on or after November 8, 1987, and that commenced construction, reconstruction, or modification on or before July 17, 2014. Impacts resulting from the proposed Emission Guidelines are below the applicable threshold.

However, the EPA recognized the proposed Emission Guidelines may significantly or uniquely affect small governments because small governments operate landfills. The EPA consulted with small governments concerning the regulatory requirements that might significantly or uniquely affect them. In developing the rule, the EPA consulted with small governments pursuant to a plan established under section 203 of the UMRA to address impacts of regulatory requirements in the rule that might significantly or uniquely affect small governments. The EPA held meetings as discussed in proposal RIA.

Additionally, the supplemental proposal for the NSPS does not contain a federal mandate that may result in expenditures of \$100 million or more for state, local, and tribal governments, in the aggregate, or the private sector in any one year. The NSPS apply to landfills that were constructed, modified, or reconstructed on or after July 17, 2014. Impacts resulting from the proposed NSPS are far below the applicable threshold. Thus, the proposed NSPS is not subject to the requirements of sections 202 or 205 of the UMRA.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 6

**Comment Excerpt:**

Based on the analysis that EPA performed, considering "green field" sites only, EPA determined that neither Regulatory Flexibility Act (RFA) nor the Unfunded Mandates Reform Act (UMRA) was applicable to the proposed rule. As stated above, we are concerned that the analysis did not consider the number of existing NSPS sites this rule would apply to and therefore, that the RFA and UMRA decision may need further consideration.

**Comment Response:**

See response to EPA-HQ-OAR-2003-0215-0108.1, excerpt 12, under comment code 17f regarding the applicability of the Regulatory Flexibility Act (RFA) and the Unfunded Mandates Reform Act (UMRA) to the proposed rule.

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## 17.4 Paperwork Reduction Act/ICR

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 134

**Comment Excerpt:**

Many delegated agencies currently follow the 1998 rule changes and do not require landfill owner or operator to submit requests if the corrective action/remedy other than expansion is completed within 120 days. The site's paperwork is minimized and required only for instances where the site needs additional time beyond 120 days to complete the corrective action. Agencies in turn have significantly fewer requests to review and approve. Requiring agencies to change their procedures will result in increased paperwork burden and need for additional resources to complete review and approvals, especially if requests must be submitted within 15 days and subsequently approved. Further, our experience to date is that many requests are never approved; there should be a period after which absent any agency approval, the request shall be deemed complete.

EPA did not consider this recordkeeping and reporting in its cost benefit analysis or in its required review of compliance with the Paperwork Reduction Act and Unfunded Mandates Reform Act. The proposed procedure to request and obtain an alternative timeline is extremely prescriptive and creates endless loops of corrective action, re-monitoring, record keeping, and

reporting. These requirements are at best a nuisance and paperwork exercise and at worst hamper corrective action.

**Comment Response:**

See section VI.A.2 of the NSPS preamble and section VI.A.2 of the Emission Guidelines preamble.

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**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 13

**Comment Excerpt:**

In its review of the applicability of the Paperwork Reduction Act, EPA outlines the requirements of the proposed rule as follows:

1. One-time initial design capacity report;
2. Periodic amended design capacity report if increased above threshold;
3. Annual or every 5-year submittal of NMOC emission rate report;
4. Design plan prior to installing GCCS;
5. One-time closure report after landfill ceases to accept waste;
6. One-time report prior to removal of GCCS; and,
7. Annual reports to be submitted to document exceedances or periods when GCCS were not operating as well as initial performance tests.

This review of the applicability of the Paperwork Reduction Act fails to account for the vast amount of paperwork required at a landfill with an operating GCCS. However, as outlined in the proposed rule, the following additional submissions are required:

1. Revised design plan for expansions into new areas not covered by previous plan;
2. Revised design plan prior to installing or expanding the gas collection system in a way not consistent with the previous design plan;
3. Separate from the design plan, any HOV including supporting data demonstrating that the elevated parameter neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens;
4. Revised design plan prior to implementing an approved alternative operating parameter value for temperature, nitrogen, or oxygen; and,



5. Alternative corrective action timeline requests must be submitted for exceedances that cannot be corrected within 15 days and when the LFG system cannot be expanded within 120 days.

These five items represent the greatest number of submissions related to the GCCS. Most landfills have occasional exceedances. These exceedances can usually be fixed within the allotted 15 day timeframe. However, when they cannot, an HOV requiring two separate submissions and approvals may be needed. A landfill may have hundreds of wells and thousands of surface emissions monitoring (SEM) points and at any given time, a couple could be on an individual timeline requiring multiple submissions. Given that the EPA is aware that regulators often do not approve design plans (71 F.R. 53277 September 8, 2006), the most unreasonable requirement under the proposed rules is for design plans to be approved prior to taking action on an HOV. Based on information provided by Waste Management and Republic, fewer than 40% of their initial design plans are ever approved. SCS Engineers states that the number of approved design plans is even lower, closer to 15%. Many design plans never even receive a response from the regulators. Thus, the industry is forced to take action while being left in continuous regulatory limbo.

**Comment Response:**

See section VI.A.6 of the NSPS Final Preamble for information about design plan approvals.

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1

**Comment Excerpt Number:** 23

**Comment Excerpt:**

EPA should also consider additional recordkeeping and reporting in its cost benefit analysis or in its required review of compliance with the Paperwork Reduction Act and Unfunded Mandates Reform Act. The proposed procedure to request and obtain an alternative timeline is extremely prescriptive and creates endless loops of corrective action, re-monitoring, recordkeeping, and reporting. These requirements are at best a nuisance and paperwork exercise and at worst hamper proper and timely corrective action measures. In addition, we cannot adequately assess the costs, benefits or the feasibility of implementing the BMP provisions discussed herein that might be issued in the final rule. EPA needs to this consider prior to finalizing the proposed rule.

**Comment Response:**

The EPA has revised the requirements for submitting a corrective action timeline in the final NSPS and Emission Guidelines. See section VI.A.2 of the final NSPS Preamble and section VI.A.2 of the final Emission Guidelines Preamble.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 153

**Comment Excerpt:**

WM urges EPA to review its proposed design plan update and approval process in the context of the Paperwork Reduction Act, both to ensure that EPA has adequately estimated the burden associated with design plan and alternatives request submittals, and to ensure that the requirements as established meet the statutory goal of reducing the burdens of federal paperwork. Specifically, it is not clear from the preamble discussion that EPA has correctly evaluated the burdens associated with design plan updates and the required back-and-forth communications that are typically required to ensure that the plan is acted upon. *See* 79 Fed. Reg. at 41828.

**Comment Response:**

See section VI.A.6 of the final NSPS Preamble.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 7

**Comment Excerpt:**

EPA states that the Proposed Rule requires very similar information collection requirements as the current rule, Subpart WWW (p. 41828). This fails to consider the additional design plan approvals required by XXX [per 40CFR 60.763(c)]:

The EPA proposes to clarify in Subpart XXX that any alternate operating value for temperature, nitrogen, or oxygen proposed by an owner or operator according to the proposed 40 CFR 60.763(c) must be submitted to the Administrator (i.e., the EPA Administrator or delegated authority) for approval. The request may be submitted separately from a design plan revision. However, the design plan would have to be updated on the schedule described in the next section. (p. 41813)

The revision and resubmission of the design plan for each higher operating value (HOY) needed at a facility could result in an inordinate number of additional submissions.

**Comment Response:**

The EPA has removed the requirement to submit a revised design plan for approval of alternative operating values for temperature, nitrogen, and oxygen. See section VI.A.6 of the final NSPS Preamble.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 70

**Comment Excerpt:**

EPA's proposal to require electronic reporting presents significant implementation and duplication concerns that will result not in less burden as EPA contends, but significantly more burden to the user, to EPA and the state/local agencies. EPA must address the significant potential costs associated with implementing an entirely new reporting system for NSPS and EG MSW landfills as this data is not part of the NSPS or the ANPRM docket.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0099.1, comment excerpt 74, under comment code 15b.

## **18.0 GENERAL**

### **18.1 General Support**

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**Commenter Name:** John Quigley, Secretary

**Commenter Affiliation:** Pennsylvania Department of Environmental Protection (DEP)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0169

**Comment Excerpt Number:** 1

**Comment Excerpt:** The DEP fully supports EPA's efforts to reduce methane emissions from landfills. According to EPA's *Inventory of US. Greenhouse Gas Emissions and Sinks: 1990-2013*, landfills are the third largest source of methane emissions in the United States, accounting for approximately 18 % of the methane emissions in the country. The DEP believes that the proposed "Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills" will allow EPA, States, and Tribes to further reduce landfill gas and its components including methane from the MSW landfill sector.

**Comment Response:**

We thank the commenters for their support.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 14

**Comment Excerpt:**

The proposed rule does represent some limited progress. The proposed NSPS would modestly reduce the emission threshold that ensure landfills install basic emission controls, and it would require monitoring of certain landfill features where leaks frequently occur. EPA estimates these measures would reduce emissions from new landfills by approximately 13 percent in 2023, the equivalent to just over 300,000 metric tons of carbon dioxide using EPA's current global warming potential for methane, and at a very low cost, just a dollar fifty for every ton of CO2 equivalent emissions reduced.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, comment excerpt 1, under comment code GEN1.

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**Commenter Name:** Comment submitted by Richard Boyd, Manager, Process Evaluation Section, Transportation and Toxics Division

**Commenter Affiliation:** California Air Resources Board (ARB)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0119.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

We support USEPA's efforts to explore opportunities to achieve additional reductions in non-methane organic compounds (NMOCs) emissions, including methane emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, comment excerpt 1, under comment code GEN1.

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**Commenter Name:** Juene Franklin, P.E.

**Commenter Affiliation:** Franklin Engineers & Consultants, LLC

**Document Control Number:** EPA-HQ-OAR-2003-0215-0122

**Comment Excerpt Number:** 1

**Comment Excerpt:**

This section of our comments details the information presented in the proposed NSPS XXX to which we have no strong objection:

1. Clarification that the proposed regulations apply only to MSW landfills that commence construction, modification, or reconstruction on or after the publication date.
2. The use of a reduced NMOC emissions threshold (40 Mg/yr) and a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters to trigger the installation/operational timeframe for the Landfill Gas Collection and Control System (GCCS).
3. No proposed reduction to the lag time associated with GCCS installation/operations.
4. Clarification that the proposed regulation was not intended to apply to facilities that only accept segregated yard waste and non-household waste such as construction and demolition (C&D) and yard waste.
5. Clarification of the definition of modification to indicate that it includes an increase in the permitted design capacity in terms of volume or mass.

6. Exclusion of the temperature and oxygen/nitrogen requirements for LFG wellhead monitoring.
7. Reliance on the maintenance of a negative pressure at the wellheads and surface emissions monitoring to indicate proper operation of the GCCS and minimization of surface emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, comment excerpt 1, under comment code GEN1.

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**Commenter Name:** S. Woodson

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0148

**Comment Excerpt Number:** 8

**Comment Excerpt:**

EPA's proposed changes identify, recommend and aim to enhance compliance and operative methods in municipal solid waste landfills. If accepted, the proposed rules hope to reduce emissions of landfill gas, in particular methane and NMOC. Based on the revisions outlined in the docket, hopes of adopting standardized automatic surface emission monitoring systems and increasing compliance among technological operations aid in achieving total reduction of methane emission by the year 2025. As described in the article, there are various alternatives in increasing surface emission assessment and monitoring techniques.

Future application of EPA's changes will be extremely essential in preserving the environment and the health of the public. Acceptance of such proposed rule is extremely important to human health and the environment. My passion for supporting EPA's revisions are due in part to my desire to combat activities that hinder or diminish the quality of life, for all. Not only does the release of surface emissions damage our atmosphere, the quality of soil and water can be impacted due to effluxed gas and other areas of ineffectiveness regarding landfill management practices.

In all, I support and encourage the updates to the Emission Guidelines for Municipal Solid Waste. Through updated compliance, monitoring and technology, EPA's proposed revisions are positive enforcements in improving the health of the public and environment. The ultimate goal of EPA's revised changes aim decrease the risks associated to landfill gas exposure and improve the quality of outdoor air.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, comment excerpt 1, under comment code GEN1.

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**Commenter Name:** Becky Tooley, Mayor, Office of City Commission

**Commenter Affiliation:** Coconut Creek, Florida

**Document Control Number:** EPA-HQ-OAR-2014-0451-0161

**Comment Excerpt Number: 1**

**Comment Excerpt:**

The City of Coconut Creek (City) remains extremely supportive of EPA's rulemaking efforts to achieve additional reductions of landfill gas (LFG) and its components, including methane, by lowering the emissions threshold at which a landfill must install controls. Coconut Creek is a city of more than 55,000 in northern Broward County, a heavily urbanized region in southeast Florida. Immediately adjacent to us is Waste Management's Monarch Hill Renewable Energy Park (Monarch Hill), which is located in the neighboring city of Pompano Beach.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, comment excerpt 1, under comment code GEN1.

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**Commenter Name:** Becky Tooley, Mayor, Office of City Commission

**Commenter Affiliation:** Coconut Creek, Florida

**Document Control Number:** EPA-HQ-OAR-2014-0451-0161

**Comment Excerpt Number:** 4

**Comment Excerpt:**

We agree that reduced emissions from this proposed rule will result in improvements in air quality and lessen the health effects associated with exposure to air pollution related to emissions, and result in climate benefits due to reductions of the methane component of landfill gas. We urge the EPA to strongly weigh each of these critical outcomes when finalizing the rule - particular as they relate to localized air quality improvements.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, comment excerpt 1, under comment code GEN1.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Republic has a shared interest with EPA and state regulatory authorities in achieving emission reductions through a program that is reasonable, cost-effective, and flexible. Republic agrees with EPA that revisions are needed to reduce unnecessary administrative burdens and provide sufficient flexibility to ensure that emission reductions can be achieved in the most efficient, cost-effective manner.

Republic appreciates EPA's efforts to engage in a dialogue with the regulated community as it seeks to revise the emission guidelines for existing municipal solid waste landfills. In particular, Republic is encouraged by the fact that EPA's proposed emission guidelines appear to consider the comments that Republic provided in response to EPA's advanced notice of proposed rulemaking (ANPRM) in September 2014 seeking clarification of various implementation issues. The comments provided below are intended to continue that dialogue to ensure the emission guidelines minimize both emissions and administrative burden.

EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks confirms that landfills have reduced methane emissions by more than 30% between 1990 and 2012. EPA's 1996 NSPS and Emission Guidelines have contributed to this success by requiring the solid waste disposal industry to design and operate highly effective landfill gas emission controls. Republic is pleased to have played an important role in achieving these reductions by designing, installing, and operating environmentally sound GCCS both on a voluntary basis and also as a part of its compliance obligations under the NSPS rules that govern landfills today.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, comment excerpt 1, under comment code GEN1.

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator

**Commenter Affiliation:** Californians Against Waste, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0191

**Comment Excerpt Number:** 1

**Comment Excerpt:**

We strongly support EPA's decision to review and revise the emission guidelines for existing MSW landfills. These guidelines have not been reviewed or revised since they were initially promulgated 1996 – much has changed in the last 20 years. Both the practices of the waste industry and our understanding of the detrimental impacts of methane have altered dramatically

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0169, comment excerpt 1, under comment code GEN1.

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**Commenter Name:** Amanda B. (no surname provided)

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2003-0215-0189

**Comment Excerpt Number:** 4

**Comment Excerpt:**

The largest environmental benefit of passing this proposed rule is the positive effect it will have on global climate change. Carbon dioxide is the classically referenced greenhouse gas. It makes up 35% to 50% of LFG by volume. Methane, existing as 50% to 65% of LFG, has twenty-five times more global warming potential than carbon dioxide. Many landfill gasses are greenhouse gases, and some, like chlorofluorohydrocarbons, can cause ozone depletion (Wang et al., 2015, Scheutz et al., 2008). In addition to adding greenhouse gasses to the atmosphere, landfills often contribute chemicals that diminish the ozone layer. More strict regulations on LFG are a straightforward way to lessen the human impact on climate change.

**Comment Response:**

We thank the commenter for their support. As stated in the preamble for the final NSPS, installation of a GCCS to comply with the lower NMOC emission threshold of 34 Mg/yr would achieve reductions of 44,300 Mg/yr methane which is equivalent to 1.1 million metric tons of carbon dioxide equivalent per year (CO<sub>2</sub>e/yr) beyond reductions achieved at the existing NMOC threshold of 50 Mg/yr. Likewise, the preamble for the final Emission Guidelines states that an additional 285,000 Mg/yr methane (7.1 million metric tons CO<sub>2</sub>e/yr) will be reduced as a result of installation of a GCCS to comply with the lower NMOC emissions threshold of 34 Mg/yr for open landfills. As noted by the commenter, this collection and control of LFG is an efficient way to directly reduce greenhouse gas emissions.

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**Commenter Name:** Ali Mirzakhali, Director

**Commenter Affiliation:** State of Delaware, Department of Natural Resources & Environmental Control, Division of Air Quality

**Document Control Number:** EPA-HQ-OAR-2003-0215-0191

**Comment Excerpt Number:** 23

**Comment Excerpt:**

The State of Delaware supports the requirement in §60.40f (b) (3) that throttle valves be used on all LFG wellheads. Some facilities have installed valves that have on/off functionality only. These valves provide no ability to make adjustments to collection and can result in over-pulling, which increases the risk of subsurface fires.

**Comment Response:**

We thank the commenter for their support. The final Emission Guidelines in section 60.40f(b)(3) state that the connector assembly must include a positive closing throttle valve, any necessary seals and couplings, access couplings, and at least one sample port as proposed.

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**Commenter Name:** Claudia R. Rodgers, Acting Chief Counsel

**Commenter Affiliation:** Small Business Administration

**Document Control Number:** EPA-HQ-OAR-2014-0451-0155

**Comment Excerpt Number:** 4



**Comment Excerpt:**

Advocacy commends EPA for its efforts to engage in small entity outreach in this rulemaking and for adopting many of the flexibilities suggested by the SERs during the SBREFA panel outreach. Advocacy appreciates that EPA convened the SBREFA panel early enough to provide small entity input into the Emission Guidelines, even though the direct impacts on small entities would be triggered by later state regulation or, in some cases, eventual Federal plans. We believe that the end result of this early consultation on the Emission Guidelines will be a better rule for EPA, small entities, and the environment.

**Comment Response:**

We thank the commenter for their support.

**18.2 General Oppose**

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 11

**Comment Excerpt:**

We urge EPA to strengthen the proposed new source performance standards for municipal solid waste landfills, and to adopt stronger protections for emissions from existing landfills. EPA's current proposal fails to secure vital and highly cost-effective emission reductions for methane, a potent accelerant of climate destabilization, and does not adequately account for the most recent science thoroughly documenting the dangerous force of this climate change accelerant.

**Comment Response:**

Following the 2014 proposal of a new NSPS subpart (40 CFR part 60, subpart XXX) that lowered the NMOC emission rate at which an MSW landfill must install controls from 50 Mg/yr to 40 Mg/yr, the EPA updated its model that estimates the emission reductions and cost impacts of changes to the design capacity thresholds and/or the NMOC emission rate trigger based on public comments and new data. In August 2015, the EPA issued a supplemental proposal to further reduce the NMOC emission rate to 34 Mg/yr. Additionally, the EPA also proposed new Emission Guidelines for existing landfills in August 2015 that also lowered the NMOC emission rate at which an MSW landfill must install controls from 50 Mg/yr to 34 Mg/yr. The final NSPS and Emission Guidelines maintain the existing design capacity threshold but and finalize the lower NMOC emission threshold of 34 Mg/yr for when an MSW landfill must install and operate a GCCS. As stated in the preambles to the final rules, the lower NMOC emission threshold will reduce methane emissions by an additional 44,300 Mg/yr and 285,000 Mg/yr for new landfills subject to the NSPS and existing landfills through the Emission Guidelines, respectively.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 18

**Comment Excerpt:**

EPA must also take prompt action to reduce emissions from existing landfills. Existing landfills will emit far more methane and other harmful pollutants than new landfills for the foreseeable future, and present opportunities for significant and cost-effective reductions in emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 11, under comment code GEN2.

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**Commenter Name:** Ted Michaels, President

**Commenter Affiliation:** Energy Recovery Council (ERC)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0175

**Comment Excerpt Number:** 1

**Comment Excerpt:**

We firmly support the EPA's efforts to reduce non-methane organic compound ("NMOC") and GHG emissions from landfills, but believe that this proposal falls far short of the significant reductions achievable. Changes made to the emissions guidelines now, to be implemented over a reasonable schedule, represent the best path forward for the EPA to reduce emissions associated with waste management.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 11, under comment code GEN2.

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**Commenter Name:** John R. Holladay

**Commenter Affiliation:** Local Government Coalition for Renewable Energy

**Document Control Number:** EPA-HQ-OAR-2014-0451-0184

**Comment Excerpt Number:** 2

**Comment Excerpt:**

While cognizant of the cost, the Coalition members nevertheless urge EPA to adopt measures more protective than those in the Agency's August 27 proposal. The context for our position is the serious adverse environmental impact of landfill methane, one of the most potent greenhouse gases, and the fact, stated on EPA's website, that for every ton of municipal solid waste (MSW) directed to a WTE facility rather than landfilled, one ton of greenhouse gas (GHG) emissions is avoided.

This is the context for EPA’s conclusion – in the ANPRM that preceded the proposed Emission Guidelines – that “because of its potency as a GHG and its atmospheric life, *reducing methane emissions is one of the best ways to achieve a near-term beneficial impact in mitigating global climate change.*” 79 Fed. Reg. at 41774/1 (emphasis added throughout unless otherwise indicated). Unfortunately, the proposed regulations falls far short of that objective and will do very little to change the status quo, which the Agency appears to acknowledge.<sup>1</sup> One of the reasons for the gap between EPA’s objective and the reality of the proposed Emission Guidelines is the latter’s significant understatement of the quantity of municipal solid waste that is disposed in landfills and the resulting methane emissions.

[Footnote 1 Thus, as EPA states, given that the proposed Emission Guidelines will impose minimal additional cost, “EPA does not believe the proposal would lead to substantial changes in supply and demand for landfill services or waste disposal costs, tipping fees, or the amount of waste disposed in landfills,” and, accordingly, “the overall economic impact of the proposal should be minimal on the affected industries and their consumers.” 80 Fed. Reg. at 52143/1; *see also id.* at 52142/1 (given the limited incremental control costs, the proposed Emission Guidelines “are not expected to have an appreciable market effect on the waste disposal costs, tipping fees, or the amount of solid waste disposed in landfills”).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 11, under comment code GEN2.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 1

**Comment Excerpt:**

We firmly support the EPA’s efforts to reduce non-methane organic compound (“NMOC”) and GHG emissions from landfills, but believe that this proposal falls far short of the significant reductions achievable. More sustainable waste management in the U.S. focused on landfill diversion could achieve GHG reductions of over **260 million tons** of CO<sub>2</sub>e/year, over 20x greater than what is projected under the current Proposed Rule.<sup>1</sup> Changes made to the emissions guidelines now, to be implemented over a reasonable schedule, represent the best path forward for the EPA to reduce emissions associated with waste management.

[Footnote 1] Methodology of [Bahor, B., M. Van Brunt, J. Stovall, K. Blue. “Integrated waste management as a climate change stabilization wedge” *Waste Management & Research*. 2009: 27: 839-849. [http://www.seas.columbia.edu/earth/wtert/sofos/wmr\\_nov09\\_p839.pdf](http://www.seas.columbia.edu/earth/wtert/sofos/wmr_nov09_p839.pdf)] applied to U.S. waste generation. Reductions assume future waste disposition of 65% recycling & composting, 25% energy recovery, and 10% landfilling.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 11, under comment code GEN2.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 11

**Comment Excerpt:**

While EPA must establish the NSPS and the rule for existing landfills on the basis of impacts across the country, we thought it might be useful to share our sense of the implications for our state. North Carolina's experience with MSW landfills mirrors the nation's: over time, fewer active landfills, but larger. Both as a result of shift in the economy during the Great Recession, and thanks to rising rates of recycling, composting, and waste diversion, North Carolina has significant MSW capacity – at least three decades' worth for the state as a whole.<sup>14</sup> That means, in practical terms, that the methane capture rule for existing landfills will matter a great deal more than the NSPS rule. North Carolina has 41 active MSW landfills and another 153 inactive or closed; only 24 are listed in EPA's voluntary Landfill Methane Outreach Program (LMOP) database as having methane capture projects (a total of 36 projects).<sup>15</sup> That suggests substantial room for additional methane capture at active and closed MSW landfills in the state.

[Footnotes]

14. NC DENR, North Carolina Solid Waste and Materials Management Annual Report, FY2012-2013, at 8.

15. NC DENR, Permitted Solid Waste Facility List, online at <http://portal.ncdenr.org/web/wm/sw/facilitylist> (accessed Sept. 12, 2014); US EPA, Operational LFG Energy Projects, sorted by state and landfill name, online at <http://www.epa.gov/lmop/documents/xls/opprjslmopdata.xls> (accessed Sept. 12, 2014).

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 11, under comment code GEN2.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 22

**Comment Excerpt:**

In our initial review of the proposed rule and accompanying technical analyses, we noted that the Agency was hard-pressed to identify additional means to obtain further, cost effective methane

reductions. While the intent of this rule making is to further reduce emissions, our members are concerned that many of the proposed measures will do little to achieve that goal. The proposed provisions make it more difficult for landfills to optimize the performance of their gas collection and control systems, by perpetuating prescriptive standards that require them to make system adjustments that often hamper emissions control. Rather than reducing needless bureaucracy, these provisions actually increase paperwork and administrative burdens for both the landfill sector and our state regulators, with no attendant environmental benefits.

**Comment Response:**

See response to DCN: EPA-HQ-OAR-2003-0215-0087, excerpt number 11, under comment code GEN2 for information about emission reductions achieved through the final standards. For additional information on flexibilities within the final NSPS, see section VI of the NSPS Preamble.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 20

**Comment Excerpt:**

We believe the EPA should streamline the standards to eliminate the historical bureaucracy that has hampered effective implementation of methane controls, and avoid establishing new provisions that are neither cost effective, nor achieve new methane reductions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 22, under comment code GEN2.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

TXSWANA believes that further progress toward reducing methane emissions will continue without the proposed changes in today's NSPS proposed rule revision. Accordingly, TXSWANA will focus many of its comments on those rules which seemingly have no impact on reducing emissions; but instead merely increase the cost to the landfills, the administrative burdens to both the regulatory agencies and the landfills and actually delay, if not inhibit, the

ability of landfills to take steps which would have an actual beneficial impact on reducing emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 22, under comment code GEN2.

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**Commenter Name:** Comment submitted by Curt Publow

**Commenter Affiliation:** Decatur Hills Inc.

**Document Control Number:** EPA-HQ-OAR-2003-0215-0118.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

These comments on the proposed revision to the Standards of Performance for Municipal Solid Waste Landfills (proposed on July 17, 2014) have been prepared to ensure we continue to have control of our facilities with respect to meeting the performance standard. There are several items in the proposed rule which we are concerned may remove our control and make it difficult to meet the requirements of the performance standard. Landfills are, by design, an ever-changing source. We are unaware of any other industry that is subject to air pollution control standards with the level of operating, recordkeeping, and reporting that are found in the proposed rule. Therefore, we respectfully submit the following comments.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 22, under comment code GEN2.

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**Commenter Name:** Anonymous public comment

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0153

**Comment Excerpt Number:** 1

**Comment Excerpt:**

I have been a small business owner for 25 years, and believe the pendulum is now swinging too far on EPA regulations. Certainly we all want clean air/water/land and the EPA has done a fine job of assisting with that goal using the existing regulations. These proposed increased regulations, however, are excessive and counterproductive to the best interests of our country. They will increase the financial burden on all consumers and small businesses to cover the cost of compliance, without a meaningful increase in public health and welfare.

When the EPA was first set up, the impact was significant and important to the general welfare. As time progressed, there were diminishing returns to the regulations leading to today where the benefit to risk analysis shows negative returns. It is enough to enforce the existing regulations

and completely unnecessary to make them stricter and more onerous. The current regulations are sufficient.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 22, under comment code GEN2.

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**Commenter Name:** Julie R. Hall, Senior Project Manager and Kyle E. Nay, Client Manager  
**Commenter Affiliation:** Cornerstone Environmental Group, LLC  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0180  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

These comments on the proposed EG have been prepared to ensure that we can continue to support our clients who must control their facilities in accordance with the performance standard. We recognize USEPA's effort to identify and revise some of the areas within the current rules that have proved problematic and their efforts to correct these through the proposed rule revisions are appreciated.

There are several items in the proposed rule, however, which we are concerned may remove our control and make it difficult to meet the requirements of the performance standard. Landfills are, by design, an ever-changing source. We are unaware of any other industry that is subject to air pollution control standards with the level of operating, recordkeeping, and reporting that are found in the proposed rule.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0087, comment excerpt 22, under comment code GEN2. The EPA acknowledges the changes in the landfill since the NSPS and emission guidelines were first promulgated. While these revisions achieve additional emission reductions, they also provide a number of flexibilities such as site-specific measurement as well as a revised approach to landfill gas treatment.

### **18.3 General - Methane**

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator  
**Commenter Affiliation:** Californians Against Waste, et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0191  
**Comment Excerpt Number:** 2

**Comment Excerpt:**

As recognized by the Obama Administration and detailed in the Proposed Rule, methane mitigation is an essential component of any strategy to limit global temperature change to 2 °C

or 2 below.<sup>1</sup> Furthermore, the Proposed Rule recognizes that methane is an ozone precursor and presents significant health risks.<sup>2</sup> Consequently, we must seize every opportunity to mitigate methane emissions.

Landfills present a unique opportunity to reduce U.S. methane emissions: they are both a significant source of methane and a source that is theoretically avoidable. According to the EPA's Inventory of U.S. Greenhouse Gas Emissions, landfills are the third largest source of methane.<sup>3</sup> Notably, this evaluation is probably an underestimate of domestic MSW landfill methane emissions. For instance, a recent study quantified the amount of garbage currently contained in U.S. landfills and found that disposal rates (which are proportional to methane emissions) are over twice the rate assumed by the EPA.<sup>4</sup> Landfill gas collection efficiencies are also much lower than typical estimates, ranging from only 35 to 70 percent,<sup>5</sup> and resulting models of landfill gas emissions often result in significant under-estimation of emissions.<sup>6</sup> Finally, it should be noted that the United States is by far the largest global source of landfill methane, emitting 15% of global landfill methane and over two times more landfill methane than the second largest emitter.<sup>7</sup>

Perhaps more important is the fact that MSW landfills represent an avoidable source of methane: if organic matter is treated in an alternative manner or diverted, *no landfill gas will be produced*. The EPA has the opportunity with this rulemaking to change the course of methane mitigation in the United States. Yet, the current proposed guidelines would achieve only a modest decrease in methane emissions: 5 percent in year 2025. This is unacceptable: a number of facets of the emission guidelines must be strengthened. Specifically, the EPA must (1) adopt a lower threshold for determining which landfills are subject to the requirements; (2) include organics diversion as a part of the best system of emission reduction; (3) improve monitoring requirements; and (4) address fugitive methane emissions from wet-cell landfills.

Footnotes:

1 Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills; Proposed Rule, 80 Fed. Reg. 52,100 , 52,105 – 52,109 (Aug. 27, 2015)(“Proposed Rule”).

2 Ids.

3 US EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990 – 2013 ES-6 (Apr. 15, 2015). As discussed below, this is likely an underestimate of actual methane emissions from this sector. Furthermore, the Inventory uses an outdated value for methane's global warming potential (GWP). According to the IPCC's Fifth Assessment Report, the most accurate estimate for methane's GWP is 34 over 100 years and 86 over 20 years. These are the values that should be employed when translating methane emissions to CO2 equivalents.

4 Jon T. Powell et al., Estimates of solid waste disposal rates and reduction targets for landfill gas emissions, NATURE CLIMATE CHANGE DOI: 10.1038/NCLIMATE2804 (advance publication Sept. 21, 2015).

5 See, e.g., Environmental Commissioner of Ontario, EcoIssues: GHG11 Landfill Methane, available at [http://ecoissues.ca/GHG11\\_Landfill\\_Methane](http://ecoissues.ca/GHG11_Landfill_Methane); M. Fishedick et al., (2014) Industry. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge University Press 2014), available at



[https://www.ipcc.ch/pdf/assessmentreport/ar5/wg3/ipcc\\_wg3\\_ar5\\_chapter10.pdf](https://www.ipcc.ch/pdf/assessmentreport/ar5/wg3/ipcc_wg3_ar5_chapter10.pdf); J. Levis & M.A. Barlaz, Landfill Gas Monte Carlo Model Documentation and Results (2014), available at [http://www3.epa.gov/epawaste/conservation/tools/warm/pdfs/lanfl\\_gas\\_mont\\_carlo\\_modl.pdf](http://www3.epa.gov/epawaste/conservation/tools/warm/pdfs/lanfl_gas_mont_carlo_modl.pdf); CalRecycle (2012) CalRecycle Review of Waste-to-Energy and Avoided Landfill Methane Emissions. Available at: <http://www.calrecycle.ca.gov/Actions/Documents%5c116%5c2012%5c689%5cCalRecycle%20Review%20of%20WtE%20Avoided%20Emissions%2007032012.pdf>

6 H.R. Amini, D. Reinhart & A. Niskanen, Comparison of first-order-decay modeled and actual field measured municipal solid waste landfill methane data, 33 WASTE MANAGEMENT 2720 (Dec. 2013).

7 U.S. EPA, GLOBAL MITIGATION OF NON-CO2 GASES: 2010 – 2030 III-5 (2013), available at [http://www3.epa.gov/climatechange/Downloads/EPAactivities/MAC\\_Report\\_2013.pdf](http://www3.epa.gov/climatechange/Downloads/EPAactivities/MAC_Report_2013.pdf).

**Comment Response:**

The EPA has lowered its emission threshold. The revised threshold achieves reductions beyond the current baseline. The EPA maintains that the best system of emission reduction for its final rules is a well-designed and well-operated gas collection and control system. The approach taken in the final rules, however, does not preclude organics diversion. The EPA encourages diversion and acknowledges that these programs further assist in reducing methane emissions from landfills.

In addition, the EPA is finalizing additional electronic reporting requirements for wet landfills with a design capacity of 2.5 million Mg or greater to inform potential future action on wet landfills. See section VI.A.3 of the final NSPS preamble. See section VI.A.3 of the final Emission Guidelines preamble.

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**Commenter Name:** S. Woodson

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2014-0451-0148

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Landfill gas is characterized as a compilation of air pollutants that are produced from solid waste decomposition. Generally, landfill gas is comprised of 50% methane, 50% carbon dioxide and <1% of non-methane organic compounds (NMOC) (Mou, 2015).

Methane (CH<sub>4</sub>) is a potent, anthropogenic greenhouse gas generated from anaerobic decomposition of waste in MSW landfills (Mou, 2015). Carbon dioxide is often considered as the most significant greenhouse gas, yet the gradual rise in atmospheric methane concentration have prompted the development of more efficient detection and monitoring systems for landfill gas (EPA & MOU 2015).

According to the International Panel on Climate Change (IPCC), methane gas is considered the second longest-lived greenhouse gas (IPCC, 2015). Methane has a global warming potential that is 28 times greater than carbon dioxide (CO<sub>2</sub>), based on a 100-year time horizon. At the same time, carbon dioxide has a lifespan of 100 million years compared to atmospheric methane of 12 years, resulting in higher CO<sub>2</sub> atmospheric concentrations (Kwok, 2015).

The biodegradation of solid waste in landfills throughout the United States is responsible for contributing 4907 Gigagrams of CH<sub>4</sub> in the year of 2011. This constitutes for 17.5% of the United States anthropogenic methane emissions during the total year. (Mou, 2015).

Improvements to mitigation and monitoring techniques that inspect landfill gas emissions are vital. The revision of the Emission Guidelines for MSW landfills plan to address and resolve incompetence's of landfill emission assessment. Without the implementation of a standardized monitoring system, unknown amounts of landfill gas will continue to be produced and emitted into the atmosphere.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, Comment Excerpt Number 2.

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**Commenter Name:** Darin Schroeder, Associate Attorney

**Commenter Affiliation:** Clean Air Task Force (CATF)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0189

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Methane and carbon dioxide are two of the most important greenhouse gases. Thus, landfill emissions, consisting primarily of methane and CO<sub>2</sub>, pose threats to health and welfare that were not officially recognized by EPA back when the existing landfill EGs were promulgated. The climate threat is recognized as acute today, as evidenced by, among other things, the President's recent 2013 Climate Action Plan<sup>11</sup> and his 2014 Methane Strategy.<sup>12,13</sup> As EPA states, "reducing emissions of GHGs across the globe is necessary in order to avoid the worst impacts of climate change, and underscore the urgency of reducing emissions now."<sup>14</sup>

Specifically reducing *methane* emissions now is critical, as methane is an extremely potent GHG, having a "global warming potential (GWP 28--36 times greater than CO<sub>2</sub>, which accounts for methane's stronger absorption of radiation of infrared radiation per ton in the atmosphere).<sup>15</sup> In fact, methane is the second leading long-lived climate forcer after CO<sub>2</sub> globally.<sup>16</sup> And, because methane has a significantly shorter lifetime in the atmosphere than CO<sub>2</sub> (roughly 12 years compared to centuries or millennia for CO<sub>2</sub>), "reducing methane emissions is one of the best ways to achieve a near-term beneficial impact on mitigating global climate change."<sup>17</sup>

[Footnotes]

<sup>11</sup> Executive Office of the President, "The President's Climate Action Plan," (June 2013), available on the Internet at: <https://www.whitehouse.gov/sites/default/files/image/president27climateactionplan.pdf>.

<sup>12</sup> Executive Office of the President, “Climate Action Plan Strategy to Reduce Methane,” (March 2014), available on the Internet at: [https://www.whitehouse.gov/sites/default/files/strategy\\_to\\_reduce\\_methane\\_emissions\\_2\\_014---03---28\\_final.pdf](https://www.whitehouse.gov/sites/default/files/strategy_to_reduce_methane_emissions_2_014---03---28_final.pdf).

<sup>13</sup> We agree with EPA that the proposal to review and upgrade the landfill EGs is consistent with these Presidential directives.

<sup>14</sup> 80 Fed. Reg. at 52109. . The NRC Committee on America’s Climate Choices also noted that it is “imprudent to delay actions that at least begin the process of substantially reducing emissions.” NRC, 2011, America’s Climate Choices, The National Academies Press.

<sup>15</sup> 80 Fed. Reg. at 52106. This GWP range for methane is estimated for a 100--year time horizon. Within the first 20 years after methane is emitted, however, it is as much as 87 times more potent a climate forcer than CO<sub>2</sub>. IPCC (2013) Fifth Assessment Report.

<sup>16</sup> *Id.*

<sup>17</sup> EPA (2014), “Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills; Proposed Rule,” 79 Fed. Reg. 41772 at 41774 (July 17, 2014) (hereinafter, “Initial MSW Proposal.”)

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191 Comment Excerpt Number 2.

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**Commenter Name:** Public Hearing Transcript

**Commenter Affiliation:** Various Speakers - see original file

**Document Control Number:** EPA-HQ-OAR-2003-0215-0087

**Comment Excerpt Number:** 12

**Comment Excerpt:**

Landfills are the nation’s third largest anthropogenic source of methane, which is generated along with air toxics and ozone forming pollutants as the waste deposited in landfills decomposes. Methane is a powerful climate pollutant that is 84 to 86 times more potent than carbon dioxide within the first two decades after it is emitted, and 28 to 34 times more potent even a century after its emission. Studies show that reducing methane now from major source sectors, such as oil and gas development and municipal landfills, while simultaneously making deep cuts in carbon pollution from other major sources like power plants, is crucial for slowing the rate of near-term climate change and securing long-term climate stability. This proposed rule is an important part of the Whitehouse strategy to reduce methane emissions.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191 Comment Excerpt Number 2.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 2

**Comment Excerpt:**

The need to reduce landfill methane emissions is urgent. The need to control emissions of greenhouse gases is urgent. The draft 2014 Intergovernmental Panel on Climate Change (IPCC) report warns of "severe, pervasive, and irreversible impacts for people and ecosystems" from continued high levels of greenhouse gas emissions.<sup>1</sup> Climate change threatens to eliminate 314 North American bird species.<sup>2</sup> The 2014 Low Carbon Economy Index notes that:

For the sixth year running, the global economy has missed the decarbonisation target needed to limit global warming to 2°C. Confronted with the challenge in 2013 of decarbonising at 6% a year, we managed only 1.2%. To avoid two degrees of warming, the global economy now needs to decarbonise at 6.2% a year, more than five times faster than the current rate, every year from now till 2100. On our current burn rate we blow our carbon budget by 2034, sixty six years ahead of schedule.<sup>3</sup>

Control of methane is particularly important in the near term, given its powerful short-term warming impact, some 25 times greater per ton than carbon dioxide.<sup>4</sup>

[Footnotes]

1. Justin Gillis, U.N. Draft Report Lists Unchecked Emissions' Risks, New York Times, Aug. 26, 2014, A3.

2. National Audubon Society, The Climate Report, September 2014, online at [climate.audubon.org](http://climate.audubon.org).

3. PricewaterhouseCoopers, *Two Degrees of Separation: Ambition and Reality, Low Carbon Economy Index 2014*, September, 2014.

4. Intergovernmental Panel on Climate Change (IPCC), *Fourth Assessment Report (AR4)*, Working Group 1, Ch.2, Changes in Atmospheric Constituents and in Radiative Forcing, Table 2.14, page 212.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191, comment excerpt number 2.

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**Commenter Name:** Ted Michaels, President

**Commenter Affiliation:** Energy Recovery Council (ERC)

**Document Control Number:** EPA-HQ-OAR-2014-0451-0175

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Landfills are the third largest source of anthropogenic methane in the United States,<sup>ii</sup> and the cost of these landfill methane emissions are \$1.8 - \$14.8 billion annually.<sup>iii</sup> The President's Climate

Action Plan calls reducing emissions of methane "critical to our overall effort to address global climate change" and initiated an interagency methane strategy. In 2012, the U.S. State Department, the United Nations Environmental Program, and a group of international partners announced the Climate and Clean Air Coalition ("CCAC") to specifically focus on methane and other short-lived climate pollutants ("SLCPs").

[Footnote ii] U.S. EPA (2014) *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012*, EPA 430-R-14-003.

[Footnote iii] Based on a 100-year methane GWP of 34 from IPCC (2013), 2012 landfill methane emissions from U.S. EPA (2014), and 2010 social cost of carbon ("SCC") range of \$11 - \$89 / metric tonne from Interagency Working Group on Social Cost of Carbon, United States Government (2013) *Technical Support Document: - Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191 Comment Excerpt Number 2.

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**Commenter Name:** Paul Gilman, Senior Vice President, Chief Sustainability Officer

**Commenter Affiliation:** Covanta

**Document Control Number:** EPA-HQ-OAR-2014-0451-0185

**Comment Excerpt Number:** 2

**Comment Excerpt:**

Landfills are the third largest source of anthropogenic methane in the United States,<sup>2</sup> and the cost of these landfill methane emissions are \$1.8 - \$14.8 billion annually.<sup>3</sup> The President's Climate Action Plan calls reducing emissions of methane "critical to our overall effort to address global climate change" and initiated an interagency methane strategy. In 2012, the U.S. State Department, the United Nations Environmental Program, and a group of international partners announced the Climate and Clean Air Coalition ("CCAC") to specifically focus on methane and other short-lived climate pollutants ("SLCPs").

[Footnote 2] EPA (2014) *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012*, EPA 430-R-14-003.

[Footnote 3] Based on a 100-year methane GWP of 34 from IPCC (2013), 2012 landfill methane emissions from EPA (2014), and 2010 social cost of carbon ("SCC") range of \$11 - \$89 / metric tonne from Interagency Working Group on Social Cost of Carbon, United States Government (2013) *Technical Support Document: - Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2014-0451-0191 Comment Excerpt Number 2.

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**Commenter Name:** Comment submitted by Grady McCallie, Policy Director

**Commenter Affiliation:** NC Conservation Network

**Document Control Number:** EPA-HQ-OAR-2003-0215-0116.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

Administrative efficiency argues in favor of the strongest possible reduction requirement. The proposed NSPS rule and the prospective rule for existing landfills are just two of many steps EPA and the Administration have proposed to bring down America's total greenhouse gas emissions.<sup>5</sup> For state agencies as well as EPA, programs to implement and enforce the final landfill methane capture rules will be one part of a complex field of regulatory responsibilities. In that context, it would be wise for EPA to design the landfill methane rules to achieve significant reductions in emissions of methane and other greenhouse gases.

[Footnote]

5. The White House, Climate Action Plan: Strategy to Reduce Methane Emissions, March 2014.

**Comment Response:**

The EPA thanks the commenter for their support of the MSW landfill rules. As stated in sections I.C and VII.A of the final NSPS Preamble and final Emission Guidelines Preamble, these rules will achieve emission reductions beyond the reductions achieved by the existing MSW landfill rules.

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**Commenter Name:** Comment submitted by Dave McElroy, Landfill Superintendent

**Commenter Affiliation:** City of Sioux Falls Public Works, Sioux Falls, South Dakota

**Document Control Number:** EPA-HQ-OAR-2003-0215-0105.1

**Comment Excerpt Number:** 3

**Comment Excerpt:**

The proposed regulations do not offer the best bang for the buck in reducing greenhouse gas emissions. Our industry is already subject to stringent air quality regulations while we make up but a small percentage of overall greenhouse gas emissions. We feel that regulating larger sources of greenhouse gas makes much more sense and shares the burden. Why should small to medium sized landfills with existing beneficial reuse projects be punished?

**Comment Response:**

In its original rulemaking, the EPA targeted large landfills for control and avoided an undue burden on small entities. The EPA has continued that approach with its final rules. In 2014, landfills continued to be the third largest source of anthropogenic methane emissions in the U.S. and have been identified in the President's Climate Action Plan. While the EPA has not changed the regulated or designated pollutant for these actions (i.e., MSW landfill emissions), it recognizes the climate co-benefits that can be achieved.

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**Commenter Name:** Barbara Klipp, Zero Waste Community Leader  
**Commenter Affiliation:** Sierra Club, et al.  
**Document Control Number:** EPA-HQ-OAR-2014-0451-0178  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

The latest information reported in Nature and culled from EPA’s GHG Reporting files<sup>5</sup>, but which otherwise uses all of EPA’s assumptions, establishes that there is more than twice as much trash being landfill than the agency has estimated with its top-down model. Also, gas collection efficiency at closed sites is 17% greater than at open sites. Together, with just these corrections from EPA’s own files, landfills’ responsibility for anthropogenic GHG emissions rises from 1.7% to 7.1%<sup>6</sup>, which is the fourth largest source after electric generation, transportation and industrial boilers<sup>7</sup>. Of further note, that is before accounting for the agency’s insistence on using outdated global warming potentials for methane, as well as many other significant errors that will be discussed elsewhere.

Footnotes:

5 40 CFR Part 98 Subpart HH.

6 Jon Powell et al., “Estimates of solid waste disposal rates and reduction targets for landfill gas emissions,” Nature Climate Change (September 21, 2015) (Nature Article).

7 EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2013 (EPA 430-R-15-004, April 15, 2015), at Table ES-2.

**Comment Response:**

The EPA has outlined the data sources used for it's final rules in *Summary of Updated Landfill Dataset Used in the Cost and Emission Impacts Analysis of Landfill Regulations*. As discussed in the Regulatory Impacts Analysis, the GWP for methane was based on the *Fourth Assessment Report of the United Nations Intergovernmental Panel on Climate Change*. The RIA also includes a discussion about collection efficiency. Based on public input, the EPA has accounted for collection efficiency in its final actions.

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## 18.4 Comment Extension

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**Commenter Name:** Comment submitted by Niki Wuestenberg, Manager, Air Compliance  
**Commenter Affiliation:** Republic Services  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0099.1  
**Comment Excerpt Number:** 76

**Comment Excerpt:**

Republic would like to note that we requested an extension of the 60-day comment period because the proposed rule contains hundreds of pages of technical information that include a wide variety of revisions, clarifications, and requests for information. The number of important issues raised by EPA's proposal required an extensive review and evaluation that made preparing a complete analysis of the proposal within 60-days extremely difficult. The short deadline for comment was further exacerbated by the concurrent publication of the Advanced Notice of Proposed Rulemaking for Emissions Guidelines for Existing MSW landfills, which required the same resources and experts to prepare additional comments during the same 60-day period. Nevertheless, Republic provides the attached comments on the rule based on the analyses that could be completed within that time.

**Comment Response:**

EPA was unable to grant an extension of the comment period for this rulemaking. At the time of the July 17, 2014 NSPS proposal and ANPRM, the EPA was under a court order to finalize the NSPS by March 30, 2015, which did not afford us the time to extend the comment period. While there was no court order related to the ANPRM for the Emission Guidelines, we have indicated that it was our intent to consider information submitted as part of the ANPRM and August 2015 Emission Guidelines proposal in the development of the final NSPS. Likewise, the EPA considered information submitted as part of the NSPS proposal in the development of the final Emission Guidelines. The EPA conducted a public hearing as well as other public outreach on this rulemaking. Information received was used to help inform the final rulemakings.

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**Commenter Name:** Comment submitted by Angela D. Marconi, Manager of Landfill Gas Systems

**Commenter Affiliation:** Delaware Solid Waste Authority (DSWA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0113.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The proposed NSPS and the ANPRM were published on the same day and the comment periods end on the same day. These rule making efforts are of critical importance to our industry and therefore DSWA has taken great effort to draft meaningful comments. We did request additional time to draft comments, however our requests were not granted. We have therefore combined our comments into this letter. The proposed NSPS and ANPRM contain many requests for comment on various scenarios. We have attempted to address these requests to the best of our ability given the time constraints. We would be happy to provide supplemental information to EPA as needed following the close of the comment period. The breadth of differences between the existing rules (Subpart WWW and Cc) and the proposed Subpart (XXX) remain unclear at this time so it is difficult to comment on the results of transitioning from WWW to XXX.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 76 under comment code EXT1.



**Commenter Name:** Comment submitted by Sharon H. Kneiss, President & Chief Executive Officer (CEO), National Waste & Recycling Association (NW&RA) and John Skinner, Executive Director & Chief Executive Officer (CEO)

**Commenter Affiliation:** Solid Waste Association of North America (SWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0108.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Changes to the NSPS for landfills have been under consideration by EPA for many years; however, the regulated community's first opportunity to review the changes occurred with the publication of the proposed rule in July. The structure of the proposed rule is substantially different than anticipated with the development of a new subpart XXX, and the issuance of the ANPRM EG. EPA requests comments on many options discussed in the draft rule preamble and the ANPRM EG. On July 21, 2014, the industry requested additional time to gather and analyze data in order to adequately respond to the proposed rule and ANPRM EG. Because this additional time was not granted, these comments summarize issues of greatest import to the industry. Additional documentation supporting these comments may be submitted as they become available.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 76 under comment code EXT1.

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**Commenter Name:** Comment submitted by Michael Rice, Past President

**Commenter Affiliation:** Texas Lone Star Chapter of the Solid Waste Association of North America (TXSWANA)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0117.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

Due to the widespread nature of the TXSWANA membership because of the size of the State of Texas, it has been difficult to coordinate with the many different cities in Texas that will be impacted by this proposed rule. Insofar as this was foreseeable, TXSWANA requested an extension of the comment periods in both dockets. The concurrent publication of both dockets and the limitation to a 60-day comment period further exacerbated our difficulty in providing thorough and reasoned comments. Please note our disagreement with your failure to grant the requested extension. One way we have determined to deal with this squeezed timeline is to combine our comments for both dockets into this one letter.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 76 under comment code EXT1.

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 1

**Comment Excerpt:**

The standards that you have put out and proposed is of very significant interest to all of our members, many of them who have been operating under the prior subpart WWW for many, many years. We noticed in the preamble that there are many, many questions that you ask, if you count them all, there are probably over 80, maybe even more if you look at the subparts of the questions, and there's also many documents that you reference in the preamble. We believe that 60 days public comment is not sufficient to review all that material and to comment during the comment period. Adding the fact that you also put out an advanced notice for emission guidelines that has a similar number of questions and documents putting them both together in a 60 day public comment period is just not feasible. So we have requested formally, an extension of the comment period of both for an additional 60 days.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 76 under comment code EXT1.

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**Commenter Name:** Public Hearing Transcript  
**Commenter Affiliation:** Various Speakers - see original file  
**Document Control Number:** EPA-HQ-OAR-2003-0215-0087  
**Comment Excerpt Number:** 24

**Comment Excerpt:**

The industry is beginning a detailed review of the rule and supporting documents. In addition to the publication of the proposed NSPS, the solid waste industry must also respond to the Advanced Notice of Proposed Rulemaking for Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills that was issued the same day. Both proposals entail review of hundreds of pages of technical documents and preparation of information and comments to numerous Agency questions that will require extensive time and resources, particularly with in the same 60-day period. As such, we have requested that a 60-day extension be provided to commenters on the proposed NSPS so that the EPA will benefit from thoroughly researched responses.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 76 under comment code EXT1.

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**Commenter Name:** Comment submitted by Kerry Kelly, Senior Director, Federal Affairs  
**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0100.1

**Comment Excerpt Number:** 78

**Comment Excerpt:**

EPA failed to provide adequate time for comment.

EPA has not afforded a full and fair opportunity to effectively review and comment on the proposed Subpart XXX and the ANPRM. The rulemaking docket is filled with letters from regulated entities, large, small and municipal, that have requested additional time to review and provide comment on this substantial set of proposals. WM's request for extension of the comment period, submitted well in advance of the comment deadline, was based on its initial review of proposed Subpart XXX and ANPRM, which revealed an extremely broad and in some cases ill-defined set of issues for comment. As one of the industry leaders within the regulated source category, it is incumbent upon WM to undertake a comprehensive and thoughtful approach to providing comments to EPA. While we have endeavored to do so here despite the inadequate time provided, we believe that we could have provided more useful and complete information and data to the Agency if given more time. We are confident that the same is true for other affected entities, including small businesses and municipal landfill owners/operators that have restricted resources and budgets on which to rely in this context. While EPA has often provided extensions to comment deadlines in other rulemakings, EPA denied the request for extension in this case, and waited until the eleventh hour to do so. (WM received a response to its extension request late on Friday afternoon, September 12th, just before the Monday comment deadline.) We are extremely disappointed in EPA's failure to allow adequate time for review and comment and to timely respond to WM and others' requests. While we are aware that EPA has subjected itself to certain deadlines for completion of the rulemaking, we are concerned that these deadlines are counterproductive and serve to truncate industry's opportunity to fully engage with EPA in a reasoned approach based on reliable and comprehensive data.

**Comment Response:**

See the response to EPA-HQ-OAR-2003-0215-0099.1, excerpt 76 under comment code EXT1.

## **18.5 Out of Scope--Other Rules**

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**Commenter Name:** Kerry Kelly, Senior Director, Federal Affairs and Amy Van Kolken Banister, Senior Director, Corporate Air Programs

**Commenter Affiliation:** Waste Management (WM)

**Document Control Number:** EPA-HQ-OAR-2003-0215-0198

**Comment Excerpt Number:** 110

**Comment Excerpt:**

We also recommend that EPA expeditiously prepare and propose revisions to Subpart AAAA to be consistent with proposed changes to XXX and Cf as well as our recommendations on SSM issues above. This would include removing the requirement for sites to prepare and maintain an SSM plan, in recognition that the rules would establish compliance obligations for each mode of

operation, including SSM periods. Removal of an SSM plan requirement would be consistent with recent federal rulemakings, including NESHAP for Brick and Structural Clay Products Manufacturing; NESHAP for Clay Ceramics Manufacturing, NESHAPs for Primary Aluminum Reduction Plants and Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards.

**Comment Response:**

The EPA is not reviewing Subpart AAAA in this action. The EPA is aware of its statutory obligation to review the standard and will do so at a later time.

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**Commenter Name:** Niki Wuestenberg, Manager, Air Compliance

**Commenter Affiliation:** Republic Services

**Document Control Number:** EPA-HQ-OAR-2014-0451-0176

**Comment Excerpt Number:** 72

**Comment Excerpt:**

The finalization of the emission guidelines and NSPS revisions that EPA has proposed will render those Section 111 rules inconsistent with the Section 112 NESHAP rules for MSW landfills promulgated under 40 C.F.R. § 63 Subpart AAAA. EPA must ensure both sets of rules are consistent. In particular, EPA will need to harmonize the provisions related to SSM events by making revisions to Subpart AAAA similar to those that EPA finalizes for Subpart XXX and Cf, including elimination of the requirement for landfills to prepare and maintain an SSM plan.

**Comment Response:**

See response to DCN EPA-HQ-OAR-2003-0215-0198, comment excerpt 110, under comment code OOS1.

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**Commenter Name:** Anna Moritz, Legal Fellow, Center for Biological Diversity, and Nick Lapis, Legislative Coordinator

**Commenter Affiliation:** Californians Against Waste, et al.

**Document Control Number:** EPA-HQ-OAR-2014-0451-0191

**Comment Excerpt Number:** 7

**Comment Excerpt:**

The Proposed Rule emphasizes the potential burdens to small entities that operate lower capacity MSW landfills should they be subject to landfill gas collection requirements.<sup>10</sup> As noted in the Proposed Rule, however, 17 percent of “small” landfills have already installed gas collection,<sup>11</sup> suggesting that cost is not prohibitive. Furthermore, the climate and public health benefits of reducing methane likely outweigh the costs to small landfill operators. At a minimum, EPA must support its decision not to regulate smaller landfills with a more comprehensive analysis of the potential costs and benefits of including them.

Footnotes:

10 Proposed Rule at 52,120.

11 Id.

**Comment Response:**

The EPA analyzed options below its current regulatory thresholds. Impacts for those options are provided in the record. The EPA completed a Small Business Advocacy Review Panel for its final rules. The analysis of impacts to small entities is consistent with the requirements of the Regulatory Flexibility Act. Final regulatory options selected also achieve significant reductions beyond the current regulatory thresholds.

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**Commenter Name:** Comment submitted by Peter Anderson, Executive Director

**Commenter Affiliation:** Center for a Competitive Waste Industry

**Document Control Number:** EPA-HQ-OAR-2003-0215-0098.1

**Comment Excerpt Number:** 1

**Comment Excerpt:**

The Clean Air Act Amendments of 1990 do not permit EPA to issue standards as part of the landfill air rules [40 C.F.R. Part 60 Subparts CCC and WWW] under §111, but instead it is statutorily obligated to act under the significantly more robust §112 applicable to sources that release hazardous air pollutants (HAP).

In the face of the documented levels of HAPs in landfill gas in excess of 10 tons per year of one (or 25 tons/year of all), EPA has repeatedly acknowledged, albeit has not acted under, this obligation. Its notice for the proposed rule stated:

“There is also concern about cancer risks from landfill NMOC emissions. In reviewing limited emissions data from MSW landfills, EPA identified both known and suspected carcinogens such as benzene.... However toxics emissions data were not available from most MSW landfills. EPA attempted to apply statistical methods to the limited data to generate the average annual increased cancer incidence and the maximum individual risk. In evaluating the results of the calculations for annual incident and MIR, EPA could not determine reasonable estimates of either an annual incidence or the MIR. EPA believes the uncertainties in the database are too great to calculate credible estimates of the cancer risks associated with MSW landfills.

“After considering what statutory approach to use in regulating MSW landfill emissions, EPA accounted the decision to regulate these emissions under section 111 of the CAA in the Federal Register on August 30, 1988 (53 FR 33314). When this decision was made, EPA was cognizant that section 112 of the CAA could have been used. However, given the uncertainty and difficult in setting the standards under section 112, EPA decided to proceed with standards development under section 111.” [See 56 Fed. Reg. 6 104 (May 30, 1991), at 24474.]

Five years later, even though the intervening years would seem ample to rectify any research deficiencies, EPA made essentially the same acknowledgment in the final landfill air rule in 1996.

“There is also concern about cancer risks from landfill NMOC emissions. In reviewing limited emissions data from MSW landfills, EPA identified both known and suspected carcinogens such as benzene, carbon tetrachloride, chloroform, ethylene dichloride, methylene dichloride, perchloroethylene, trichloroethylene, vinyl chloride, and vinylidene chloride. Prior to proposal, the EPA attempted to apply statistical methods to the limited data to generate the average annual increased cancer incidence and the maximum individual risk (MIR). In evaluating the result of the calculations for annual incidence and MIR, the EPA could not determine reasonable estimates of either an annual incidence or the MIR. The EPA concluded that the uncertainties in the database are too great to calculate credible estimates of the cancer risks associated with MSW landfills.” [See 61 Fed Reg. 49 (Mar 12, 1996) at p. 9917.]

Put aside whether any uncertainty surrounding specific cancer risks are legally cognizable as a defense to refuse to comply with §112, especially when that uncertainty persisted for *more than 25 years*, which is more than enough time to remedy any inadequacy. Even if *arguendo* that was a proper defense then, in 2003 EPA effectively decided that the putative information deficiency was resolved and it must henceforth act under §112.

For that year the agency proceeded to adopt what it, erroneously, stated was Maximum Achievable Control Technology (MACT) standards for landfills – albeit with one fatal flaw. Other than for collateral startup/shut down reporting marginalia, the putative MACT standards were exactly the same as the earlier §111 BACT standards for MSW landfills adopted in 1996. Of telling note, nothing was done to follow the procedures to determine the 12% best systems to use to properly determine what was the “maximum” technology available. [See 68 Fed. Reg. 11, at 2227 (January 16, 2003).]

**Comment Response:**

The EPA promulgated national emission standards for hazardous air pollutants (NESHAP) for municipal solid waste (MSW) landfills. The final rule fulfills the requirements of section 112(d) of the Clean Air Act (CAA), which requires the Administrator to regulate emissions of hazardous air pollutants (HAP) listed in section 112(b), and helps implement the Urban Air Toxics Strategy developed under section 112(k) of the CAA.

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**Commenter Name:** Anonymous public comment

**Commenter Affiliation:** Private Citizen

**Document Control Number:** EPA-HQ-OAR-2003-0215-0076

**Comment Excerpt Number:** 1

**Comment Excerpt:**

I wish the EPA would stop spreading the STINK around! Now the STINK is in my neighborhood and I am not happy with the EPA, who I largely blame. It seems the EPA is handing out Class 2 composting license to everyone and anyone regardless of the location or if

the facility is prepared for this type of business. I have read the articles about how the EPA is excited to now have in-town composting facilities in Cincinnati, OH (Cincy Compost) and Wilmington, DE. I would hope you are aware of the complete disasters both of these have turned into. Then we had Marvin's Organic Gardens in Lebanon, OH, now closed because of the STINK. Now we have the STINK here in Clarksville, OH at Brausch Farms.

**Comment Response:**

The EPA is reviewing both the NSPS and Emission Guidelines. Neither action mandates or specifies requirements for composting facilities. Additional information about composting may be found through EPA's Office of Resource Conservation and Recovery at <https://www.epa.gov/sustainable-management-food/reducing-impact-wasted-food-feeding-soil-and-composting>.