MEMORANDUM

FROM: Rachel Schmeltz, U.S. EPA, Climate Change Division

TO: Docket EPA-HQ-OAR-2012-0934

DATE: March 1, 2013

SUBJECT: Table of 2013 Revisions to the Greenhouse Gas Reporting Rule

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1.0 INTRODUCTION

The 2009 final GHG reporting rule (2009 final rule) was signed by EPA Administrator Lisa Jackson on September 22, 2009 and published in the Federal Register on October 30, 2009 (74 FR 56260, October 30, 2009). The 2009 final rule, which became effective on December 29, 2009, included reporting of GHGs from various facilities and suppliers, consistent with the 2008 Consolidated Appropriations Act. Subsequent notices were published in 2010 finalizing the requirements for subparts T, FF, II, and TT (75 FR 39736, July 12, 2010), subpart W (75 FR 74458, November 20, 2010), subparts I, L, DD, QQ, and SS (75 FR 74774, December 1, 2010), and subparts RR and UU (75 FR 75060, December 1, 2010). These requirements are contained in 40 CFR part 98.The rule does not require control of GHGs, rather it only requires that sources above certain threshold levels monitor and report emissions and other related data.

Since promulgation of the rule, the EPA has identified a number of technical issues that need to be corrected and specific portions of the Mandatory Greenhouse Gases Reporting Rule (hereafter referred to as "Part 98") that need to be clarified. The EPA is proposing to amend specific provisions in the Mandatory Reporting of Greenhouse Gases Rule to better reflect industry practices and improvements in climate research, correct technical and editorial errors that have been identified since promulgation, and to clarify or update certain provisions that have been the subject of questions from reporting entities.

The purpose of this memorandum is to provide a detailed list of each change proposed in this action. The table in section 3.0 contains a list of each change proposed, the rule language for the current requirement, and the proposed language. A brief explanation of the reason for the change is included for those items that are not specifically addressed in the preamble for this proposal. These changes are minor clarifications of the requirements text to better reflect EPA's intent, simple corrections to calculation terms or cross-references that do not revise the output of the calculations, harmonizing changes within a subpart (such as changes to terminology), simple editorial and minor error corrections, or removal of redundant text. In total, these changes do not represent a change in reporting burden. Also available in the docket for this action is a set of documents in redline strikeout format for each section of Part 98 for which EPA is proposing changes.

2.0 SUMMARY OF CHANGES INCLUDED

EPA is proposing changes for the subparts identified in the table below. Significant changes that are not detailed in this memorandum include changes to tables for several subparts. The amended tables are available in the redline document for the individual subpart and as attachments to this memorandum. Tables that have been changed include: Table A-1, A-6, C-1, C-2, AA-1, AA-2, HH-1, HH-2, new Table HH-4, MM-1 NN-1, NN-2, and TT-1.

Subpart
A- General Provision
C- General Stationary Fuel Combustion Sources
E - Adipic Acid Production
G – Ammonia Manufacturing
H – Cement production
K –Ferroalloy Production
L –Fluorinated Gas Production
N – Glass Production
O - HCFC-22 Production and HFC-23 Destruction
P – Hydrogen Production
Q - Iron & Steel Production
S – Lime Manufacturing
V- Nitric Acid Production
X – Petrochemical Production
Y – Petroleum Refineries
Z - Phosphoric Acid Production
AA - Pulp & Paper Manufacturing
BB - Silicon Carbide Production
DD - Electrical Transmission and Distribution Equipment Use

Subpart
FF - Underground Coal Mines
HH – Municipal Solid Waste Landfills
II - Industrial Wastewater Treatment
MM- Suppliers of Petroleum Products
NN – Suppliers of Natural Gas and Natural Gas Liquids
PP – Suppliers of Carbon Dioxide
QQ - Importers and Exporters of Fluorinated Greenhouse Gases Contained in Pre-Charged Equipment or Closed Cell Foams
RR - Geologic Sequestration of Carbon Dioxide
SS - Electrical Equipment Manufacture or Refurbishment
TT - Industrial Waste Landfills
UU - Injection of Carbon Dioxide

3.0 SUMMARY OF TECHNICAL CORRECTIONS AND OTHER AMENDMENTS

The following table summarizes the amendments proposed for various subparts of Part 98 which are being addressed by the proposed 2013 Revisions to the Greenhouse Gas Reporting Rule.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
A	98.3(c)(1)	98.3(c)(1) Facility name or supplier name (as appropriate), and physical street address of the facility or supplier, including the city, State, and zip code.	98.3(c)(1) Facility name or supplier name (as appropriate), and physical street address of the facility or supplier, including the city, State, and zip code. If the facility does not have a physical street address, then the facility must provide the latitude and longitude representing the location of facility operations in decimal degree format. This must be provided in a comma-delimited "latitude, longitude" coordinate pair reported in decimal degrees to at least four digits to the right of the decimal.	See preamble text for explanation
A	98.3(c)(11)	(None)	(viii) The facility or supplier must refer to the reporting instructions of the electronic GHG reporting tool regarding standardized conventions for the naming of a parent company.	See preamble text for explanation
A	98.3(c)(13)	(None)	(13) ORIS code for each power generation unit that has been assigned an ORIS code by the Energy Information Administration.	See preamble text for explanation
A	98.3(h)(4)	(4) Notwithstanding paragraphs (h)(1) and (h)(2) of this section, upon request by the owner or operator, the Administrator may provide reasonable extensions of the 45-day period for submission of the revised report or information under paragraphs (h)(1) and (h)(2) of this section. If the Administrator receives a request for extension of the 45-day period, by e-mail to an address prescribed by the Administrator, at least two days prior to the expiration of the 45-day period, and the Administrator does not respond to the request by the end of such period, the extension request is deemed to be automatically granted for 30 more days. During the automatic 30-day extension, the Administrator will determine what extension, if any, beyond the automatic extension is reasonable and will provide any such additional extension.	(4) Notwithstanding paragraphs (h)(1) and (h)(2) of this section, upon request by the owner or operator, the Administrator may provide reasonable extensions of the 45-day period for submission of the revised report or information under paragraphs (h)(1) and (h)(2) of this section. If the Administrator receives a request for extension of the 45-day period, by e-mail to an address prescribed by the Administrator prior to the expiration of the 45-day period, the extension request is deemed to be automatically granted for 30 days. The Administrator may grant an additional extension beyond the automatic 30-day extension if the owner or operator submits a request for an additional extension and the request is received by the Administrator at least 5 business days prior to the expiration of the automatic 30-day extension, provided the request demonstrates that it is not practicable to submit a revised report or information under paragraphs (h)(1) and (h)(2) with 75 days. The Administrator will approve the extension request if the request demonstrates that it is not practicable to collect and process the data needed to resolve potential reporting errors identified pursuant to paragraphs (h)(1) or (h)(2) of this section within 75	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
			days.	
A	98.3(j)(3)(ii)	(ii) Any subsequent extensions to the original request must be submitted to the Administrator within 4 weeks of the owner or operator identifying the need to extend the request, but in any event no later than 4 weeks before the date for the planned process equipment or unit shutdown that was provided in the original request.	(ii) Any subsequent extensions to the original request must be submitted to the Administrator within 4 weeks of the owner or operator identifying the need to extend the request, but in any event no later than 4 weeks before the date for the planned process equipment or unit shutdown that was provided in the original or most recently approved request.	Clarifies BAMM requirement.
A	98.3(k)(1)	(None)	(k) Revised Global Warming Potentials. (1) General. Starting with reporting year 2013, facilities and suppliers must use the revised GWPs in Table A-1 of this subpart, Global Warming Potentials (revised 2013), for calculating CO_2e emissions for determining applicability to this part and for calculating CO_2e emissions in annual GHG reports.	See preamble text for explanation
A	98.3(k)(2)	(None)	(2) Special provision for reporting year 2013. A facility or supplier that was not subject a subpart of part 98 for reporting year 2012, but becomes subject a subpart due to a change in the GWP for one or more compounds in Table A-1 of this subpart, Global Warming Potentials (revised 2013), is not required to submit an annual GHG for reporting year 2013. Such facilities or suppliers must start monitoring and collecting GHG data in compliance with this part starting on January 1, 2014, and submit an annual greenhouse gas report for reporting year 2014 by March 31, 2015.	See preamble text for explanation
A	98.3(l)	(None)	(l) Special provision for best available monitoring methods in 2014. This paragraph applies to owners or operators of facilities or suppliers that first become subject to any subpart of part 98 due to an amendment to Table A-1 of this subpart, Global Warming Potentials (revised 2013).	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
A	98.3(l)(1)	(None)	(1) Best available monitoring methods. From January 1, 2014 to March 31, 2014, owners or operators subject to this paragraph may use best available monitoring methods for any parameter (e.g., fuel use, feedstock rates) that cannot reasonably be measured according to the monitoring and QA/QC requirements of a relevant subpart. The owner or operator must use the calculation methodologies and equations in the "Calculating GHG Emissions" sections of each relevant subpart, but may use the best available monitoring method for any parameter for which it is not reasonably feasible to acquire, install, and operate a required piece of monitoring equipment by January 1, 2014. Starting no later than April 1, 2014, the owner or operator must discontinue using best available methods and begin following all applicable monitoring and QA/QC requirements of this part, except as provided in paragraph (l)(2) of this section. Best available monitoring methods means any of the following methods:	See preamble text for explanation
A	98.3(l)(1)(i)-(iv)	(None)	(i) Monitoring methods currently used by the facility that do not meet the specifications of a relevant subpart. (ii) Supplier data. (iii) Engineering calculations. (iv) Other company records.	See preamble text for explanation
A	98.3(l)(2)	(None)	(2) Requests for extension of the use of best available monitoring methods. The owner or operator may submit a request to the Administrator to use one or more best available monitoring methods beyond March 31, 2014. (i) Timing of request. The extension request must be submitted to EPA no later than January 31, 2014. (ii) Content of request. Requests must contain the following information:	See preamble text for explanation
A	98.3(l)(2)(ii)(A)	(None)	(A) A list of specific items of monitoring instrumentation for which the request is being made and the locations where each piece of monitoring instrumentation will be installed.	See preamble text for explanation
A	98.3(l)(2)(ii)(B)	(None)	(B) Identification of the specific rule requirements (by rule subpart, section, and paragraph numbers) for which the instrumentation is needed.	See preamble text for explanation
A	98.3(l)(2)(ii)(C)	(None)	(C) A description of the reasons that the needed equipment could not be obtained and installed before	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
			April 1, 2014.	
A	98.3(l)(2)(ii)(D)	(None)	(D) If the reason for the extension is that the equipment cannot be purchased and delivered by April 1, 2014, supporting documentation such as the date the monitoring equipment was ordered, investigation of alternative suppliers and the dates by which alternative vendors promised delivery, backorder notices or unexpected delays, descriptions of actions taken to expedite delivery, and the current expected date of delivery.	See preamble text for explanation
A	98.3(l)(2)(ii)(E)	(None)	(E) If the reason for the extension is that the equipment cannot be installed without a process unit shutdown, include supporting documentation demonstrating that it is not practicable to isolate the equipment and install the monitoring instrument without a full process unit shutdown. Include the date of the most recent process unit shutdown, the frequency of shutdowns for this process unit, and the date of the next planned shutdown during which the monitoring equipment can be installed. If there has been a shutdown or if there is a planned process unit shutdown between [THE DATE OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER] and April 1, 2014, include a justification of why the equipment could not be obtained and installed during that shutdown.	See preamble text for explanation
A	98.3(l)(2)(ii)(F)	(None)	(F) A description of the specific actions the facility will take to obtain and install the equipment as soon as reasonably feasible and the expected date by which the equipment will be installed and operating.	See preamble text for explanation
A	98.3(l)(2)(iii)	(None)	(iii) Approval criteria. To obtain approval, the owner or operator must demonstrate to the Administrator's satisfaction that it is not reasonably feasible to acquire, install, and operate a required piece of monitoring equipment by April 1, 2014. The use of best available methods under this subsection (l) will not be approved beyond December 31, 2014.	See preamble text for explanation
A	98.6	Continuous bleed means a continuous flow of pneumatic supply gas to the process measurement device (e.g. level control, temperature control, pressure control) where the supply gas pressure is modulated by the process condition, and then flows to the valve controller where the signal is	Continuous bleed means a continuous flow of pneumatic supply natural gas to the process control device (e.g. level control, temperature control, pressure control) where the supply gas pressure is modulated by the process condition, and then flows to the valve controller where the signal is compared with the process set-point to adjust gas pressure in the	Clarifies definition

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		compared with the process set-point to adjust gas pressure in the valve actuator.	valve actuator.	
A	98.6	Degasification system means the entirety of the equipment that is used to drain gas from underground and collect it at a common point, such as a vacuum pumping station. This includes all degasification wells and gob gas vent holes at the underground coal mine. Degasification systems include surface pre-mining, horizontal pre-mining, and post-mining systems.	Degasification system means the entirety of the equipment that is used to drain gas from underground coal mines. This includes all degasification wells and gob gas vent holes at the underground coal mine. Degasification systems include gob and premine surface drainage wells, gob and premine in-mine drainage wells, and in-mine gob and premine cross-measure borehole wells.	See preamble text for explanation
A	98.6	Intermittent bleed pneumatic devices mean automated flow control devices powered by pressurized natural gas and used for maintaining a process condition such as liquid level, pressure, delta-pressure and temperature. These are snap-acting or throttling devices that discharge the full volume of the actuator intermittently when control action is necessary, but does not bleed continuously.	Intermittent bleed pneumatic devices mean automated flow control devices powered by pressurized natural gas and used for automatically maintaining a process condition such as liquid level, pressure, delta-pressure and temperature. These are snap-acting or throttling devices that discharge all or a portion of the full volume of the actuator intermittently when control action is necessary, but does not bleed continuously.	Clarifies definition
A	98.6	(None)	Fluidized Bed Combustor (FBC) means a combustion technology (e.g., a fluidized bed boiler) where the maximum steady-state temperature reached within the combustor (excluding periods of startup, shutdown, and malfunction) during the combustion of solid fuels (e.g., coal, tire derived fuel, wood and wood residuals, agricultural byproducts, coke, municipal solid waste, or mixtures of such fuels) is less than or equal to 19,900 degrees F.	See preamble text for explanation
A	98.6	Ventilation well or shaft means a well or shaft employed at an underground coal mine to serve as the outlet or conduit to move air from the ventilation system out of the mine.	Ventilation hole or shaft means a vent hole or shaft employed at an underground coal mine to serve as the outlet or conduit to move air from the ventilation system out of the mine.	See preamble text for explanation
A	98.6	Ventilation system means a system that is used to control the concentration of methane and other gases within mine working areas through mine ventilation, rather than a mine degasification system. A ventilation system consists of fans that	Ventilation system means a system that is used to control the concentration of methane and other gases within mine working areas through mine ventilation, rather than a mine degasification system. A ventilation system consists of fans that move air through the mine workings to dilute methane	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		move air through the mine workings to dilute methane concentrations. This includes all ventilation shafts and wells at the underground coal mine.	concentrations.	
A	98.6	98.6 No definition	ORIS Code means the unique identifier assigned to each power plant in the National Electric Energy Data System (NEEDS). The ORIS code is a 4 digit number assigned by the Energy Information Administration (EIA) at US Department of Energy to power plants owned by utilities.	Definition added for new term used in rule
A	Table A-1	Table A-1	See Appendix A for changes to Table A-1	See preamble text for explanation
A	Table A-6	Table A-6	See Appendix A for changes to Table A-6	Changed numbering of two data elements for subpart HH
C	98.33(b)(1)	(None)	(viii) May be used for the combustion of a fuel listed in Table C-1 if the fuel is combusted in a unit with a maximum rated heat input capacity greater than 250 mmBtu/hr (or, pursuant to §98.36(c)(3), in a group of units served by a common supply pipe, having at least one unit with a maximum rated heat input capacity greater than 250 mmBtu/hr), provided that both of the following conditions apply: (A) The use of Tier 4 is not required. (B) The fuel provides less than 10 percent of the annual heat input to the unit, or if §98.36(c)(3) applies, to the group of units served by a common supply pipe. (ix) May not be used for the combustion of waste coal (i.e., waste anthracite (culm) and waste bituminous (gob)).	See preamble text for explanation
C	98.33(b)(3)(ii)(A)	(A) The use of Tier 1 or 2 is permitted, as described in paragraphs (b)(1)(iii), (b)(1)(v), and (b)(2)(ii) of this section.	(A) The use of Tier 1 or 2 is permitted, as described in paragraphs (b)(1)(iii), (b)(1)(v), (b)(1)(viii), and (b)(2)(ii) of this section.	Harmonizing change with addition of paragraph 98.33(b)(1)(viii).
C	98.33(e)(1)(ii)	(ii) The procedures in paragraph (e)(5) of this section.	(ii) The procedures in paragraph (e)(4) of this section.	Corrects reference
C	98.33(e)(3)(iv)(B)	(B) Multiply the result from paragraph (e)(3)(iv)(A) of this section by the appropriate default factor to determine the annual biogenic CO_2 emissions, in metric tons. For MSW, use a default factor of 0.6 and for tires, use a default factor of 0.20.	(B) Multiply the result from paragraph (e)(3)(iv)(A) of this section by the appropriate default factor to determine the annual biogenic CO_2 emissions, in metric tons. For MSW, use a default factor of 0.55 and for tires, use a default factor of 0.20.	See preamble text for explanation
C	98.36(b)(3)	(3) Maximum rated heat input capacity of	(3) Maximum rated heat input capacity of the unit in	Standardize units of measure for all

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		the unit in mmBtu/hr for boilers and process heaters only and relevant units of measure for other combustion units.	mmBtu/hr.	reporters.
C	98.36(c)(3)	(3) ...As a second example, in accordance with §98.33(b)(1)(v), Tier 1 may be used regardless of unit size when natural gas is transported through the common pipe, if the annual fuel consumption is obtained from gas billing records in units of therms. ...	(3) ...As a second example, in accordance with §98.33(b)(1)(v), Tier 1 may be used regardless of unit size when natural gas is transported through the common pipe, if the annual fuel consumption is obtained from gas billing records in units of therms or mmBtu. ...	Consistency across the subpart
C	Table C-1	Table C-1	See Appendix A for changes to Table C-1	See preamble text for explanation
C	Table C-2	Table C-2	See Appendix A for changes to Table C-2	See preamble text for explanation
E	98.53(b)(3)	(3) You must measure the adipic acid production rate during the test and calculate the production rate for the test period in metric tons per hour.	(3) You must measure the adipic acid production rate during the test and calculate the production rate for the test period in tons per hour.	Corrects a requirement for consistency throughout the subpart.
E	98.53(d)	(d) If any N_2O abatement technology “N” is located after your test point, you must determine the destruction efficiency according to paragraphs (d)(1), (2), or (3) of this section.	(d) If the adipic acid production unit exhausts to any N_2O abatement technology “N”, you must determine the destruction efficiency according to paragraphs (d)(1), (d)(2), or (d)(3) of this section.	Clarifies requirement.
E	98.53(e)	(e) If any N_2O abatement technology “N” is located after your test point, you must determine the annual amount of adipic acid produced while N_2O abatement technology “N” is operating according to §98.54(f). Then you must calculate the abatement factor for N_2O abatement technology “N” according to Equation E–2 of this section.	(e) If the adipic acid production unit exhausts to any N_2O abatement technology “N”, you must determine the annual amount of adipic acid produced while N_2O abatement technology “N” is operating according to §98.54(f). Then you must calculate the abatement factor for N_2O abatement technology “N” according to Equation E–2 of this section.	Clarifies requirement.
E	98.53(e) Equation E-2	$AF_N = \frac{P_{aN}}{P_z} \quad \text{(Eq. E-2)}$	$AF_N = \frac{P_{z,N}}{P_z} \quad \text{(Eq. E-2)}$	Harmonizes equation with its definition.
E	98.53(g)(1)	DF = Destruction efficiency of N_2O abatement technology “N” (percent of N_2O removed from vent stream).	DF = Destruction efficiency of N_2O abatement technology “N” (decimal fraction of N_2O removed from vent stream).	Clarifies a calculation term.
E	98.53(g)(1)	AF = Abatement utilization factor of N_2O abatement technology “N” (percent of time that the abatement technology is operating).	AF = Abatement utilization factor of N_2O abatement technology “N” (decimal fraction of time that the abatement technology is operating).	Clarifies a calculation term.
E	98.53(g)(2)	DF_1 = Destruction efficiency of N_2O abatement technology 1 (percent of N_2O removed from vent stream).	DF1 = Destruction efficiency of N_2O abatement technology 1 (decimal fraction of N_2O removed from vent stream).	Clarifies a calculation term.
E	98.53(g)(2)	AF_1 = Abatement utilization factor of N_2O abatement technology 1 (percent of time	AF1 = Abatement utilization factor of N_2O abatement technology 1 (decimal fraction of time that abatement	Clarifies a calculation term.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		that abatement technology 1 is operating).	technology 1 is operating).	
E	98.53(g)(2)	DF_2 = Destruction efficiency of N_2O abatement technology 2 (percent of N_2O removed from vent stream).	DF_2 = Destruction efficiency of N_2O abatement technology 2 (decimal fraction of N_2O removed from vent stream).	Clarifies a calculation term.
E	98.53(g)(2)	AF_2 = Abatement utilization factor of N_2O abatement technology 2 (percent of time that abatement technology 2 is operating).	AF2 = Abatement utilization factor of N_2O abatement technology 2 (decimal fraction of time that abatement technology 2 is operating).	Clarifies a calculation term.
E	98.53(g)(2)	DF_N = Destruction efficiency of N_2O abatement technology N (percent of N_2O removed from vent stream).	DF_N = Destruction efficiency of N_2O abatement technology “N” (decimal fraction of N_2O removed from vent stream).	Clarifies a calculation term.
E	98.53(g)(2)	AF_N = Abatement utilization factor of N_2O abatement technology N (percent of time that abatement technology N is operating).	AF_N = Abatement utilization factor of N_2O abatement technology “N” (decimal fraction of time that abatement technology N is operating).	Clarifies a calculation term.
E	98.53(g)(3)	DF_N = Destruction efficiency of N_2O abatement technology “N” (percent of N_2O removed from vent stream).	DF_N = Destruction efficiency of N_2O abatement technology “N” (decimal fraction of N_2O removed from vent stream).	Clarifies a calculation term.
E	98.53(g)(3)	AF_N = Abatement utilization factor of N_2O abatement technology “N” (percent of time that the abatement technology is operating).	AF_N = Abatement utilization factor of N_2O abatement technology “N” (decimal fraction of time that the abatement technology is operating).	Clarifies a calculation term.
E	98.53(g)(3)	FC_N = Fraction control factor of N_2O abatement technology “N” (percent of total emissions from unit “z” that are sent to abatement technology “N”).	FC_N = Fraction control factor of N_2O abatement technology “N” (decimal fraction of total emissions from unit “z” that are sent to abatement technology “N”).	Clarifies a calculation term.
E	98.54(e)	(e) You must determine the monthly amount of adipic acid produced. You must also determine the monthly amount of adipic acid produced during which N_2O abatement technology, located after the test point, is operating. These monthly amounts are determined according to the methods in paragraphs (c)(1) or (2) of this section.	(e) You must determine the monthly amount of adipic acid produced. You must also determine the monthly amount of adipic acid produced during which N_2O abatement technology is operating. These monthly amounts are determined according to the methods in paragraphs (c)(1) or (c)(2) of this section.	Corrects a requirement for consistency throughout the subpart.
E	98.54(f)	(f) You must determine the annual amount of adipic acid produced. You must also determine the annual amount of adipic acid produced during which N_2O abatement technology located after the test point is operating. These are determined by summing the respective monthly adipic acid production quantities determined in paragraph (e) of this section.	(f) You must determine the annual amount of adipic acid produced. You must also determine the annual amount of adipic acid produced during which N_2O abatement technology is operating. These are determined by summing the respective monthly adipic acid production quantities determined in paragraph (e) of this section.	Corrects a requirement for consistency throughout the subpart.
G	98.73(b)(4)	(4) You must calculate the annual process CO_2 emissions from each ammonia processing unit k at your facility summing	(4) You must calculate the annual process CO_2 emissions from each ammonia processing unit k at your facility according to Equation G-4 of this	Clarifies calculation methodologies.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		emissions, as applicable from Equation G–1, G–2, and G–3 of this section using Equation G–4.	section:	
G	98.73(b)(4) Equation G-4	$E_{CO2_k} = CO_{2,G} + CO_{2,S} + CO_{2,L}$ (Eq. G-4)	(Eq. G-4) $E_{CO2,k} = CO_{2,G,k} + CO_{2,L,k} + CO_{2,S,k}$	Corrects a calculation term
G	98.73(b)(5) Equation G-5	$CO_2 = \sum_{k=1}^{n} E_{CO2k}$ (Eq. G-5)	(Eq. G-5) $CO_2 = \sum_{k=1}^{j} E_{CO2,k}$	Corrects a calculation term
G	98.73(b)(5)	ECO_{2k} = Annual CO_2 emissions from each ammonia processing unit (metric tons).	$ECO_{2,k}$ = Annual CO_2 emissions from each ammonia processing unit k (metric tons).	Clarifies a calculation term.
G	98.73(b)(5)	n = Total number of ammonia processing units.	j = Total number of ammonia processing units.	Corrects a calculation term
G	98.75(b)	(b) For missing feedstock supply rates or waste recycle stream used to determine monthly feedstock consumption or monthly waste recycle stream quantity, you must determine the best available estimate(s) of the parameter(s), based on all available process data.	(b) For missing feedstock supply rates used to determine monthly feedstock consumption , you must determine the best available estimate(s) of the parameter(s), based on all available process data.	Correction to missing data procedures to remove reference to parameters that are no longer part of the regulations.
G	98.76(a)	(a) If a CEMS is used to measure CO_2 emissions, then you must report the relevant information required under §98.36 for the Tier 4 Calculation Methodology and the following information in this paragraph (a):	(a) If a CEMS is used to measure CO_2 emissions, then you must report the relevant information required under §98.36 for the Tier 4 Calculation Methodology and the information in paragraphs (a)(1) and (a)(2) of this section:	Clarifies a requirement.
G	98.76(b)	(b) If a CEMS is not used to measure emissions, then you must report the following information:	(b) If a CEMS is not used to measure emissions, then you must report all of the following information in this paragraph (b):	Clarifies that all information must be reported.
G	98.76(b)(13)	(13) CO_2 from the steam reforming of a hydrocarbon or the gasification of solid and liquid raw material at the ammonia manufacturing process unit used to produce urea and the method used to determine the CO_2 consumed in urea production.	(13) Annual CO_2 emissions (metric tons) from the steam reforming of a hydrocarbon or the gasification of solid and liquid raw material at the ammonia manufacturing process unit used to produce urea and the method used to determine the CO_2 consumed in urea production.	Clarifies the units of the CO_2 emissions.
H	98.86(a)(2)	(2) Monthly cement production from each kiln at the facility.	(2)Annual facility cement production.	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
K	98.113(d)(1) Equation K-3	$E_{CH4} = \sum_{1}^{i}\left(M_{product_i} \times \frac{2000}{2205} \times EF_{product_i}\right)$ (Eq. K-3) 2000/2205 = Conversion factor to convert tons to metric tons.	$E_{CH_4} = \sum_{1}^{i}(M_{product_i} \times \frac{2}{2205} \times EF_{product_i})$ (Eq. K-3) 2/2205 = Conversion factor to convert kg CH_4/ton of product to metric tons CH_4.	See preamble text for explanation
K	98.116(e)(2)	No current requirement	(2) Annual process CH_4 emissions (in metric tons) from each EAF used for the production of any ferroalloy listed in Table K–1 of this subpart.	See preamble text for explanation
L	98.126(j) Introductory paragraph	(j) Special provisions for reporting years 2011 and 2012 only. For reporting years 2011 and 2012, the owner or operator of a facility must comply with paragraphs (j)(1), (j)(2), and (j)(3) of this section.	(j) Special provisions for reporting years 2011, 2012, and 2013 only. For reporting years 2011, 2012, and 2013, the owner or operator of a facility must comply with paragraphs (j)(1), (j)(2), and (j)(3) of this section.	See preamble text for explanation
L	98.126(j)(1)	(1) Timing. The owner or operator of a facility is not required to report the data elements at §98.3(c)(4)(iii) and §98.126(a)(2), (a)(3), (a)(4), (a)(6), (b), (c), (d), (e), (f), (g), and (h) of this section until the later of March 31, 2014 or the date set forth for that data element at §98.3(c)(4)(vii) and Table A–7 of Subpart A of this part.	(1) Timing. The owner or operator of a facility is not required to report the data elements at §98.3(c)(4)(iii) and §98.126(a)(2), (a)(3), (a)(4), (a)(6), (b), (c), (d), (e), (f), (g), and (h) of this section until the later of March 31, 2015 or the date set forth for that data element at §98.3(c)(4)(vii) and Table A–7 of Subpart A of this part.	See preamble text for explanation
L	98.126(j)(3)(i)	(i) If you choose to use a default GWP rather than your best estimate of the GWP for fluorinated GHGs whose GWPs are not listed in Table A–1 to this subpart, use a default GWP of 10,000 for fluorinated GHGs that are fully fluorinated GHGs and use a default GWP of 2000 for other fluorinated GHGs.	(i) If you choose to use a default GWP rather than your best estimate of the GWP for fluorinated GHGs whose GWPs are not listed in Table A–1 of subpart A of this part, use a default GWP of 10,000 for fluorinated GHGs that are fully fluorinated GHGs and use a default GWP of 2000 for other fluorinated GHGs.	Correction to referenced table
N	98.143 Introductory paragraph	You must calculate and report the annual process CO_2 emissions from each continuous glass melting furnace using the procedure in paragraphs (a) and (b) of this section.	You must calculate and report the annual process CO_2 emissions from each continuous glass melting furnace using the procedure in paragraphs (a) through (c) of this section.	Corrects reference
N	98.143(b)	(b) For each continuous glass melting furnace that is not subject to the	(b) For each continuous glass melting furnace that is not subject to the requirements in paragraph (a) of this	Corrects reference

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		requirements in paragraph (a) of this section, calculate and report the process and combustion CO_2 emissions from the glass melting furnace by using either the procedure in paragraph (b)(1) of this section or the procedure in paragraphs (b)(2) through (b)(7) of this section, except as specified in paragraph (c) of this section.	section, calculate and report the process and combustion CO_2 emissions from the glass melting furnace by using either the procedure in paragraph (b)(1) of this section or the procedure in paragraph (b)(2) of this section, except as specified in paragraph (c) of this section.	
N	98.143(b)(2)(iv)	MF_i = Annual average mass fraction of carbonate-based mineral i in carbonate-based raw material i (percentage, expressed as a decimal).	MF_i = Annual average decimal mass fraction of carbonate-based mineral i in carbonate-based raw material i.	Clarifies the equation term
N	98.143(b)(2)(iv)	F_i = Fraction of calcination achieved for carbonate-based raw material i, assumed to be equal to 1.0 (percentage, expressed as a decimal).	F_i = Decimal fraction of calcination achieved for carbonate-based raw material i, assumed to be equal to 1.0.	Clarifies the equation term
N	98.144(b)	(b) You must measure carbonate-based mineral mass fractions at least annually to verify the mass fraction data provided by the supplier of the raw material; such measurements shall be based on sampling and chemical analysis using ASTM D3682–01 (Reapproved 2006) Standard Test Method for Major and Minor Elements in Combustion Residues from Coal Utilization Processes (incorporated by reference, see §98.7) or ASTM D6349–09 Standard Test Method for Determination of Major and Minor Elements in Coal, Coke, and Solid Residues from Combustion of Coal and Coke by Inductively Coupled Plasma—Atomic Emission Spectrometry (incorporated by reference, see §98.7).	(b) You must measure carbonate-based mineral mass fractions at least annually to verify the mass fraction data provided by the supplier of the raw material; such measurements shall be based on sampling and chemical analysis using consensus standards that specify X-ray fluorescence. For measurements made in years prior to the emissions reporting year 2014, you may also use ASTM D3682–01 (Reapproved 2006) Standard Test Method for Major and Minor Elements in Combustion Residues from Coal Utilization Processes (incorporated by reference, see §98.7) or ASTM D6349–09 Standard Test Method for Determination of Major and Minor Elements in Coal, Coke, and Solid Residues from Combustion of Coal and Coke by Inductively Coupled Plasma—Atomic Emission Spectrometry (incorporated by reference, see §98.7).	See preamble text for explanation
N	98.146(b)(4)	(4) Carbonate-based mineral mass fraction (percentage, expressed as a decimal) for each carbonate-based raw material charged to a continuous glass melting furnace.	(4) Carbonate-based mineral decimal mass fraction for each carbonate-based raw material charged to a continuous glass melting furnace.	Clarifies the requirement
N	98.146(b)(6)	(6) The fraction of calcination achieved for each carbonate-based raw material, if a value other than 1.0 is used to calculate process mass emissions of CO_2.	(6) The decimal fraction of calcination achieved for each carbonate-based raw material, if a value other than 1.0 is used to calculate process mass emissions of CO_2.	Clarifies the requirement
N	98.146(b)(7)	(7) Method used to determine fraction of calcination.	(7) Method used to determine decimal fraction of calcination.	Clarifies the requirement
N	98.147(b)(5)	(5) The fraction of calcination achieved for	(5) The decimal fraction of calcination achieved for	Clarifies the requirement

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		each carbonate-based raw material (percentage, expressed as a decimal), if a value other than 1.0 is used to calculate process mass emissions of CO_2.	each carbonate-based raw material, if a value other than 1.0 is used to calculate process mass emissions of CO_2.	
O	98.153(c)	(c) For HCFC–22 production facilities that do not use a thermal oxidizer or that have a thermal oxidizer that is not directly connected to the HCFC–22 production equipment, HFC–23 emissions shall be estimated using Equation O–4 of this section:	(c) For HCFC–22 production facilities that do not use a destruction device or that have a destruction device that is not directly connected to the HCFC–22 production equipment, HFC–23 emissions shall be estimated using Equation O–4 of this section:	Harmonizing change for consistency of destruction device terminology within subpart.
O	98.153(d)	(d) For HCFC–22 production facilities that use a thermal oxidizer connected to the HCFC–22 production equipment, HFC–23 emissions shall be estimated using Equation O–5 of this section: (Eq. O-5) Where: E_D = Mass of HFC–23 emitted annually from thermal oxidizer (metric tons), calculated using Equation O–8 of this section.	(d) For HCFC–22 production facilities that use a destruction device connected to the HCFC–22 production equipment, HFC–23 emissions shall be estimated using Equation O–5 of this section: (Eq. O-5) Where: E_D = Mass of HFC–23 emitted annually from destruction device (metric tons), calculated using Equation O–8 of this section.	Harmonizing change for consistency of destruction device terminology within subpart.
O	98.154(j)	(j) The number of sources of equipment type t with screening values less than 10,000 ppmv shall be the difference between the number of leak sources of equipment type t that could emit HFC-23 and the number of sources of equipment type t with screening values greater than or equal to 10,000 ppmv as determined under paragraph (h) of this section.	(j) The number of sources of equipment type t with screening values less than 10,000 ppmv shall be the difference between the number of leak sources of equipment type t that could emit HFC-23 and the number of sources of equipment type t with screening values greater than or equal to 10,000 ppmv as determined under paragraph (i) of this section.	Correct paragraph reference.
O	98.156(c)	(c) Each HFC-23 destruction facility shall report the concentration (mass fraction) of HFC-23 measured at the outlet of the destruction device during the facility's annual HFC-23 concentration measurements at the outlet of the device.	(c) Each HFC-23 destruction facility shall report the concentration (mass fraction) of HFC-23 measured at the outlet of the destruction device during the facility's annual HFC-23 concentration measurements at the outlet of the device. If the concentration of HFC-23 is below the detection limit of the measuring device, report the detection limit and that the concentration is below the detection limit.	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
P	98.163(b)	(b) Fuel and feedstock material balance approach. Calculate and report CO_2 emissions as the sum of the annual emissions associated with each fuel and feedstock used for hydrogen production by following paragraphs (b)(1) through (b)(3) of this section.	(b) Fuel and feedstock material balance approach. Calculate and report CO_2 emissions as the sum of the annual emissions associated with each fuel and feedstock used for hydrogen production by following paragraphs (b)(1) through (b)(3) of this section. The carbon content and molecular weight shall be obtained from the analyses conducted in accordance with §98.164(b)(2), (b)(3), or (b)(4), as applicable, or from the missing data procedures in §98.165. If the analyses are performed annually, then the annual value shall be used as the monthly average. If the analyses are performed more frequently than monthly, use the arithmetic average of values obtained during the month as the monthly average.	See preamble text for explanation
P	98.163(b)(1)	$Fdstk_n$ = Volume of the gaseous fuel and feedstock used in month n (scf (at standard conditions of 68 °F and atmospheric pressure) of fuel and feedstock). CC_n = Average carbon content of the gaseous fuel and feedstock, from the results of one or more analyses for month n (kg carbon per kg of fuel and feedstock). If measurements are taken more frequently than monthly, use the arithmetic average of measurement values within the month to calculate a monthly average. MW_n = Average molecular weight of the gaseous fuel and feedstock from the results of one or more analyses for month n (kg/kg-mole).	$Fdstk_n$ = Volume of the gaseous fuel or feedstock used in month n (scf (at standard conditions of 68 °F and atmospheric pressure) of fuel or feedstock). CC_n = Average carbon content of the gaseous fuel and feedstock for month n (kg carbon per kg of fuel or feedstock). MW_n = Average molecular weight of the gaseous fuel or feedstock for month n (kg/kg-mole).	Clarifies equation terms
P	98.163(b)(2)	$Fdstk_n$ = Volume of the liquid fuel and feedstock used in month n (gallons of fuel and feedstock). CC_n = Average carbon content of the liquid fuel and feedstock, from the results of one or more analyses for month n (kg carbon per gallon of fuel and feedstock).	$Fdstk_n$ =Volume of the liquid fuel or feedstock used in month n (gallons of fuel or feedstock). CC_n = Average carbon content of the liquid fuel or feedstock, for month n (kg carbon per gallon of fuel or feedstock).	Clarifies equation terms
P	98.163(b)(3)	$Fdstk_n$ = Mass of solid fuel and feedstock used in month n (kg of fuel and feedstock). CC_n = Average carbon content of the solid fuel and feedstock, from the results of one or more analyses for month n (kg carbon per kg of fuel and feedstock).	$Fdstk_n$ = Mass of solid fuel or feedstock used in month n (kg of fuel or feedstock). CC_n = Average carbon content of the solid fuel or feedstock, for month n (kg carbon per kg of fuel or feedstock).	Clarifies equation terms
P	98.164(b)(3)	(3) Determine the carbon content of fuel oil,	(3) Determine the carbon content of fuel oil, naphtha,	See preamble text for explanation

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		naphtha, and other liquid fuels and feedstocks at least monthly, except annually for standard liquid hydrocarbon fuels and feedstocks having consistent composition, or upon delivery for liquid fuels delivered by bulk transport (e.g., by truck or rail).	and other liquid fuels and feedstocks at least monthly, except annually for standard liquid hydrocarbon fuels and feedstocks having consistent composition, or upon delivery for liquid fuels and feedstocks delivered by bulk transport (e.g., by truck or rail).	
P	98.164(b)(4)	(4) Determine the carbon content of coal, coke, and other solid fuels and feedstocks at least monthly, except annually for standard solid hydrocarbon fuels and feedstocks having consistent composition, or upon delivery for solid fuels delivered by bulk transport (e.g., by truck or rail).	(4) Determine the carbon content of coal, coke, and other solid fuels and feedstocks at least monthly, except annually for standard solid hydrocarbon fuels and feedstocks having consistent composition, or upon delivery for solid fuels and feedstocks delivered by bulk transport (e.g., by truck or rail).	See preamble text for explanation
P	98.164(b)(5)	(5) You must use the following applicable methods to determine the carbon content for all fuels and feedstocks, and molecular weight of gaseous fuels and feedstocks. Alternatively, you may use the results of continuous chromatographic analysis of the fuel and feedstock, provided that the gas chromatograph (GC) is operated, maintained, and calibrated according to the manufacturer's instructions; and the methods used for operation, maintenance, and calibration of the GC are documented in the written monitoring plan for the unit under §98.3(g)(5).	(5) You must use the following applicable methods to determine the carbon content for all fuels and feedstocks, and molecular weight of gaseous fuels and feedstocks. Alternatively, you may use the results of chromatographic analysis of the fuel and feedstock, provided that the chromatograph is operated, maintained, and calibrated according to the manufacturer's instructions; and the methods used for operation, maintenance, and calibration of the chromatograph are documented in the written monitoring plan for the unit under §98.3(g)(5).	See preamble text for explanation
P	98.164(c)	(c) For units using the calculation methodologies described in this section, the records required under §98.3(g) must include both the company records and a detailed explanation of how company records are used to estimate the following: (1) Fuel and feedstock consumption, when solid fuel and feedstock is combusted and a CEMS is not used to measure GHG emissions. (2) Fossil fuel consumption, when, pursuant to §98.33(e), the owner or operator of a unit that uses CEMS to quantify CO_2 emissions and that combusts both fossil and biogenic fuels separately reports the biogenic portion	(c) [Reserved]	See preamble text for explanation

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		of the total annual CO_2 emissions. (3) Sorbent usage, if the methodology in §98.33(d) is used to calculate CO_2 emissions from sorbent.		
P	98.164(d)	(d) The owner or operator must document the procedures used to ensure the accuracy of the estimates of fuel and feedstock usage and sorbent usage (as applicable) in paragraph (b) of this section, including, but not limited to, calibration of weighing equipment, fuel and feedstock flow meters, and other measurement devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided.	(d) [Reserved]	See preamble text for explanation
P	98.166(a)(2) -(a)(3)	(2) Annual quantity of hydrogen produced (metric tons) for each process unit and for all units combined. (3) Annual quantity of ammonia produced (metric tons), if applicable, for each process unit and for all units combined.	(2) Annual quantity of hydrogen produced (metric tons) for each process unit. (3) Annual quantity of ammonia produced (metric tons), if applicable for each process unit.	See preamble text for explanation
P	98.167(c)	(None)	(c) For units using the calculation methodologies described 98.163(b), the records required under §98.3(g) must include both the company records and a detailed explanation of how company records are used to estimate the following: (1) Fuel and feedstock consumption, when solid fuel and feedstock is combusted and a CEMS is not used to measure GHG emissions. (2) Fossil fuel consumption, when, pursuant to §98.33(e), the owner or operator of a unit that uses CEMS to quantify CO_2 emissions and that combusts both fossil and biogenic fuels separately reports the biogenic portion of the total annual CO_2 emissions. (3) Sorbent usage, if the methodology in §98.33(d) is used to calculate CO_2 emissions from sorbent.	See preamble text for explanation
P	98.167(d)	(None)	(d) The owner or operator must document the procedures used to ensure the accuracy of the estimates of fuel and feedstock usage and sorbent usage (as applicable) in 98.163(b), including, but not limited to, calibration of weighing equipment, fuel and feedstock flow meters, and other measurement	See preamble text for explanation

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			devices. The estimated accuracy of measurements made with these devices must also be recorded, and the technical basis for these estimates must be provided.	
Q	98.170 Introductory paragraph	98.170 Definition of the source category. The iron and steel production source category includes facilities with any of the following processes: taconite iron ore processing, integrated iron and steel manufacturing, cokemaking not colocated with an integrated iron and steel manufacturing process, and electric arc furnace (EAF) steelmaking not colocated with an integrated iron and steel manufacturing process. Integrated iron and steel manufacturing means the production of steel from iron ore or iron ore pellets. At a minimum, an integrated iron and steel manufacturing process has a basic oxygen furnace for refining molten iron into steel. Each cokemaking process and EAF process located at a facility with an integrated iron and steel manufacturing process is part of the integrated iron and steel manufacturing facility.	98.170 Definition of the source category. The iron and steel production source category includes facilities with any of the following processes: taconite iron ore processing, integrated iron and steel manufacturing, cokemaking not colocated with an integrated iron and steel manufacturing process, direct reduction furnaces not collocated with an integrated iron and steel manufacturing process, and electric arc furnace (EAF) steelmaking not colocated with an integrated iron and steel manufacturing process. Integrated iron and steel manufacturing means the production of steel from iron ore or iron ore pellets. At a minimum, an integrated iron and steel manufacturing process has a basic oxygen furnace for refining molten iron into steel. Each cokemaking process and EAF process located at a facility with an integrated iron and steel manufacturing process is part of the integrated iron and steel manufacturing facility.	See preamble text for explanation
Q	98.173(b)(1)(i)	(C_{sf}) = Carbon content of the solid fuel, from the fuel analysis (percent by weight, expressed as a decimal fraction, e.g., 95% = 0.95). (C_0) = Carbon content of the greenball (taconite) pellets, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_p) = Carbon content of the fired pellets, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (percent by weight, expressed as a decimal fraction).	(C_{sf}) = Carbon content of the solid fuel, from the fuel analysis (expressed as a decimal fraction). (C_0) = Carbon content of the greenball (taconite) pellets, from the carbon analysis results (expressed as a decimal fraction). (C_p) = Carbon content of the fired pellets, from the carbon analysis results (expressed as a decimal fraction). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (expressed as a decimal fraction).	Clarifies equation terms
Q	98.173(b)(1)(i)	(F_s) = Annual mass of the solid fuel combusted (metric tons).	(F_s) = Annual mass of the solid fuel used (metric tons).	Clarifies equation term
Q	98.173(b)(1)(i)	(F_g) = Annual volume of the gaseous fuel combusted (scf).	(F_g) = Annual volume of the gaseous fuel used (scf).	Clarifies equation term

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
Q	98.173(b)(1)(i)	(F_l) = Annual volume of the liquid fuel combusted (gallons).	(F_l) = Annual volume of the liquid fuel used (gallons).	Clarifies equation term
Q	98.173(b)(1)(ii),	(C_{Iron}) = Carbon content of the molten iron, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Scrap}) = Carbon content of the ferrous scrap, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Flux}) = Carbon content of the flux materials, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Carbon}) = Carbon content of the carbonaceous materials, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Steel}) = Carbon content of the steel, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Slag}) = Carbon content of the slag, from the carbon analysis (percent by weight, expressed as a decimal fraction). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (percent by weight, expressed as a decimal fraction).	(C_{Iron}) = Carbon content of the molten iron, from the carbon analysis results (expressed as a decimal fraction). (C_{Scrap}) = Carbon content of the ferrous scrap, from the carbon analysis results (expressed as a decimal fraction). (C_{Flux}) = Carbon content of the flux materials, from the carbon analysis results (expressed as a decimal fraction). (C_{Carbon}) = Carbon content of the carbonaceous materials, from the carbon analysis results (expressed as a decimal fraction). (C_{Steel}) = Carbon content of the steel, from the carbon analysis results (expressed as a decimal fraction). (C_{Slag}) = Carbon content of the slag, from the carbon analysis (expressed as a decimal fraction). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (expressed as a decimal fraction).	Clarifies equation terms
Q	98.173(b)(1)(iii)	(C_{Coal}) = Carbon content of the coal, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Coke}) = Carbon content of the coke, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (percent by weight, expressed as a decimal fraction).	(C_{Coal}) = Carbon content of the coal, from the carbon analysis results (expressed as a decimal fraction). (C_{Coke}) = Carbon content of the coke, from the carbon analysis results (expressed as a decimal fraction). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (expressed as a decimal fraction).	Clarifies equation terms
Q	98.173(b)(1)(iv)	(C_{Feed}) = Carbon content of the mixed sinter feed materials that form the bed entering the sintering machine, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Sinter}) = Carbon content of the sinter pellets, from the carbon analysis results	(C_{Feed}) = Carbon content of the mixed sinter feed materials that form the bed entering the sintering machine, from the carbon analysis results (expressed as a decimal fraction). (C_{Sinter}) = Carbon content of the sinter pellets, from the carbon analysis results (expressed as a decimal fraction).	Clarifies equation terms

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		(percent by weight, expressed as a decimal fraction). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (percent by weight, expressed as a decimal fraction).	(C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (expressed as a decimal fraction).	
Q	98.173(b)(1)(iv)	(F_g) = Annual volume of the gaseous fuel combusted (scf).	(F_g) = Annual volume of the gaseous fuel used (scf).	Clarifies equation term
Q	98.173(b)(1)(v)	(v) For EAFs, estimate CO_2 emissions using Equation Q-5 of this section. $CO_2=44/12*[(Iron)*(C_{Iron})+(Scrap)*(C_{Scrap})+(Flux)*(C_f)+(Electrode)*(C_{Electrode})+(Carbon)*(C_c)-(Steel)*(C_{Steel})-(Slag)*(C_{Slag})-(R)*(C_R)$ Where: CO_2 = Annual CO_2 mass emissions from the EAF (metric tons). 44/12 = Ratio of molecular weights, CO_2 to carbon. (Iron) = Annual mass of direct reduced iron (if any) charged to the furnace (metric tons). (C_{Iron}) = Carbon content of the direct reduced iron, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (Scrap) = Annual mass of ferrous scrap charged to the furnace (metric tons). (C_{Scrap}) = Carbon content of the ferrous scrap, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (Flux) = Annual mass of flux materials (e.g., limestone, dolomite) charged to the furnace (metric tons). (C_{Flux}) = Carbon content of the flux materials, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (Electrode) = Annual mass of carbon electrode consumed (metric tons). ($C_{Electrode}$) = Carbon content of the carbon	(v) For EAFs, estimate CO_2 emissions using Equation Q-5 of this section. $CO_2=44/12*[(Iron)*(C_{Iron})+(Scrap)*(C_{Scrap})+(Flux)*(C_{Flux})+(Electrode)*(C_{Electrode})+(Carbon)*(C_{Carbon})-(Steel)*(C_{Steel})+(F_g)*(C_{gf})*MW/MVC*0.001-(Slag)*(C_{Slag})-(R)*(C_R)]$ Where: CO_2 = Annual CO_2 mass emissions from the EAF (metric tons). 44/12 = Ratio of molecular weights, CO_2 to carbon. (Iron) = Annual mass of direct reduced iron (if any) charged to the furnace (metric tons). (C_{Iron}) = Carbon content of the direct reduced iron, from the carbon analysis results (expressed as a decimal fraction). (Scrap) = Annual mass of ferrous scrap charged to the furnace (metric tons). (C_{Scrap}) = Carbon content of the ferrous scrap, from the carbon analysis results (expressed as a decimal fraction). (Flux) = Annual mass of flux materials (e.g., limestone, dolomite) charged to the furnace (metric tons). (C_{Flux}) = Carbon content of the flux materials, from the carbon analysis results (expressed as a decimal fraction). (Electrode) = Annual mass of carbon electrode consumed (metric tons). ($C_{Electrode}$) = Carbon content of the carbon electrode, from the carbon analysis results (expressed as a decimal fraction). (Carbon) = Annual mass of carbonaceous materials (e.g., coal, coke) charged to the furnace (metric tons).	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		electrode, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (Carbon) = Annual mass of carbonaceous materials (e.g., coal, coke) charged to the furnace (metric tons). (C_{Carbon}) = Carbon content of the carbonaceous materials, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (Steel) = Annual mass of molten raw steel produced by the furnace (metric tons). (C_{Steel}) = Carbon content of the steel, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (Slag) = Annual mass of slag produced by the furnace (metric tons). (C_{Slag}) = Carbon content of the slag, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (R) = Annual mass of air pollution control residue collected (metric tons). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (percent by weight, expressed as a decimal fraction).	(C_{Carbon}) = Carbon content of the carbonaceous materials, from the carbon analysis results (expressed as a decimal fraction). (Steel) = Annual mass of molten raw steel produced by the furnace (metric tons). (C_{Steel}) = Carbon content of the steel, from the carbon analysis results (expressed as a decimal fraction). (F_g) = Annual volume of the gaseous fuel used (scf at 60 degrees F and one atmosphere). (C_{gf}) = Average carbon content of the gaseous fuel, from the fuel analysis results (kg C per kg of fuel). (MW) = Molecular weight of the gaseous fuel (kg/kg-mole). (MVC) = Molar volume conversion factor (836.6 scf per kg-mole at standard conditions of 60 degrees F and one atmosphere). (0.001) = Conversion factor from kg to metric tons. (Slag) = Annual mass of slag produced by the furnace (metric tons). (C_{Slag}) = Carbon content of the slag, from the carbon analysis results (expressed as a decimal fraction). (R) = Annual mass of air pollution control residue collected (metric tons). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (expressed as a decimal fraction).	
Q	98.173(b)(1)(vi)	(vi) For decarburization vessels, estimate CO_2 emissions using Equation Q-6 of this section. $CO_2=44/12*(Steel)*[(C_{Steelin})-(C_{Steelout})]-(R)*(C_R)$ Where: CO_2 = Annual CO_2 mass emissions from the decarburization vessel (metric tons). 44/12 = Ratio of molecular weights, CO_2 to carbon. (Steel) = Annual mass of molten steel charged to the vessel (metric tons). ($C_{Steelin}$) = Carbon content of the molten steel before decarburization, from the carbon analysis results (percent by weight, expressed as a decimal fraction). ($C_{Steelout}$) = Carbon content of the molten	(vi) For decarburization vessels, estimate CO_2 emissions using Equation Q-6 of this section. $CO_2=44/12*\{(Steel)*[(C_{Steelin})-(C_{Steelout})]-(R)*(C_R)\}$ Where: CO_2 = Annual CO_2 mass emissions from the decarburization vessel (metric tons). 44/12 = Ratio of molecular weights, CO_2 to carbon. (Steel) = Annual mass of molten steel charged to the vessel (metric tons). ($C_{Steelin}$) = Carbon content of the molten steel before decarburization, from the carbon analysis results (expressed as a decimal fraction). ($C_{Steelout}$) = Carbon content of the molten steel after decarburization, from the carbon analysis results (expressed as a decimal fraction). (R) = Annual mass of air pollution control residue collected (metric tons).	Clarifies the order of operations in the equation.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		steel after decarburization, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (R) = Annual mass of air pollution control residue collected (metric tons). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (percent by weight, expressed as a decimal fraction).	(C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (expressed as a decimal fraction).	
Q	98.173(b)(1)(vii)	(F_g) = Annual volume of the gaseous fuel combusted (scf).	(F_g) = Annual volume of the gaseous fuel used (scf).	Clarifies equation term
Q	98.173(b)(1)(vii)	(C_{Ore}) = Carbon content of the iron ore or iron ore pellets, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Carbon}) = Carbon content of the carbonaceous materials, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Other}) = Average carbon content of the other materials charged to the furnace, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{Iron}) = Carbon content of the iron, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_{NM}) = Carbon content of the non-metallic materials, from the carbon analysis results (percent by weight, expressed as a decimal fraction). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (percent by weight, expressed as a decimal fraction).	(C_{Ore}) = Carbon content of the iron ore or iron ore pellets, from the carbon analysis results (expressed as a decimal fraction). (C_{Carbon}) = Carbon content of the carbonaceous materials, from the carbon analysis results (expressed as a decimal fraction). (C_{Other}) = Average carbon content of the other materials charged to the furnace, from the carbon analysis results (expressed as a decimal fraction). (C_{Iron}) = Carbon content of the iron, from the carbon analysis results (expressed as a decimal fraction). (C_{NM}) = Carbon content of the non-metallic materials, from the carbon analysis results (expressed as a decimal fraction). (C_R) = Carbon content of the air pollution control residue, from the carbon analysis results (expressed as a decimal fraction).	Clarifies equation terms
Q	98.173(c)	(c) You must determine emissions of CO_2 from the coke pushing process in $mtCO_2e$ by multiplying the metric tons of coal charged to the coke ovens during the reporting period by 0.008.	(c) You must determine emissions of CO_2 from the coke pushing process in $mtCO_2e$ by multiplying the metric tons of coal charged to the by-product recovery and non-recovery coke ovens during the reporting period by 0.008.	Clarifies requirement.
Q	98.173(d)	(d)If GHG emissions from a taconite indurating furnace, basic oxygen furnace, non-recovery coke oven battery, sinter process, EAF, decarburization vessel, or direct reduction furnace are vented through	(d)If GHG emissions from a taconite indurating furnace, basic oxygen furnace, non-recovery coke oven battery, sinter process, EAF, decarburization vessel, or direct reduction furnace are vented through a stack equipped with a CEMS that complies with the	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		the same stack as any combustion unit or process equipment that reports CO_2 emissions using a CEMS that complies with the Tier 4 Calculation Methodology in subpart C of this part (General Stationary Fuel Combustion Sources), then the calculation methodology in paragraph (b) of this section shall not be used to calculate process emissions. The owner or operator shall report under this subpart the combined stack emissions according to the Tier 4 Calculation Methodology in §98.33(a)(4) and all associated requirements for Tier 4 in subpart C of this part (General Stationary Fuel Combustion Sources).	Tier 4 methodology in subpart C of this part, or through the same stack as any combustion unit or process equipment that reports CO_2 emissions using a CEMS that complies with the Tier 4 Calculation Methodology in subpart C of this part (General Stationary Fuel Combustion Sources), then the calculation methodology in paragraph (b) of this section shall not be used to calculate process emissions. The owner or operator shall report under this subpart the combined stack emissions according to the Tier 4 Calculation Methodology in §98.33(a)(4) and comply with all associated requirements for Tier 4 in subpart C of this part (General Stationary Fuel Combustion Sources).	
Q	98.174(b)(1)	(1) Except as provided in paragraph (b)(4) of this section, determine the mass of each process input and output other than fuels using the same plant instruments or procedures that are used for accounting purposes (such as weigh hoppers, belt weigh feeders, weighed purchased quantities in shipments or containers, combination of bulk density and volume measurements, etc.), record the totals for each process input and output for each calendar month, and sum the monthly mass to determine the annual mass for each process input and output. Determine the mass rate of fuels using the procedures for combustion units in §98.34.	(1) Except as provided in paragraph (b)(4) of this section, determine the mass of each process input and output other than fuels using the same plant instruments or procedures that are used for accounting purposes (such as weigh hoppers, belt weigh feeders, weighed purchased quantities in shipments or containers, combination of bulk density and volume measurements, etc.), record the totals for each process input and output for each calendar month, and sum the monthly mass to determine the annual mass for each process input and output. Determine the mass rate of fuels using the procedures for combustion units in §98.34. No determination of the mass of steel output from decarburization vessels is required.	See preamble text for explanation
Q	98.174(c)(2)	(2)For the furnace exhaust from basic oxygen furnaces, EAFs, decarburization vessels, and direct reduction furnaces, sample the furnace exhaust for at least three complete production cycles that start when the furnace is being charged and end after steel or iron and slag have been tapped. For EAFs that produce both carbon steel and stainless or specialty (low carbon) steel, develop an emission factor for the production of both types of steel.	(2)(i) For the exhaust from basic oxygen furnaces, EAFs, decarburization vessels, and direct reduction furnaces, sample the furnace exhaust for at least three complete production cycles that start when the furnace is being charged and end after steel or iron and slag have been tapped. For EAFs that produce both carbon steel and stainless or specialty (low carbon) steel, develop an emission factor for the production of both types of steel. (ii) For the exhaust from continuously charged EAFs, sample the exhaust for a period spanning at least three three hours. For EAFs that produce both carbon steel and stainless or specialty (low carbon) steel, develop	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
			an emission factor for the production of both types of steel.	
Q	98.175(a)	(a) For each missing data for the carbon content of inputs and outputs for facilities that estimate emissions using the carbon mass balance procedure in §98.173(b)(1) or for facilities that estimate emissions using the site-specific emission factor procedure in §98.173(b)(2); 100 percent data availability is required. You must repeat the test for average carbon contents of inputs and outputs according to the procedures in §98.174(b)(2). Similarly, you must repeat the test to determine the site-specific emission factor if data on the CO_2 emission rate, process production rate or process feed rate are missing.	(a) Except as provided in §98.174(b)(4), 100 percent data availability is required for the carbon content of inputs and outputs for facilities that estimate emissions using the carbon mass balance procedure in §98.173(b)(1) or facilities that estimate emissions using the site-specific emission factor procedure in §98.173(b)(2).	See preamble text for explanation
Q	98.176(e)	(e) If you use the carbon mass balance method in §98.173(b)(1) to determine CO_2 emissions, you must report the following information for each process:	(e) If you use the carbon mass balance method in §98.173(b)(1) to determine CO_2 emissions, you must, except as provided in §98.174(b)(4), report the following information for each process:	See preamble text for explanation
Q	98.177(b)	(b) When the carbon mass balance method is used to estimate emissions for a process, the monthly mass of each process input and output that are used to determine the annual mass.	(b) When the carbon mass balance method is used to estimate emissions for a process, the monthly mass of each process input and output that are used to determine the annual mass, except that no determination of the mass of steel output from decarburization vessels is required.	Separate measurements of the mass of liquid steel input to the decarburization vessel and decarburized liquid steel output from the decarburization vessel are not required, because these masses are very nearly equal.
S	98.190 (a)	(a) Lime manufacturing plants (LMPs) engage in the manufacture of a lime product (e.g., calcium oxide, high-calcium quicklime, calcium hydroxide, hydrated lime, dolomitic quicklime, dolomitic hydrate, or other lime products) by calcination of limestone, dolomite, shells or other calcareous substances as defined in 40 CFR 63.7081(a)(1).	(a) Lime manufacturing plants (LMPs) engage in the manufacture of a lime product by calcination of limestone, dolomite, shells or other calcareous substances as defined in 40 CFR 63.7081(a)(1).	Clarifies the applicability.
S	98.193(a)	(a) If all lime kilns meet the conditions specified in §98.33(b)(4)(ii) or (b)(4)(iii), you must calculate and report under this subpart the combined process and combustion CO_2 emissions by operating and maintaining a CEMS to measure CO_2 emissions according to the Tier 4 Calculation Methodology specified in	(a) If all lime kilns meet the conditions specified in §98.33(b)(4)(ii) or (b)(4)(iii), you must calculate and report under this subpart the combined process and combustion CO_2 emissions from all lime kilns by operating and maintaining a CEMS to measure CO_2 emissions according to the Tier 4 Calculation Methodology specified in §98.33(a)(4) and all associated requirements for Tier 4 in subpart C of this	Clarifies language.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		§98.33(a)(4) and all associated requirements for Tier 4 in subpart C of this part (General Stationary Fuel Combustion Sources).	part (General Stationary Fuel Combustion Sources).	
S	98.193(b)(1)	(1) Calculate and report under this subpart the combined process and combustion CO_2 emissions by operating and maintaining a CEMS to measure CO_2 emissions from all lime kilns according to the Tier 4 Calculation Methodology specified in §98.33(a)(4) and all associated requirements for Tier 4 in subpart C of this part (General Stationary Fuel Combustion Sources).	(1) Calculate and report under this subpart the combined process and combustion CO_2 emissions from all lime kilns by operating and maintaining a CEMS to measure CO_2 emissions from all lime kilns according to the Tier 4 Calculation Methodology specified in §98.33(a)(4) and all associated requirements for Tier 4 in subpart C of this part (General Stationary Fuel Combustion Sources).	Clarifies language.
S	98.193(b)(2)	(2) Calculate and report process and combustion CO_2 emissions separately using the procedures specified in paragraphs (b)(2)(i) through (b)(2)(v) of this section.	(2) Calculate and report process and combustion CO_2 emissions from all lime kilns separately using the procedures specified in paragraphs (b)(2)(i) through (b)(2)(v) of this section.	Clarifies language.
S	98.193(b)(2)(ii)	(ii) You must calculate a monthly emission factor for each type of calcined byproduct/waste sold (including lime kiln dust) using Equation S–2 of this section:	(ii) You must calculate a monthly emission factor for each type of calcined byproduct or waste sold (including lime kiln dust) using Equation S–2 of this section:	Clarifies language.
S	98.193(b)(2)(ii)	$EF_{LKD,I,N}$= Emission factor for calcined lime byproduct/waste type i sold, for month n (metric tons CO_2/ton lime product.	$EF_{LKD,I,N}$= Emission factor for calcined lime byproduct or waste type i sold, for month n (metric tons CO_2/ton lime product.	Clarifies a calculation term.
S	98.193(b)(2)(ii)	$CaO_{LKD,i,n}$= Calcium oxide content for calcined lime byproduct/ waste type i sold, for month n (metric tons CaO / metric ton lime).	$CaO_{LKD,i,n}$= Calcium oxide content for calcined lime byproduct or waste type i sold, for month n (metric tons CaO / metric ton lime).	Clarifies a calculation term.
S	98.193(b)(2)(ii)	$MgO_{LKD,i,n}$= Magnesium oxide content for calcined lime byproduct/waste type i sold, for month n (metric tons MgO / metric ton lime).	$MgO_{LKD,i,n}$= Magnesium oxide content for calcined lime byproduct or waste type i sold, for month n (metric tons MgO / metric ton lime).	Clarifies a calculation term.
S	98.193(b)(2)(iii)	(iii) You must calculate the annual CO_2 emissions from each type of calcined byproduct/waste that is not sold (including lime kiln dust and scrubber sludge) using Equation S–3 of this section:	(iii) You must calculate the annual CO_2 emissions from each type of calcined byproduct or waste that is not sold (including lime kiln dust and scrubber sludge) using Equation S–3 of this section:	Clarifies language.
S	98.193(b)(2)(iii)	$E_{waste,i}$= Annual CO_2 emissions for calcined lime byproduct/waste type i that is not sold (metric tons CO_2)	$E_{waste,i}$= Annual CO_2 emissions for calcined lime byproduct or waste type i that is not sold (metric tons CO_2)	Clarifies a calculation term.
S	98.193(b)(2)(iii)	$CaO_{waste,i}$= Calcium oxide content for calcined lime byproduct/ waste type i that is not sold (metric tons CaO / metric ton lime).	$CaO_{waste,i}$= Calcium oxide content for calcined lime byproduct or waste type i that is not sold (metric tons CaO / metric ton lime).	Clarifies a calculation term.
S	98.193(b)(2)(iii)	$MgO_{Waste,i}$= Magnesium oxide content for	$MgO_{Waste,i}$= Magnesium oxide content for calcined	Clarifies a calculation term.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		calcined lime byproduct/ waste type i that is not sold (metric tons MgO / metric ton lime).	lime byproduct or waste type i that is not sold (metric tons MgO / metric ton lime).	
S	98.193(b)(2)(iii)	$M_{Waste,i}$= Annual weight or mass of calcined byproducts/wastes for lime type i that is not sold (tons).	$M_{Waste,i}$= Annual weight or mass of calcined byproducts or wastes for lime type i that is not sold (tons).	Clarifies a calculation term.
S	98.193b(2)(iv)	(iv) You must calculate annual CO_2 process emissions for all kilns using Equation S–4 of this section:	(iv) You must calculate annual CO_2 process emissions for all lime kilns using Equation S–4 of this section:	Clarifies language.
S	98.193b(2)(iv)	ECO_2 = Annual CO_2 process emissions from lime production from all kilns (metric tons/year).	E_{CO2} = Annual CO_2 process emissions from lime production from all lime kilns (metric tons/year).	Clarifies a calculation term and corrects subscripts.
S	98.193b(2)(iv)	$EF_{LKD,i,n}$ = Emission factor of calcined byproducts/wastes sold for lime type i in calendar month n, (metric tons CO_2/ton byproduct/waste) from Equation S–2 of this section.	$EF_{LKD,i,n}$ = Emission factor of calcined byproducts or wastes sold for lime type i in calendar month n, (metric tons CO_2/ton byproduct or waste) from Equation S–2 of this section.	Clarifies a calculation term.
S	98.193b(2)(iv)	$M_{LKD,i,n}$ = Monthly weight or mass of calcined byproducts/waste sold (such as lime kiln dust, LKD) for lime type i in calendar month n (tons).	$M_{LKD,i,n}$ = Monthly weight or mass of calcined byproducts or waste sold (such as lime kiln dust, LKD) for lime type i in calendar month n (tons).	Clarifies a calculation term.
S	98.193b(2)(iv)	$E_{waste,i}$ = Annual CO_2 emissions for calcined lime byproduct/waste type i that is not sold (metric tons CO_2) from Equation S–3 of this section.	$E_{waste,i}$ = Annual CO_2 emissions for calcined lime byproduct or waste type i that is not sold (metric tons CO_2) from Equation S–3 of this section.	Clarifies a calculation term.
S	98.193b(2)(iv)	b = Number of calcined byproducts/wastes that are sold.	b = Number of calcined byproducts or wastes that are sold.	Clarifies a calculation term.
S	98.193b(2)(iv)	z = Number of calcined byproducts/wastes that are not sold.	z = Number of calcined byproducts or wastes that are not sold.	Clarifies a calculation term.
S	98.194(a)	(a) You must determine the total quantity of each type of lime product that is produced and each calcined byproduct/waste (such as lime kiln dust) that is sold. The quantities of each should be directly measured monthly with the same plant instruments used for accounting purposes, including but not limited to, calibrated weigh feeders, rail or truck scales, and barge measurements. The direct measurements of each lime product shall be reconciled annually with the	(a) You must determine the total quantity of each type of lime product that is produced and each calcined byproduct or waste (such as lime kiln dust) that is sold. The quantities of each should be directly measured monthly with the same plant instruments used for accounting purposes, including but not limited to, calibrated weigh feeders, rail or truck scales, and barge measurements. The direct measurements of each lime product shall be reconciled annually with the difference in the beginning of and end of year inventories for these	Clarifies language.

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		difference in the beginning of and end of year inventories for these products, when measurements represent lime sold.	products, when measurements represent lime sold.	
S	98.194(b)	(b) You must determine the annual quantity of each calcined byproduct/waste generated that is not sold by either direct measurement using the same instruments identified in paragraph (a) of this section or by using a calcined byproduct/waste generation rate.	(b) You must determine the annual quantity of each calcined byproduct or waste generated that is not sold by either direct measurement using the same instruments identified in paragraph (a) of this section or by using a calcined byproduct or waste generation rate.	Clarifies language.
S	98.194(c)	(c) You must determine the chemical composition (percent total CaO and percent total MgO) of each type of lime product that is produced and each type of calcined byproduct/waste sold according to paragraph (c)(1) or (2) of this section. You must determine the chemical composition of each type of lime product that is produced and each type of calcined byproduct/waste sold on a monthly basis. You must determine the chemical composition for each type of calcined byproduct/waste that is not sold on an annual basis.	(c) You must determine the chemical composition (percent total CaO and percent total MgO) of each type of lime product that is produced and each type of calcined byproduct or waste sold according to paragraph (c)(1) or (2) of this section. You must determine the chemical composition of each type of lime product that is produced and each type of calcined byproduct or waste sold on a monthly basis. You must determine the chemical composition for each type of calcined byproduct or waste that is not sold on an annual basis.	Clarifies language.
S	98.195(a)	(a) For each missing value of the quantity of lime produced (by lime type), and quantity of calcined byproduct/waste produced and sold, the substitute data value shall be the best available estimate based on all available process data or data used for accounting purposes.	(a) For each missing value of the quantity of lime produced (by lime type), and quantity of calcined byproduct or waste produced and sold, the substitute data value shall be the best available estimate based on all available process data or data used for accounting purposes.	Clarifies language.
S	98.196(a)(1)	(1) Method used to determine the quantity of lime that is produced and sold.	(1) Method used to determine the quantity of lime that is produced and quantity of lime that is sold.	Clarifies language.
S	98.196(a)(2)	(2) Method used to determine the quantity of calcined lime byproduct/waste sold.	(2) Method used to determine the quantity of calcined lime byproduct or waste sold.	Clarifies language.
S	98.196(a)(4)	(4) Beginning and end of year inventories for calcined lime byproducts/wastes sold, by type.	(4) Beginning and end of year inventories for calcined lime byproducts or wastes sold, by type.	Clarifies language.
S	98.196(a)(5)	(5) Annual amount of calcined lime byproduct/waste sold, by type (tons).	(5) Annual amount of calcined lime byproduct or waste sold, by type (tons).	Clarifies language.
S	98.196(a)(7)	(7) Annual amount of calcined lime byproduct/waste that is not sold, by type (tons).	(7) Annual amount of calcined lime byproduct or waste that is not sold, by type (tons).	Clarifies language.
S	98.196(b)(1)	(1) Annual CO_2 process emissions from all kilns combined (metric tons).	(1) Annual CO_2 process emissions from all lime kilns combined (metric tons).	Clarifies language.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
S	98.196(b)(2)	(2) Monthly emission factors for each lime type produced.	(2) Monthly emission factors (metric ton CO_2/ton lime product) for each lime product type produced.	Clarifies language.
S	98.196(b)(3)	(3) Monthly emission factors for each calcined byproduct/waste by lime type that is sold.	(3) Monthly emission factors for each calcined byproduct or waste by lime type that is sold.	Clarifies language.
S	98.196(b)(4)	(4) Standard method used (ASTM or NLA testing method) to determine chemical compositions of each lime type produced and each calcined lime byproduct/waste type.	(4) Standard method used (ASTM or NLA testing method) to determine chemical compositions of each lime type produced and each calcined lime byproduct or waste type.	Clarifies language.
S	98.196(b)(5)	(5) Monthly results of chemical composition analysis of each type of lime product produced and calcined byproduct/waste sold.	(5) Monthly results of chemical composition analysis of each type of lime product produced and calcined byproduct or waste sold.	Clarifies language.
S	98.196(b)(6)	(6) Annual results of chemical composition analysis of each type of lime byproduct/waste that is not sold.	(6) Annual results of chemical composition analysis of each type of lime byproduct or waste that is not sold.	Clarifies language.
S	98.196(b)(9)	(9) Method used to determine the quantity of calcined lime byproduct/waste sold.	(9) Method used to determine the quantity of calcined lime byproduct or waste sold.	Clarifies language.
S	98.196(b)(10)	(10) Monthly amount of calcined lime byproduct/waste sold, by type (tons).	(10) Monthly amount of calcined lime byproduct or waste sold, by type (tons).	Clarifies language.
S	98.196(b)(11)	(11) Annual amount of calcined lime byproduct/waste that is not sold, by type (tons).	(11) Annual amount of calcined lime byproduct or waste that is not sold, by type (tons).	Clarifies language.
S	98.196(b)(14)	(14) Beginning and end of year inventories for calcined lime byproducts/wastes sold.	(14) Beginning and end of year inventories for calcined lime byproducts or wastes sold.	Clarifies language.
V	98.222(a)	(a) You must report N_2O process emissions from each nitric acid production train as required by this subpart.	(a) You must report N_2O process emissions from each nitric acid train as required by this subpart.	Clarifies language.
V	98.223(b)	(b) You must conduct an annual performance test for each nitric acid train according to paragraphs (b)(1) through (3) of this section.	(b) You must conduct an annual performance test for each nitric acid train according to paragraphs (b)(1) through (b)(3) of this section.	Clarifies language.
V	98.223(b)(1)	(1) You must conduct the performance test at the absorber tail gas vent, referred to as the test point, for each nitric acid train according to §98.224(b) through (f). If multiple nitric acid production units exhaust to a common abatement technology and/or emission point, you must sample each process in the ducts before the emissions are combined, sample each process when only	(1) You must conduct the performance test at the absorber tail gas vent, referred to as the test point, for each nitric acid train according to §98.224(b) through (f). If multiple nitric acid trains exhaust to a common abatement technology and/or emission point, you must sample each process in the ducts before the emissions are combined, sample each process when only one process is operating, or sample the combined emissions when multiple processes are operating and	Clarifies terminology of the production units

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		one process is operating, or sample the combined emissions when multiple processes are operating and base the site-specific emission factor on the combined production rate of the multiple nitric acid production units.	base the site-specific emission factor on the combined production rate of the multiple nitric acid trains.	
V	98.223(b)(3)	(3) You must measure the production rate during the performance test and calculate the production rate for the test period in metric tons (100 percent acid basis) per hour.	(3) You must measure the production rate during the performance test and calculate the production rate for the test period in tons (100 percent acid basis) per hour.	Clarifies units of measurement.
V	98.223(d)	(d) If nitric acid train “t” exhausts to any N_2O abatement technology “N” after the test point, you must determine the destruction efficiency for each N_2O abatement technology “N” according to paragraphs (d)(1), (d)(2), or (d)(3) of this section.	(d) If nitric acid train “t” exhausts to any N_2O abatement technology “N”, you must determine the destruction efficiency for each N_2O abatement technology “N” according to paragraphs (d)(1), (d)(2), or (d)(3) of this section.	Clarifies requirement.
V	98.223(e)	(e) If nitric acid train “t” exhausts to any N_2O abatement technology “N” after the test point, you must determine the annual amount of nitric acid produced on train “t” while N_2O abatement technology “N” is operating according to §98.224(f). Then you must calculate the abatement utilization factor for each N_2O abatement technology “N” for each nitric acid train “t” according to Equation V–2 of this section.	(e) If nitric acid train “t” exhausts to any N_2O abatement technology “N”, you must determine the annual amount of nitric acid produced on nitric acid train “t” while N_2O abatement technology “N” is operating according to §98.224(f). Then you must calculate the abatement utilization factor for each N_2O abatement technology “N” for each nitric acid train “t” according to Equation V–2 of this section.	Clarifies requirement
V	98.223(e)	$P_{a,t,N}$	$P_{t,N}$	Corrects equation term
V	98.223(g)(1)	EN_2O_t = Annual N_2O mass emissions from nitric acid production unit “t” according to this Equation V–3a (metric tons)	EN_2O_t = Annual N_2O mass emissions from nitric acid train “t” according to this Equation V–3a (metric tons).	Clarifies terminology of the production units
V	98.223(g)(1)	P_t = Annual nitric acid production from the train “t” (ton acid produced, 100 percent acid basis).	P_t = Annual nitric acid production from nitric acid train “t” (ton acid produced, 100 percent acid basis).	Clarifies an equation term.
V	98.223(g)(1)	DF = Destruction efficiency of N_2O abatement technology N that is used on nitric acid train “t” (percent of N_2O removed from vent stream).	DF = Destruction efficiency of N_2O abatement technology N that is used on nitric acid train “t” (decimal fraction of N_2O removed from vent stream).	Corrects a calculation term.
V	98.223(g)(1)	AF = Abatement utilization factor of N_2O abatement technology “N” for nitric acid train “t” (percent of time that the abatement technology is operating).	AF = Abatement utilization factor of N_2O abatement technology “N” for nitric acid train “t” (decimal fraction of annual production during which abatement technology is operating).	Clarifies an equation term.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
V	98.223(g)(2)	(2) If multiple N_2O abatement technologies are located in series after your test point, you must use the emissions factor (determined in Equation V–1 of this section), the destruction efficiency (determined in paragraph (d) of this section), the annual nitric acid production (determined in paragraph (f) of this section), and the abatement utilization factor (determined in paragraph (e) of this section), according to Equation V–3b of this section:	(2) If multiple N_2O abatement technologies are located in series after your test point, you must use the emissions factor (determined in Equation V–1 of this section), the destruction efficiency (determined in paragraph (d) of this section), the annual nitric acid production (determined in paragraph (i) of this section), and the abatement utilization factor (determined in paragraph (e) of this section), according to Equation V–3b of this section:	Corrects a paragraph reference
V	98.223(g)(2)	EN_2O_t = Annual N_2O mass emissions from nitric acid production unit "t" according to this Equation V–3b (metric tons).	EN_2O_t = Annual N_2O mass emissions from nitric acid train "t" according to this Equation V–3b (metric tons).	Clarifies terminology of the production units
V	98.223(g)(2)	$EFN_2O_{,t}$ = N_2O emissions factor for unit "t" (lb N_2O/ton nitric acid produced).	$EFN_2O_{,t}$ = N_2O emissions factor for nitric acid train "t" (lb N_2O/ton nitric acid produced).	Clarifies terminology of the production units
V	98.223(g)(2)	P_t = Annual nitric acid produced from unit "t" (ton acid produced, 100 percent acid basis).	P_t = Annual nitric acid produced from nitric acid train "t" (ton acid produced, 100 percent acid basis).	Clarifies terminology of the production units
V	98.223(g)(2)	DF_1 = Destruction efficiency of N_2O abatement technology 1 (percent of N_2O removed from vent stream).	DF_1 = Destruction efficiency of N_2O abatement technology 1 (decimal fraction of N_2O removed from vent stream).	Corrects a calculation term.
V	98.223(g)(2)	AF_1 = Abatement utilization factor of N_2O abatement technology 1 (percent of time that abatement technology 1 is operating).	AF_1 = Abatement utilization factor of N_2O abatement technology 1 (decimal fraction of time that abatement technology 1 is operating).	Corrects a calculation term.
V	98.223(g)(2)	DF_2 = Destruction efficiency of N_2O abatement technology 2 (percent of N_2O removed from vent stream).	DF_2 = Destruction efficiency of N_2O abatement technology 2 (decimal fraction of N_2O removed from vent stream).	Corrects a calculation term.
V	98.223(g)(2)	AF_2 = Abatement utilization factor of N_2O abatement technology 2 (percent of time that abatement technology 2 is operating).	AF_2 = Abatement utilization factor of N_2O abatement technology 2 (decimal fraction of time that abatement technology 2 is operating).	Corrects a calculation term.
V	98.223(g)(2)	DF_N = Destruction efficiency of N_2O abatement technology N (percent of N_2O removed from vent stream).	DF_N = Destruction efficiency of N_2O abatement technology N (decimal fraction of N_2O removed from vent stream).	Corrects a calculation term.
V	98.223(g)(2)	AF_N = Abatement utilization factor of N_2O abatement technology N (percent of time that abatement technology N is operating).	AF_N = Abatement utilization factor of N_2O abatement technology N (decimal fraction of time that abatement technology N is operating).	Corrects a calculation term.
V	98.223(g)(3)	(3) If multiple N_2O abatement technologies are located in parallel after your test point, you must use the emissions factor (determined in Equation V–1 of this section), the destruction efficiency	(3) If multiple N_2O abatement technologies are located in parallel after your test point, you must use the emissions factor (determined in Equation V–1 of this section), the destruction efficiency (determined in paragraph (d) of this section), the annual nitric acid	Corrects a paragraph reference

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		(determined in paragraph (d) of this section), the annual nitric acid production (determined in paragraph (f) of this section), and the abatement utilization factor (determined in paragraph (e) of this section), according to Equation V–3c of this section:	production (determined in paragraph (i) of this section), and the abatement utilization factor (determined in paragraph (e) of this section), according to Equation V–3c of this section:	
V	98.223(g)(3)	EN_2O_t = Annual N_2O mass emissions from nitric acid production unit “t” according to this Equation V–3c (metric tons).	EN_2O_t = Annual N_2O mass emissions from nitric acid train “t” according to this Equation V–3c (metric tons).	Clarifies terminology of the production units
V	98.223(g)(3)	$EFN_2O_{,t}$ = N_2O emissions factor for unit “t” (lb N_2O/ton nitric acid produced).	$EFN_2O_{,t}$ = N_2O emissions factor for nitric acid train “t” (lb N_2O/ton nitric acid produced).	Clarifies terminology of the production units
V	98.223(g)(3)	P_t = Annual nitric acid produced from unit “t” (ton acid produced, 100 percent acid basis).	P_t = Annual nitric acid produced from nitric acid train “t” (ton acid produced, 100 percent acid basis).	Clarifies terminology of the production units
V	98.223(g)(3)	DF_N = Destruction efficiency of N_2O abatement technology “N” (percent of N_2O removed from vent stream).	DF_N = Destruction efficiency of N_2O abatement technology “N” (decimal fraction of N_2O removed from vent stream).	Corrects a calculation term.
V	98.223(g)(3)	AF_N = Abatement utilization factor of N_2O abatement technology “N” (percent of time that abatement technology “N” is operating).	AF_N = Abatement utilization factor of N_2O abatement technology “N” (decimal fraction of time that abatement technology “N” is operating).	Corrects a calculation term.
V	98.223(g)(3)	FC_N = Fraction control factor of N_2O abatement technology “N” (percent of total emissions from unit “t” that are sent to abatement technology “N”).	FC_N = Fraction control factor of N_2O abatement technology “N” (decimal fraction of total emissions from nitric acid train “t” that are sent to abatement technology “N”).	Corrects a calculation term.
V	98.223(g)(4)	EN_2O_t = Annual N_2O mass emissions from nitric acid production unit “t” according to this Equation V–3d (metric tons).	EN_2O_t = Annual N_2O mass emissions from nitric acid train “t” according to this Equation V–3d (metric tons).	Corrects a calculation term.
V	98.223(i)	(i) You must determine the total annual amount of nitric acid produced on nitric acid train “t” for each nitric acid train (tons acid produced, 100 percent acid basis), according to §98.224(f).	(i) You must determine the total annual amount of nitric acid produced on each nitric acid train “t” (tons acid produced, 100 percent acid basis), according to §98.224(f).	Clarifies terminology of the production units
V	98.224(c)	(c) You must determine the production rate(s) (100 percent basis) from each nitric acid train during the performance test according to paragraphs (c)(1) or (c)(2) of this section.	(c) You must determine the production rate(s) (100 percent acid basis) from each nitric acid train during the performance test according to paragraphs (c)(1) or (c)(2) of this section.	Clarifies units for a calculation term.
V	98.224(e)	(e) You must determine the total monthly amount of nitric acid produced. You must also determine the monthly amount of nitric acid produced while N_2O abatement	(e) You must determine the total monthly amount of nitric acid produced. You must also determine the monthly amount of nitric acid produced while N_2O abatement technology is operating from each nitric	Clarifies requirements.

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		technology (located after the test point) is operating from each nitric acid train. These monthly amounts are determined according to the methods in paragraphs (c)(1) or (2) of this section.	acid train. These monthly amounts are determined according to the methods in paragraphs (c)(1) or (2) of this section.	
V	98.224(f)	(f) You must determine the annual amount of nitric acid produced. You must also determine the annual amount of nitric acid produced while N_2O abatement technology (located after the test point) is operating for each train. These annual amounts are determined by summing the respective monthly nitric acid quantities determined in paragraph (e) of this section.	(f) You must determine the annual amount of nitric acid produced. You must also determine the annual amount of nitric acid produced while N_2O abatement technology is operating for each nitric acid train. These annual amounts are determined by summing the respective monthly nitric acid quantities determined in paragraph (e) of this section.	Clarifies requirements.
V	98.226(a)	(a) Train identification number.	(a) Nitric Acid train identification number.	Clarifies requirements.
V	98.226(n)	(n) If you requested Administrator approval for an alternative method of determining N_2O emissions under §98.223(a)(2), each annual report must also contain the information specified in paragraphs (n)(1) through (4) of this section. (n)(1) through (n)(4) of this section for each nitric acid production facility.	(n) If you requested Administrator approval for an alternative method of determining N_2O emissions under §98.223(a)(2), each annual report must also contain the information specified in paragraphs (n)(1) through (n)(4) of this section for each nitric acid production facility.	Corrects typographical error
V	98.226(o)	(None)	(o) [Reserved]	Corrects typographical error
V	98.226(p)	(p) Fraction control factor for each abatement technology (percent of total emissions from the production unit that are sent to the abatement technology) if equation V–3c is used.	(p) Fraction control factor for each abatement technology (percent of total emissions from the nitric acid train that are sent to each abatement technology) if Equation V–3c is used.	Clarifies terminology of the production units
X	98.242(b)(2)	(2) If you comply with §98.243(c), report CO_2, CH_4, and N_2O combustion emissions under subpart C of this part (General Stationary Fuel Combustion Sources) by following the requirements of subpart C only for the combustion of supplemental fuel. Determine the applicable Tier in subpart C of this part (General Stationary Fuel Combustion Sources) based on the maximum rated heat input capacity of the stationary combustion source.	(2) If you comply with §98.243(c), report CO_2, CH_4, and N_2O combustion emissions under subpart C of this part (General Stationary Fuel Combustion Sources) by following the requirements of subpart Cfor all fuels, except emissions from burning petrochemical process off-gas in any combustion unit are not to be reported under subpart C of this part. Determine the applicable Tier in subpart C of this part (General Stationary Fuel Combustion Sources) based on the maximum rated heat input capacity of the stationary combustion source.	See preamble text for explanation
X	98.243(b)	(b) Continuous emission monitoring system (CEMS). Route all process vent emissions and emissions from combustion of process off-gas to one or more stacks and determine	(b) Continuous emission monitoring system (CEMS). Route all process vent emissions and emissions from stationary combustion units that burn any amount of process off-gas to one or more stacks and determine	See preamble text for explanation

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		CO_2 emissions from each stack (except flare stacks) according to the Tier 4 Calculation Methodology requirements in subpart C of this part. For each stack (except flare stacks) that includes emissions from combustion of petrochemical process off-gas, calculate CH_4 and N20 emissions in accordance with subpart C of this part (use the Tier 3 methodology, emission factors for “Petroleum” in Table C–2 of subpart C of this part, and either the default high heat value for fuel gas in Table C–1 of subpart C of this part or a calculated HHV, as allowed in Equation C–8 of subpart C of this part). For each flare, calculate CO_2, CH_4, and N_2O emissions using the methodology specified in §98.253(b)(1) through (b)(3).	GHG emissions as specified in paragraphs (b)(1) through (3) of this section. (1)Determine CO_2 emissions from each stack (except flare stacks) according to the Tier 4 Calculation Methodology requirements in subpart C of this part. (2)For each stack (except flare stacks) that includes emissions from combustion of petrochemical process off-gas, calculate CH_4 and N_2O emissions in accordance with subpart C of this part (use Equation C-10 and the "fuel gas" emission factors in Table C–2 of subpart C of this part). (3)For each flare, calculate CO_2, CH_4, and N_2O emissions using the methodology specified in §98.253(b)(1) through (b)(3).	
X	98.243(c)(3)	(3) Collect a sample of each feedstock and product at least once per month and determine the carbon content of each sample according to the procedures of §98.244(b)(4). If multiple valid carbon content measurements are made during the monthly measurement period, average them arithmetically. However, if a particular liquid or solid feedstock is delivered in lots, and if multiple deliveries of the same feedstock are received from the same supply source in a given calendar month, only one representative sample is required. Alternatively, you may use the results of analyses conducted by a fuel or feedstock supplier, provided the sampling and analysis is conducted at least once per month using any of the procedures specified in §98.244(b)(4).	(3) Collect a sample of each feedstock and product at least once per month and determine the carbon content of each sample according to the procedures of §98.244(b)(4). If multiple valid carbon content measurements are made during the monthly measurement period, average them arithmetically. However, if a particular liquid or solid feedstock is delivered in lots, and if multiple deliveries of the same feedstock are received from the same supply source in a given calendar month, only one representative sample is required. Alternatively, you may use the results of analyses conducted by a feedstock supplier, or product customer, provided the sampling and analysis is conducted at least once per month using any of the procedures specified in §98.244(b)(4).	See preamble text for explanation
X	98.243(c)(4)	(4) If you determine that the monthly average concentration of a specific compound in a feedstock or product is greater than 99.5 percent by volume (or mass for liquids and solids), then as an alternative to the sampling and analysis specified in paragraph (c)(3) of this section,	(4) If you determine that the monthly average concentration of a specific compound in a feedstock or product is greater than 99.5 percent by volume or mass, then as an alternative to the sampling and analysis specified in paragraph (c)(3) of this section, you may determine carbon content in accordance with paragraphs (c)(4)(i) through (iii) of this section.	See preamble text for explanation

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		you may calculate the carbon content assuming 100 percent of that feedstock or product is the specific compound during periods of normal operation. This alternative may not be used for products during periods of operation when off-specification product is produced. You must maintain records of any determination made in accordance with this paragraph (c)(4) along with all supporting data, calculations, and other information. You must reevaluate determinations made under this paragraph (c)(4) after any process change that affects the feedstock or product composition. You must keep records of the process change and the corresponding composition determinations. If the feedstock or product composition changes so that the average monthly concentration falls below 99.5 percent, you are no longer permitted to use this alternative method.	(i) Calculate the carbon content assuming 100 percent of that feedstock or product is the specific compound. (ii) You must maintain records of any determination made in accordance with this paragraph (c)(4) along with all supporting data, calculations, and other information. (iii) Reevaluate determinations made under this paragraph (c)(4) after any process change that affects the feedstock or product composition. Keep records of the process change and the corresponding composition determinations. If the feedstock or product composition changes so that the average monthly concentration falls below 99.5 percent, you are no longer permitted to use this alternative method.	
X	98.243(c)(5)(i)	C_g = Annual net contribution to calculated emissions from carbon (C) in gaseous materials (kilograms/year, kg/yr) $(F_{gf})_{i,n}$ = Volume of gaseous feedstock i introduced in month "n" (standard cubic feet, scf). $(MW_f)_i$ = Molecular weight of gaseous feedstock i (kg/kg-mole). $(P_{gp})_{i,n}$ = volume of gaseous product i produced in month "n" (scf). $(MW_p)_{i,n}$ = Molecular wieght of gaseous product i (kg/kg-mole).	C_g = Annual net contribution to calculated emissions from carbon (C) in gaseous materials, including streams containing CO_2 recovered for sale or use in another process(kg/yr) (F_{gf}) = Volume or mass of gaseous feedstock i introduced in month "n" (scf or kg). If you measure mass, the term $(MW_f)_i$/MVC is replaced with "1". $(MW_f)_{i,n}$ = Molecular weight of gaseous feedstock i in month "n" (kg/kg-mole). $(P_{gp})_{i,n}$ = Volume or mass of gaseous product i produced in month "n" (scf or kg). If you measure mass, the term $(MW_p)_i$/MVC is replaced with "1". $(MW_p)_{i,n}$ = Molecular wieght of gaseous product i in month "n" (kg/kg-mole).	See preamble text for explanation
X	98.243(d)(3)(i)	(i) For all gaseous fuels that contain ethylene process off-gas, use the emission factors for "Petroleum" in Table C–2 of subpart C of this part (General Stationary Fuel Combustion Sources).	(i) For all gaseous fuels that contain ethylene process off-gas, use the emission factors for "Fuel Gas" in Table C–2 of subpart C of this part (General Stationary Fuel Combustion Sources).	See preamble text for explanation
X	98.244(b)(4)	(4) ...Analyses conducted in accordance with methods specified in paragraphs (b)(4)(i) through (b)(4)(xv) of this section may be performed by the owner or operator,	(4) ...Analyses conducted in accordance with methods specified in paragraphs (b)(4)(i) through (b)(4)(xv) of this section may be performed by the owner or operator, by an independent laboratory, by the	Harmonizing change with 40 CFR 98.243(c)(3).

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		by an independent laboratory, or by the supplier of a feedstock.	supplier of a feedstock, or by a product customer.	
X	98.244(b)(4)(xiii)	(xiii) The results of chromatographic analysis of a feedstock or product, provided that the gas chromatograph is operated, maintained, and calibrated according to the manufacturer's instructions.	(xiii) The results of chromatographic analysis of a feedstock or product, provided that the chromatograph is operated, maintained, and calibrated according to the manufacturer's instructions.	See preamble text for explanation
X	98.244(b)(4)(xiv)	(xiv) The carbon content results of mass spectrometer analysis of a feedstock or product, provided that the mass spectrometer is operated, maintained, and calibrated according to the manufacturer's instructions.	(xiv) The results of mass spectrometer analysis of a feedstock or product, provided that the mass spectrometer is operated, maintained, and calibrated according to the manufacturer's instructions.	See preamble text for explanation
X	98.244(b)(4)(xv)(A)	(A) An industry standard practice for carbon black feedstock oils and carbon black products.	(A) An industry standard practice, or a method published by a consensus-based standards organization if such a method exists, for carbon black feedstock oils and carbon black products. Consensus-based standards organizations include, but are not limited to, the following: ASTM International (100 Barr Harbor Drive, P.O. Box CB700, West Conshohocken, Pennsylvania 19428-B2959, (800) 262-1373, http://www.astm.org), the American National Standards Institute (ANSI, 1819 L Street, NW., 6th floor, Washington, DC 20036, (202) 293-8020, http://www.ansi.org), the American Gas Association (AGA, 400 North Capitol Street, NW., 4th Floor, Washington, DC 20001, (202) 824-7000, http://www.aga.org), the American Society of Mechanical Engineers (ASME, Three Park Avenue, New York, NY 10016-5990, (800) 843-2763, http://www.asme.org), the American Petroleum Institute (API, 1220 L Street, NW., Washington, DC 20005-4070, (202) 682-8000, http://www.api.org), and the North American Energy Standards Board (NAESB, 801 Travis Street, Suite 1675, Houston, TX 77002, (713) 356-0060, http://www.naesb.org). The method(s) used shall be documented in the Monitoring Plan required under § 98.3(g)(5).	See preamble text for explanation
X	98.244(c)	(None)	(c) If you comply with §98.243(b) or (d), conduct monitoring and QA/QC for flares in accordance with §98.254.	See preamble text for explanation
X	98.245 Introductory paragraph	For missing feedstock flow rates, product flow rates, and carbon contents, use the same procedures as for missing flow rates	For missing feedstock and product flow rates, use the same procedures as for missing fuel usage as specified in §98.35(b)(2). For missing feedstock and product	See preamble text for explanation

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		and carbon contents for fuels as specified in §98.35.	carbon contents and missing molecular weights for gaseous feedstocks and products, use the same procedures as for missing carbon contents and missing molecular weights for fuels as specified in §98.35(b)(1). For missing flare data, follow the procedures in §98.255(b) and (c).	
X	98.246(a)(6)	(6) Name of each method listed in §98.244 used to determine a measured parameter (or description of manufacturer's recommended method).	(6) For each feedstock and product, provide the information specified in paragraphs (a)(6)(i) through (a)(6)(iii) of this section. (i) Name of each method used to determine carbon content or molecular weight in accordance with 98.244(b)(4); (ii) Description of each type of device (e.g., flow meter, weighing device) used to determine flow or mass in accordance 98.244(b)(1) through (3). (iii) Identification of each method (i.e., method number, title, or other description) used to determine flow or mass in accordance with 98.244(b)(1) through (3).	See preamble text for explanation
X	98.246(a)(8)	(8) Identification of each combustion unit that burned both process off-gas and supplemental fuel.	(8) Identification of each combustion unit that burned both process off-gas and supplemental fuel, including combustion units that are not part of the petrochemical process unit.	See preamble text for explanation
X	98.246(a)(9)	(9) If you comply with the alternative to sampling and analysis specified in §98.243(c)(4), the amount of time during which off-specification product was produced, the volume or mass of off-specification product produced, and if applicable, the date of any process change that reduced the composition to less than 99.5 percent.	(9) If you comply with the alternative to sampling and analysis specified in §98.243(c)(4), the number of days during which off-specification product was produced, and if applicable, the date of any process change that reduced the composition to less than 99.5 percent.	See preamble text for explanation
X	98.246(a)(11)	(11) If you determine carbon content or composition of a feedstock or product using a method under §98.244(b)(4)(xv)(B), report the information listed in paragraphs (a)(11)(i) through (a)(11)(iv) of this section.	(11) If you determine carbon content or composition of a feedstock or product using a method under §98.244(b)(4)(xv)(B), report the information listed in paragraphs (a)(11)(i) through (a)(11)(iii) of this section.	Corrects cross-reference.

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X	98.246(b)(2)	(2) For CEMS used on stacks for stationary combustion units, report the relevant information required under §98.36 for the Tier 4 calculation methodology. Section 98.36(b)(9)(iii) does not apply for the purposes of this subpart.	(2) For CEMS used on stacks that include emissions from stationary combustion units that burn any amount of off-gas from the petrochemical process, report the relevant information required under §98.36(c)(2) and (e)(2)(vi) for the Tier 4 calculation methodology. Sections §98.36(c)(2)(ii) and (c)(2)(ix) do not apply for the purposes of this subpart.	Clarifies CEMS reporting requirement to align more closely with procedures in e-GGRT and corrects cross-reference.
X	98.246(b)(3)	(3) For CEMS used on stacks that are not used for stationary combustion units, report the information required under §98.36(e)(2)(vi).	(3) For CEMS used on stacks that do not include emissions from stationary combustion units, report the information required under §98.36(b)(6), (b)(7), and §98.36(e)(2)(vi).	Clarifies CEMS reporting requirement to align more closely with procedures in e-GGRT.
X	98.246(b)(4)	(4) The CO_2 emissions from each stack and the combined CO_2 emissions from all stacks (except flare stacks) that handle process vent emissions and emissions from stationary combustion units that burn process off-gas for the petrochemical process unit. For each stationary combustion unit (or group of combustion units monitored with a single CO_2 CEMS) that burns petrochemical process off-gas, provide an estimate based on engineering judgment of the fraction of the total emissions that is attributable to combustion of off-gas from the petrochemical process unit.	(4) For each CEMS monitoring location that meets the conditions in paragraph (b)(2) or (3) of this section, provide an estimate based on engineering judgment of the fraction of the total CO_2 emissions that is attributable to the petrochemical process unit.	See preamble text for explanation
X	98.246(b)(5)	(5) For stationary combustion units that burn process off-gas from the petrochemical process unit, report the information related to CH_4 and N_2O emissions as specified in paragraphs (b)(5)(i) through (b)(5)(iv) of this section. (i) The CH_4 and N_2O emissions from each stack that is monitored with a CO_2 CEMS, expressed in metric tons of each gas and in metric tons of CO_2 e. For each stack provide an estimate based on engineering judgment of the fraction of the total	(5) For each CEMS monitoring location that meets the conditions in paragraph (b)(2) of this section, report the CH_4 and N_2O emissions expressed in metric tons of each gas. For each CEMS monitoring location, provide an estimate based on engineering judgment of the fraction of the total CH_4 and N_2O emissions that is attributable to combustion of off-gas from the petrochemical process unit. (i)[Reserved] (ii)[Reserved] (iii)[Reserved] (iv)[Reserved]	See preamble text for explanation

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		emissions that is attributable to combustion of off-gas from the petrochemical process unit. (ii) The combined CH_4 and N_2O emissions from all stationary combustion units, expressed in metric tons of each gas and in metric tons of CO_2 e. (iii) The quantity of each type of fuel used in Equation C–8 in §98.33(c) for each stationary combustion unit or group of units (as applicable) during the reporting year, expressed in short tons for solid fuels, gallons for liquid fuels, and scf for gaseous fuels. (iv) The HHV (either default or annual average from measured data) used in Equation C–8 in §98.33(c) for each stationary combustion unit or group of combustion units (as applicable).		
X	98.246(b)(6)	(6) ID or other appropriate descriptor of each stationary combustion unit that burns process off-gas.	(6) [Reserved]	See preamble text for explanation
X	98.246(c)(4)	(4) Name and annual quantity of each feedstock	(4) Name and annual quantity of each feedstock (metric tons).	Clarifies units of measure for reporting requirement
X	98.247(b)	(b) If you comply with the mass balance methodology in §98.243(c), then you must retain records of the information listed in paragraphs (b)(1) through (b)(3) of this section. (1) Results of feedstock or product composition determinations conducted in accordance with §98.243(c)(4). (2) Start and end times and calculated carbon contents for time periods when off-specification product is produced, if you comply with the alternative methodology in §98.243(c)(4) for determining carbon content of feedstock or product.	(b) If you comply with the mass balance methodology in §98.243(c), then you must retain records of the information listed in paragraphs (b)(1) through (b)(4) of this section. (1) Results of feedstock or product composition determinations conducted in accordance with §98.243(c)(4). (2) Start and end times for time periods when off-specification product is produced, if you comply with the alternative methodology in §98.243(c)(4) for determining carbon content of product.	Corrects a reference and reduces recordkeeping requirements when the alternative methodology in 98.234 (c)(4) is used.
X	98.248	<u>Product</u>, as used in §98.243, means each of the following carbon-containing outputs from a process: the petrochemical, recovered byproducts, and liquid organic wastes that are not incinerated onsite. Product does not include process vent	<u>Product,</u> as used in §98.243, means each of the following carbon-containing outputs from a process: the petrochemical, recovered byproducts, and liquid organic wastes that are not combusted onsite. Product does not include process vent emissions, fugitive emissions, or wastewater.	The definition of product has been revised to provide consistency with other subparts of this rule.

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		emissions, fugitive emissions, or wastewater.		
Y	98.252(a)	(a) …. For CH_4 and N_2O emissions from combustion of fuel gas, use the applicable procedures in 98.33 (c) for the same tier methodology that was used for calculating CO_2 emissions. (Use the default CH_4 and N_2O emission factors for "Petroleum (All fuel types in Table C-1)" in Table C-2 of this part. For Tier 3...	(a) …. For CH_4 and N_2O emissions from combustion of fuel gas, use the applicable procedures in 98.33(c) for the same tier methodology that was used for calculating CO_2 emissions. (Use the default CH_4 and N_2O emission factors for "Fuel Gas" in Table C-2 of this part. For Tier 3....	See preamble text for explanation
Y	98.252(i)	(i) CO_2 emissions from non-merchant hydrogen production process units (not including hydrogen produced from catalytic reforming units) under this subpart. You must follow the calculation methodologies, monitoring and QA/QC methods, missing data procedures, reporting requirements, and recordkeeping requirements of subpart P of this part.	(i) CO_2 emissions from non-merchant hydrogen production process units (not including hydrogen produced from catalytic reforming units) following the calculation methodologies, monitoring and QA/QC methods, missing data procedures, reporting requirements, and recordkeeping requirements of subpart P of this part.	Clarifies requirement
Y	98.253(b)(2)	$EmFCH_4$ = Default CH_4 emission factor for "PetroleumProducts" from Table C-2 of Subpart C of this part (General Staionary Fuel Combusion Sources) (kg CH_4/ MMBtu)	$EmFCH_4$ = Default CH_4 emission factor for "Fuel Gas" from Table C-2 of Subpart C of this part (General Staionary Fuel Combustion Sources) (kg CH_4/ MMBtu)	See preamble text for explanation
Y	98.253(b)(3)	$EmFN_2O$ = Default N_2O emission factor for "PetroleumProducts" from Table C-2 of subpart C of this part (General Stationary Fuel Combustion Sources) (kg N_2O/MMBtu).	$EmFN_2O$ = Default N_2O emission factor for "Fuel Gas" from Table C-2 of subpart C of this part (General Stationary Fuel Combustion Sources) (kg N_2O/MMBtu).	See preamble text for explanation
Y	98.253(f)(2)	(2) Flow measurement. If you have a continuous flow monitor on the sour gas feed to the sulfur recovery plant, you must use the measured flow rates when the monitor is operational to calculate the sour gas flow rate. If you do not have a continuous flow monitor on the sour gas feed to the sulfur recovery plant, you must use engineering calculations, company records, or similar estimates of volumetric sour gas flow.	(2) Flow measurement. If you have a continuous flow monitor on the sour gas feed to the sulfur recovery plant or the sour gas feed sent for off-site sulfur recovery, you must use the measured flow rates when the monitor is operational to calculate the sour gas flow rate. If you do not have a continuous flow monitor on the sour gas feed to the sulfur recovery plant or the sour gas feed sent for off-site sulfur recovery, you must use engineering calculations, company records, or similar estimates of volumetric sour gas flow.	Clarifies requirement
Y	98.253(f)(3)	(3) Carbon content. If you have a continuous gas composition monitor capable of measuring carbon content on the sour gas feed to the sulfur recovery plant or	(3) Carbon content. If you have a continuous gas composition monitor capable of measuring carbon content on the sour gas feed to the sulfur recovery plant or the sour gas feed sent for off-site for sulfur	Clarifies requirement

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		if you monitor gas composition for carbon content on a routine basis, you must use the measured carbon content value. Alternatively, you may develop a site-specific carbon content factor using limited measurement data or engineering estimates or use the default factor of 0.20.	recovery, or if you monitor gas composition for carbon content on a routine basis, you must use the measured carbon content value. Alternatively, you may develop a site-specific carbon content factor using limited measurement data or engineering estimates or use the default factor of 0.20.	
Y	98.253(f)(4)	(4) Calculate the CO_2 emissions from each sulfur recovery plant using Equation Y–12 of this section. Where: F_{SG} = Volumetric flow rate of sour gas feed (including sour water stripper gas) to the sulfur recovery plant (scf/year). MF_C = Mole fraction of carbon in the sour gas to the sulfur recovery plant (kg-mole C/kg-mole gas); default = 0.20.	(4) Calculate the CO_2 emissions from each on-site sulfur recovery plant and for sour gas sent off-site for sulfur recovery using Equation Y–12 of this section. Where: F_{SG} = Volumetric flow rate of sour gas (including sour water stripper gas)fed to the sulfur recovery plant or the sour gas feed sent for off-site for sulfur recovery (scf/year). MF_C = Mole fraction of carbon in the sour gas fed to the sulfur recovery plant or the sour gas feed sent for off-site for sulfur recovery (kg-mole C/kg-mole gas); default = 0.20.	See preamble text for explanation
Y	98.253(j)	(j) For each process vent not covered in paragraphs (a) through (i) of this section that can reasonably be expected to contain greater than 2 percent by volume CO_2 or greater than 0.5 percent by volume of CH_4 or greater than 0.01 percent by volume (100 parts per million) of N_2O, calculate GHG emissions using the Equation Y–19 of this section. You must use Equation Y–19 of this section to calculate CH_4 emissions for catalytic reforming unit depressurization and purge vents when methane is used as the purge gas or if you elected this method as an alternative to the methods in paragraphs (f), (h), or (k) of this section.	(j) For each process vent not covered in paragraphs (a) through (i) of this section that can reasonably be expected to contain greater than 2 percent by volume CO_2 or greater than 0.5 percent by volume of CH_4 or greater than 0.01 percent by volume (100 parts per million) of N_2O, calculate GHG emissions using the Equation Y–19 of this section. You must also use Equation Y–19 of this section to calculate CH_4 emissions for catalytic reforming unit depressurization and purge vents when methane is used as the purge gas, CH_4 emissions if you elected to use the method in (i)(1) of this section, and CO_2 and/or CH_4 emissions, as applicable, if you elected this method as an alternative to the methods in paragraphs (f), (h), or (k) of this section.	See preamble text for explanation
Y	98.253(k)	(k) For uncontrolled blowdown systems, you must calculate CH_4 emissions either using the methods for process vents in paragraph (j) of this section regardless of the CH_4concentration or using Equation Y20 of this section. Blowdown systems where the uncondensed gas stream is routed to a flare or similar control device is considered to be controlled and is not required to estimate emissions under this	(k) For uncontrolled blowdown systems, you must calculate CH_4 emissions either using the methods for process vents in paragraph (j) of this section regardless of the CH_4concentration or using Equation Y-20 of this section. Blowdown systems where the uncondensed gas stream is routed to a flare or similar control device is considered to be controlled and is not required to estimate emissions under this paragraph (k).	Corrects typographical error in reference to equation Y-20

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		paragraph (k).		
Y	98.253(m)	(m) For storage tanks, except as provided in paragraph (m)(4) of this section, calculate CH_4 emissions using the applicable methods in paragraphs (m)(1) through (m)(3) of this section.	(m) For storage tanks, except as provided in paragraph (m)(3) of this section, calculate CH_4 emissions using the applicable methods in paragraphs (m)(1) and (m)(2) of this section.	Corrects cross-reference
Y	98.256(f)(6)	(6) If you use a CEMS, the relevant information required under §98.36 for the Tier 4 Calculation Methodology, the CO_2 annual emissions as measured by the CEMS (unadjusted to remove CO_2 combustion emissions associated with additional units, if present) and the process CO_2 emissions as calculated according to §98.253(c)(1)(ii). Report the CO_2 annual emissions associated with sources other than those from the coke burn-off in the applicable subpart (e.g., subpart C of this part in the case of a CO boiler).	(6) If you use a CEMS, the relevant information required under §98.36 for the Tier 4 Calculation Methodology, the CO_2 annual emissions as measured by the CEMS (unadjusted to remove CO_2 combustion emissions associated with additional units, if present) and the process CO_2 emissions as calculated according to §98.253(c)(1)(ii). Report the CO_2 annual emissions associated with sources other than those from the coke burn-off in accordance with the applicable subpart (e.g., subpart C of this part in the case of a CO boiler).	Clarifies reporting requirements
Y	98.256(h)	(h) For sulfur recovery plants and for emissions from sour gas sent off-site for sulfur recovery, the owner and operator shall report:	(h) For on-site sulfur recovery plants and for emissions from sour gas sent off-site for sulfur recovery, the owner and operator shall report:	See preamble text for explanation
Y	98.256(h)(2)	(2) Maximum rated throughput of each independent sulfur recovery plant, in metric tons sulfur produced/stream day, a description of the type of sulfur recovery plant, and an indication of the method used to calculate CO_2 annual emissions for the sulfur recovery plant (e.g., CO_2 CEMS, Equation Y–12, or process vent method in §98.253(j)).	(2) For each on-site sulfur recovery plant, the maximum rated throughput (metric tons sulfur produced/stream day), a description of the type of sulfur recovery plant, and an indication of the method used to calculate CO_2 annual emissions for the sulfur recovery plant (e.g., CO_2 CEMS, Equation Y–12, or process vent method in §98.253(j)).	See preamble text for explanation
Y	98.256(h)(3)	(3) The calculated CO_2 annual emissions for each sulfur recovery plant, expressed in metric tons. The calculated annual CO_2 emissions from sour gas sent off-site for sulfur recovery, expressed in metric tons.	(3) The calculated CO_2 annual emissions for each on-site sulfur recovery plant, expressed in metric tons. The calculated annual CO_2 emissions from sour gas sent off-site for sulfur recovery, expressed in metric tons.	See preamble text for explanation
Y	98.256(h)(4)	(4) If you use Equation Y–12 of this subpart, the annual volumetric flow to the sulfur recovery plant (in scf/year), the molar volume conversion factor (in scf/kg-mole), and the annual average mole fraction of carbon in the sour gas (in kg-mole C/kg-mole gas).	(4) If you use Equation Y–12 of this subpart, the annual volumetric flow to the on-site and off-site sulfur recovery plant (in scf/year), the molar volume conversion factor (in scf/kg-mole), and the annual average mole fraction of carbon in the sour gas (in kg-mole C/kg-mole gas).	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
Y	98.256(h)(5)	(5) If you recycle tail gas to the front of the sulfur recovery plant, indicate whether the recycled flow rate and carbon content are included in the measured data under §98.253(f)(2) and (3). Indicate whether a correction for CO_2 emissions in the tail gas was used in Equation Y–12. If so, then report the value of the correction, the annual volume of recycled tail gas (in scf/year) and the annual average mole fraction of carbon in the tail gas (in kg-mole C/kg-mole gas). Indicate whether you used the default (95%) or a unit specific correction, and if used, report the approach used.	(5) If you recycle tail gas to the front of an on-site sulfur recovery plant, indicate whether the recycled flow rate and carbon content are included in the measured data under §98.253(f)(2) and (3). Indicate whether a correction for CO_2 emissions in the tail gas was used in Equation Y–12. If so, then report the value of the correction, the annual volume of recycled tail gas (in scf/year) and the annual average mole fraction of carbon in the tail gas (in kg-mole C/kg-mole gas). Indicate whether you used the default (95%) or a unit specific correction, and if a unit specific correction is used, report the approach used.	See preamble text for explanation
Y	98.256(h)(6)	(6) If you use a CEMS, the relevant information required under §98.36 for the Tier 4 Calculation Methodology, the CO_2 annual emissions as measured by the CEMS and the annual process CO_2 emissions calculated according to §98.253(f)(1). Report the CO_2 annual emissions associated with fuel combustion subpart C of this part (General Stationary Fuel Combustion Sources).	(6) If you use a CEMS, the relevant information required under §98.36 for the Tier 4 Calculation Methodology, the CO_2 annual emissions as measured by the CEMS and the annual process CO_2 emissions calculated according to §98.253(f)(1). Report the CO_2 annual emissions associated with fuel combustion in accordance with subpart C of this part (General Stationary Fuel Combustion Sources).	Clarifies reporting requirements
Y	98.256(j) (10)	(None)	(10)If you use Equation Y-19 of this subpart, the relevant information required under paragraph (l)(5) of this section.	See preamble text for explanation
Y	98.256(k)(4)	(4) For each set of coking drums that are the same dimensions: The number of coking drums in the set, the height and diameter of the coke drums (in feet), the cumulative number of vessel openings for all delayed coking drums in the set, the typical venting pressure (in psig), void fraction (in cf gas/cf of vessel), and the mole fraction of methane in coking gas (in kg-mole CF_4/kg-mole gas, wet basis).	(4) For each set of coking drums that are the same dimensions: The number of coking drums in the set, the height and diameter of the coke drums (in feet), the cumulative number of vessel openings for all delayed coking drums in the set, the typical venting pressure (in psig), void fraction (in cf gas/cf of vessel), and the mole fraction of methane in coking gas (in kg-mole CH_4/kg-mole gas, wet basis).	Corrects typographical error (CF4 to CH_4)
Y	98.256(k)(6)	(None)	(6) If you use Equation Y-19 of this subpart, the relevant information required under paragraph (l)(5) of this section for each set of coke drums or vessels of the same size.	See preamble text for explanation
Y	98.256(o)(4)(vi)	(vi) If you did not use Equation Y–23, the tank-specific methane composition data and the gas generation rate data used to estimate	(vi) If you did not use Equation Y–23, the tank-specific methane composition data and the annual gas generation volume (scf/yr) used to estimate the	Clarifies reporting requirements

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		the cumulative CH_4 emissions for storage tanks used to process unstabilized crude oil.	cumulative CH_4 emissions for storage tanks used to process unstabilized crude oil.	
Y	98.256(o)(5), (6), (7)	(5) The method used to calculate the reported storage tank emissions for storage tanks processing unstabilized crude oil. (6) The quantity of unstabilized crude oil received during the calendar year (in MMbbl), the average pressure differential (in psi), and the mole fraction of CH_4 in vent gas from the unstabilized crude oil storage tank, and the basis for the mole fraction. (7) The tank-specific methane composition data and the gas generation rate data, if you did not use Equation Y–23.	(5) [Reserved] [6) [Reserved] (7) [Reserved]	Removes duplicate reporting requirements.
Z	98.263(b)(1)(ii)	(ii) If your process measurement provides the CO_2 emissions directly as an output… $CO_{2\ n,i}$ = Carbon dioxide emissions of a grab sample batch of phosphate rock by origin i obtained during month n (percent by weight, expressed as a decimal fraction).	(ii) If your process measurement provides the CO_2 content directly as an output… $CO_{2\ n,i}$ = Carbon dioxide content of a grab sample batch of phosphate rock by origin i obtained during month n (percent by weight, expressed as a decimal fraction).	See preamble text for explanation
Z	98.264(a)	(a) You must obtain a monthly grab sample of phosphate rock directly from the rock being fed to the process line before it enters the mill using one of the following methods. You may conduct the representative bulk sampling using a method published by a consensus standards organization, or you may use industry consensus standard practice methods, including but not limited to the Phosphate Mining States Methods Used and Adopted by the Association of Fertilizer and Phosphate Chemists (AFPC) (P.O. Box 1645, Bartow, Florida 33831, (863) 534–9755, http://afpc.net, paul.mcafee@mosaicco.com). If phosphate rock is obtained from more than one origin in a month, you must obtain a sample from each origin of rock or obtain a composite representative sample.	(a) You must obtain a monthly grab sample of phosphate rock directly from the rock being fed to the process line before it enters the mill using one of the following methods. You may conduct the representative bulk sampling using a method published by a consensus standards organization, or you may use industry consensus standard practice methods, including but not limited to the Phosphate Mining States Methods Used and Adopted by the Association of Fertilizer and Phosphate Chemists (AFPC). If phosphate rock is obtained from more than one origin in a month, you must obtain a sample from each origin of rock or obtain a composite representative sample.	Deletes outdated contact information
Z	98.264(b)	(b) You must determine the carbon dioxide or inorganic carbon content of each monthly grab sample of phosphate rock (consumed in the production of phosphoric acid). You	(b) You must determine the carbon dioxide or inorganic carbon content of each monthly grab sample of phosphate rock (consumed in the production of phosphoric acid). You may use a method published by	Deletes outdated contact information

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		may use a method published by a consensus standards organization, or you may use industry consensus standard practice methods, including but not limited to the Phosphate Mining States Methods Used and Adopted by AFPC (P.O. Box 1645, Bartow, Florida 33831, (863) 534–9755, http://afpc.net, paul.mcafee@mosaicco.com).	a consensus standards organization, or you may use industry consensus standard practice methods, including but not limited to the Phosphate Mining States Methods Used and Adopted by AFPC.	
Z	98.265(a)	(a) For each missing value of the inorganic carbon content of phosphate rock or carbon dioxide (by origin), you must use the appropriate default factor provided in Table Z–1 this subpart. Alternatively, you must determine a substitute data value by calculating the arithmetic average of the quality-assured values of inorganic carbon contents of phosphate rock of origin i from samples immediately preceding and immediately following the missing data incident. You must document and keep records of the procedures used for all such estimates. (a) For each missing value of the inorganic carbon content of phosphate rock (by origin), you must use the appropriate default factor provided in Table Z–1 of this subpart. Alternatively, the you must determine substitute data value by calculating the arithmetic average of the quality-assured values of inorganic carbon contents of phosphate rock of origin i (see Equation Z–1 of this subpart) from samples immediately preceding and immediately following the missing data incident. If no quality-assured data on inorganic carbon contents of phosphate rock of origin i are available prior to the missing data incident, the substitute data value shall be the first quality-assured value for inorganic carbon contents for phosphate rock of origin i obtained after the missing data period.	A complete record of all measured parameters used in the GHG emissions calculations is required. Therefore, whenever a quality-assured value of a required parameter is unavailable, a substitute data value for the missing parameter must be used in the calculations as specified in paragraphs (a) and (b) of this section. (a) For each missing value of the inorganic carbon content or CO_2 content of phosphate rock (by origin), you must use the appropriate default factor provided in Table Z–1 of this subpart. Alternatively, you must determine a substitute data value by calculating the arithmetic average of the quality-assured values of inorganic carbon contents or CO_2 contents of phosphate rock of origin i (see Equation Z–1a or Z-1b of this subpart) from samples immediately preceding and immediately following the missing data incident. If no quality-assured data on inorganic carbon contents or CO_2 contents of phosphate rock of origin i are available prior to the missing data incident, the substitute data value shall be the first quality-assured value for inorganic carbon contents or CO_2 contents for phosphate rock of origin i obtained after the missing data period.	Correction; clarifies the general requirement for missing data, removes a duplicate paragraph, clarifies the data element of inorganic carbon content may also be represented by CO_2 content, and corrects the equation reference.
Z	98.266(a)	(a) Annual phosphoric acid production by origin (as listed in Table Z–1 to this	(a) Annual phosphoric acid production, by origin of the phosphate rock (tons).	Removes a reference to Table Z-1. The reporting element could have a place of

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		subpart) of the phosphate rock (tons).		origin other than those listed in Table Z-1
Z	98.266(b)	(b) Annual phosphoric acid permitted production capacity (tons)	(b) Annual phosphoric acid production capacity (tons)	See preamble text for explanation
Z	98.266(d)	(d) Annual phosphate rock consumption from monthly measurement records by origin, (as listed in Table Z–1 to this subpart) (tons).	(d) Annual phosphate rock consumption from monthly measurement records by origin (tons).	Clarifies reporting requirements
Z	98.266(f)(5)	(5) Monthly inorganic carbon content of phosphate rock for each wet-process phosphoric acid process line for which Equation Z–1a is used (percent by weight, expressed as a decimal fraction), or CO_2 (percent by weight, expressed as a decimal fraction) for which Equation Z–1b is used.	(5) Monthly inorganic carbon content of phosphate rock for each wet-process phosphoric acid process line for which Equation Z–1a is used (percent by weight, expressed as a decimal fraction), or CO_2 content (percent by weight, expressed as a decimal fraction) for which Equation Z–1b is used.	Clarifies reporting requirements
Z	98.266(f)(6)	(6) Monthly mass of phosphate rock consumed by origin, (as listed in Table Z–1 of this subpart) in production for each wet-process phosphoric acid process line (tons).	(6) Monthly mass of phosphate rock consumed, by origin, in production for each wet-process phosphoric acid process line (tons).	Clarifies reporting requirements
Z	98.266(f)(8)	(8) Number of times missing data procedures were used to estimate phosphate rock consumption (months) and inorganic carbon contents of the phosphate rock (months).	(8) Number of times missing data procedures were used to estimate phosphate rock consumption (months), inorganic carbon contents of the phosphate rock (months), and CO_2 contents of the phosphate rock (months).	Adds reporting requirement for missing data procedures
Z	98.267(a)	(a) Monthly mass of phosphate rock consumed by origin (as listed in Table Z–1 of this subpart) (tons).	(a) Monthly mass of phosphate rock consumed by origin (tons).	Removes a reference to Table Z-1. The reporting element could have a place of origin other than those listed in Table Z-1
Z	98.26(c)	(c) Documentation of the procedures used to ensure the accuracy of monthly phosphate rock consumption by origin, (as listed in Table Z–1 of this subpart).	(c) Documentation of the procedures used to ensure the accuracy of monthly phosphate rock consumption by origin.	Removes a reference to Table Z-1. The reporting element could have a place of origin other than those listed in Table Z-1
AA	98.273(a)(3)	(3) Calculate biogenic CO_2 emissions and emissions of CH_4 and N_2O from biomass using measured quantities of spent liquor solids fired, site-specific HHV, and default or site-specific emissions factors, according to Equation AA–1 of this section: *** (Variable from Equation AA-1:) (EF) = Default or site-specific emission factor for CO_2, CH_4, or N_2O, from Table AA–1 of this subpart (kg CO_2, CH_4, or	(3) Calculate biogenic CO_2 emissions and emissions of CH_4 and N_2O from biomass using measured quantities of spent liquor solids fired, site-specific HHV, and default emissions factors, according to Equation AA–1 of this section: *** (Variable from Equation AA-1:) (EF) = Default emission factor for CO_2, CH_4, or N_2O, from Table AA–1 of this subpart (kg CO_2, CH_4, or N_2O per mmBtu).	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		N_2O per mmBtu).		
AA	98.276(e)	(e) The default or site-specific emission factor for CO_2, CH_4, or N_2O, used in Equation AA–1 of this subpart (kg CO_2, CH_4, or N_2O per mmBtu).	(e) The default emission factor for CO_2, CH_4, or N_2O, used in Equation AA–1 of this subpart (kg CO_2, CH_4, or N_2O per mmBtu).	Harmonize with change made to 98.273(a)(3)
AA	98.276(k)	(k) Annual production of pulp and/or paper products produced (metric tons).	(k) Annual production of pulp and/or paper products produced (metric tons) as follows: (1) Report the total annual production of unbleached virgin pulp produced onsite during the reporting year in air-dried metric tons per year. This total annual production value is the sum of all kraft, semichemical, soda, and sulfite pulp produced onsite, prior to bleaching, through all virgin pulping lines. (i) Do not include secondary fiber repulped for paper production in the virgin pulp production total. (ii) You must report a positive (non-zero) value for pulp production unless your pulp mill did not operate during the reporting year. (2) Report the total annual production of paper products exiting the paper machine(s), prior to application of any off-machine coatings, in air-dried metric tons per year. If you operate multiple paper machines, report the sum (total) of the air-dried metric tons of paper produced during the reporting year for all paper machines at the mill.	See preamble text for explanation
AA	Tables AA-1 & AA-2	See Tables AA-1 and AA-2 in the current rule file.	See Appendix A for changes to Table AA-1 and AA-2	See preamble text for explanation
BB	98.282(a)	(a) CO_2 and CH_4 process emissions from all silicon carbide process units or furnaces combined.	(a) CO_2 process emissions from all silicon carbide process units or furnaces combined.	See preamble text for explanation
BB	98.283 Introductory paragraph	98.283 Calculating GHG Emissions. You must calculate and report the annual process CO_2 emissions from each silicon carbide process unit or production furnace using the procedures in either paragraph (a) or (b) of this section. You must determine CH_4 process emissions in accordance with the procedures specified in paragraph (d) of this section.	98.283 Calculating GHG Emissions. You must calculate and report the combined annual process CO_2 emissions from all silicon carbide process units and production furnaces using the procedures in either paragraph (a) or (b) of this section.	See preamble text for explanation
BB	98.283(a)	(a) Calculate and report under this subpart the process CO_2 emissions by operating and maintaining CEMS according to the Tier 4 Calculation Methodology specified in	(a) Calculate and report under this subpart the combined annual process CO_2 emissions by operating and maintaining CEMS according to the Tier 4 Calculation Methodology specified in §98.33(a)(4)	Harmonizing change with 98.283 introductory paragraph.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		§98.33(a)(4) and all associated requirements for Tier 4 in subpart C of this part (General Stationary Fuel Combustion Sources).	and all associated requirements for Tier 4 in subpart C of this part (General Stationary Fuel Combustion Sources).	
BB	98.283(b)	(b) Calculate and report under this subpart the process CO_2 emissions using the procedures in paragraphs (b)(1) and (b)(2) of this section.	(b) Calculate and report under this subpart the combined annual process CO_2 emissions using the procedures in paragraphs (b)(1) and (b)(2) of this section.	Harmonizing change with 98.283 introductory paragraph.
BB	98.283(b)(2)	(2) Use Equation BB–2 of this section to calculate annual CO_2 process emissions from all silicone carbide production:	(2) Calculate annual CO_2 process emissions from the silicon carbide production facility according to Equation BB-2 of this section:	Corrects misspelling and clarifies requirement
BB	98.283(b)(2)	T_n = Petroleum coke consumption in month n(tons)	T_n = Petroleum coke consumption in calendar month n(tons)	Clarifies equation term
BB	98.283(d)	(d) You must calculate annual process CH_4 emissions from all silicon carbide production combined using Equation BB–3 of this section: Eq. BB-3	(d) [Reserved]	See preamble text for explanation
BB	98.286(b)	(b) If a CEMS is not used to measure process CO_2 emissions, you must report the information listed in this paragraph (b) for all furnaces combined:	(b) If a CEMS is not used to measure process CO_2 emissions, you must report the information in paragraph (b)(1) through (b)(8) of this section for all silicon carbide process units or production furnaces combined:	Correction for consistency with 40 CFR 98.282.
DD	98.304(c)(1)	(1) Ensure that cylinders returned to the gas supplier are consistently weighed on a scale that is certified to be accurate and precise to within 2 pounds of the scale's capacity and is periodically recalibrated per the manufacturer's specifications. Either measure residual gas (the amount of gas remaining in returned cylinders) or have the gas supplier measure it. If the gas supplier weighs the residual gas, obtain from the gas supplier a detailed monthly accounting, within ± 2 pounds, of residual gas amounts in the cylinders returned to the gas supplier.	(1) Ensure that cylinders returned to the gas supplier are consistently weighed on a scale that is certified to be accurate and precise to within 2 pounds of true weight and is periodically recalibrated per the manufacturer's specifications. Either measure residual gas (the amount of gas remaining in returned cylinders) or have the gas supplier measure it. If the gas supplier weighs the residual gas, obtain from the gas supplier a detailed monthly accounting, within ± 2 pounds, of residual gas amounts in the cylinders returned to the gas supplier.	See preamble text for explanation
DD	98.304(c)(2)	(2) Ensure that cylinders weighed for the beginning and end of year inventory measurements are weighed on a scale that is certified to be accurate to within 2 pounds of the scale's capacity and is periodically recalibrated per the manufacturer's specifications. All scales used to measure quantities that are to be reported under §98.306 must be calibrated using calibration	(2) Ensure that cylinders weighed for the beginning and end of year inventory measurements are weighed on a scale that is certified to be accurate and precise to within 2 pounds of true weight and is periodically recalibrated per the manufacturer's specifications. All scales used to measure quantities that are to be reported under §98.306 must be calibrated using calibration procedures specified by the scale manufacturer. Calibration must be performed prior to	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		procedures specified by the scale manufacturer. Calibration must be performed prior to the first reporting year. After the initial calibration, recalibration must be performed at the minimum frequency specified by the manufacturer.	the first reporting year. After the initial calibration, recalibration must be performed at the minimum frequency specified by the manufacturer.	
FF	98.320(b)(1)	(1) Each ventilation well or shaft, including both those wells and shafts where gas is emitted and those where gas is sold, used onsite, or otherwise destroyed (including by flaring).	(1) Each ventilation system shaft or vent hole, including both those points where mine ventilation air is emitted and those where it is sold, used onsite, or otherwise destroyed (including by ventilation air methane (VAM) oxidizers).	See preamble text for explanation
FF	98.320(b)(2)	(2) Each degasification system well or shaft, including degasification systems deployed before, during, or after mining operations are conducted in a mine area. This includes both those wells and shafts where gas is emitted, and those where gas is sold, used onsite, or otherwise destroyed (including by flaring).	(2) Each degasification system well or gob gas vent hole, including degasification systems deployed before, during, or after mining operations are conducted in a mine area. This includes both those wells and vent holes where coal bed gas is emitted, and those where the gas is sold, used onsite, or otherwise destroyed (including by flaring).	See preamble text for explanation
FF	98.322(b)	(b) You must report CH_4 destruction from systems where gas is sold, used onsite, or otherwise destroyed (including by flaring).	(b) You must report CH_4 destruction from systems where gas is sold, used onsite, or otherwise destroyed (including by VAM oxidation and by flaring).	See preamble text for explanation
FF	98.322(d)	(d) You must report under this subpart the CO_2 emissions from coal mine gas CH_4 destruction occurring at the facility, where the gas is not a fuel input for energy generation or use (e.g., flaring).	(d) You must report under this subpart the CO_2 emissions from coal mine gas CH_4 destruction occurring at the facility, where the gas is not a fuel input for energy generation or use (e.g., flaring and VAM oxidation).	See preamble text for explanation
FF	98.323(a)	V = Volumetric flow rate for the quarter (cfm) based on sampling or a flow rate meter. If a flow rate meter is used and the meter automatically corrects for temperature and pressure, replace “520°R/T × P/1 atm” with “1”.	V = Volumetric flow rate for the quarter (acfm) based on sampling or a flow rate meter. If a flow rate meter is used and the meter automatically corrects to standard temperature and pressure, then use scfm and replace “520°R/T × P/1 atm” with “1”.	Clarifies an equation term
FF	98.323(a)	MCF = Moisture correction factor for the measurement period, volumetric basis. = 1 when V and C are measured on a dry basis or if both are measured on a wet basis.= $1-(f_{H2O})_n$ when V is measured on a wet basis and C is measured on a dry basis.= $1/[1-(f_{H2O})]$ when V is measured on a dry basis and C is measured on a wet	MCF = Moisture correction factor for the measurement period, volumetric basis. = 1 when V and C are measured on a dry basis or if both are measured on a wet basis.= $1-(f_{H2O})$ when V is measured on a wet basis and C is measured on a dry basis.= $1/[1-(f_{H2O})]$ when V is measured on a dry basis and C is measured on a wet basis.	Corrects subscript errors

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		basis.		
FF	98.323(a)	$(f_{H}2_{O})$ = Moisture content of the methane emitted during the measurement period, volumetric basis (cubic feet water per cubic feet emitted gas).	(f_{H2O}) = Moisture content of the methane emitted during the measurement period, volumetric basis (cubic feet water per cubic feet emitted gas).	Corrects subscript errors
FF	98.323(a)	P = Pressure at which flow is measured (atm) for the quarter. The annual average barometric pressure from the nearest NOAA weather service station may be used as a default.	P = Absolute pressure at which flow is measured (atm) for the quarter. The annual average barometric pressure from the nearest NOAA weather service station may be used as a default.	See preamble text for explanation
FF	98.323(a)(2)	(2) Values of V, C, T, P, and (fH2O), if applicable…	(2) Values of V, C, T, P, and (f_{H2O}), if applicable…	Corrects subscript errors
FF	98.323(b) Equation FF-3	T	T_i	Corrects subscript errors
FF	98.323(b)	V_i= Measured volumetric flow rate for the days in the week when the degasification system is in operation at that monitoring point, based on sampling or a flow rate meter (cfm). If a flow rate meter is used and the meter automatically corrects for temperature and pressure, replace “520°R/Ti× Pi/1 atm” with “1”.	V_i= Measured volumetric flow rate for the days in the week when the degasification system is in operation at that monitoring point, based on sampling or a flow rate meter (acfm). If a flow rate meter is used and the meter automatically corrects to standard temperature and pressure, then use scfm and replace “520°R/Ti× Pi/1 atm” with “1”.	Clarification of equation term
FF	98.323(b)	fH_2O	f_{H2O}	Corrects subscript errors
FF	98.323(b)	P_i = Pressure at which flow is measured (atm).	P_i = Absolute pressure at which flow is measured (atm).	Clarifies an equation term
FF	98.323(b)(1)	(1) Values of V, C, T, P, and (fH2O), if applicable must be based on measurements taken at least once each quarter with no fewer than 6 weeks between measurements. If measurements are taken more frequently than once per quarter, then use the average value for all measurements taken. If continuous measurements are taken, then use the average value over the time period of continuous monitoring.	(1) Values of V, C, T, P, and (f_{H2O}), if applicable must be based on measurements taken at least once each quarter with no fewer than 6 weeks between measurements. If measurements are taken more frequently than once per quarter, then use the average value for all measurements taken. If continuous measurements are taken, then use the average value over the time period of continuous monitoring.	Corrects subscript errors and typographical error.
FF	98.323(b)(2)	CH_{4D}	$(CH_{4D})_{i,j}$	Corrects subscript errors

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
FF	98.323(c)	(c) If gas from degasification system wells or ventilation shafts is sold, used onsite, or otherwise destroyed (including by flaring), you must calculate the quarterly CH_4 destroyed for each destruction device and each point of offsite transport to a destruction device, using Equation FF–5 of this section. You must measure CH_4 content and flow rate according to the provisions in §98.324, and calculate the methane routed to the destruction device (CH_4) using either Equation FF–1 or Equation FF–3 of this section, as applicable.	(c) If gas from a degasification system or ventilation system is sold, used onsite, or otherwise destroyed (including by flaring or VAM oxidation), you must calculate the quarterly CH_4 destroyed for each destruction device and each point of offsite transport to a destruction device, using Equation FF–5 of this section. You must measure CH_4 content and flow rate according to the provisions in §98.324, and calculate the methane routed to the destruction device (CH_4) using either Equation FF–1 or Equation FF–4 of this section, as applicable.	Clarifies terminology and equation reference
FF	98.323 (c) Equation FF-6	$CH_{4Destroyed\,Total} = \sum_{i=1}^{d} \left(CH_{4Destroyed}\right)_d$	$CH_{4Destroyed\,Total} = \sum_{i=1}^{d} \left(CH_{4Destroyed}\right)_i$	Corrects equation term
FF	98.324(b)	(b) For CH_4 liberated from ventilation systems, determine whether CH_4 will be monitored from each ventilation well and shaft, from a centralized monitoring point, or from a combination of the two options. Operators are allowed flexibility for aggregating emissions from more than one ventilation well or shaft, as long as emissions from all are addressed, and the methodology for calculating total emissions documented. Monitor by one of the following options:	(b) For CH_4 liberated from ventilation systems, determine whether CH_4 will be monitored from each ventilation shaft and vent hole, from a centralized monitoring point, or from a combination of the two options. Operators are allowed flexibility for aggregating emissions from more than one ventilation point, as long as emissions from all are addressed, and the methodology for calculating total emissions documented. Monitor by one of the following options:	Clarifies rule text.
FF	98.324(c)(2)	(2) Collect weekly (once each calendar	(2) Collect weekly (once each calendar week, with at	Clarifies rule text.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		week, with at least three days between measurements) or more frequent samples, for all degasification wells and gob gas vent holes. Determine weekly or more frequent flow rates, methane concentration, temperature, and pressure from these degasification wells and gob gas vent holes. Methane composition should be determined either by submitting samples to a lab for analysis, or from the use of methanometers at the degasification well site. Follow the sampling protocols for sampling of methane emissions from ventilation shafts, as described in §98.324(b)(1). You must record the date of sampling, flow, temperature, pressure, and moisture measurements, the methane concentration (percent), the bottle number of samples collected, and the location of the measurement or collection.	least three days between measurements) or more frequent samples, for all degasification wells and gob gas vent holes. Determine weekly or more frequent flow rates, methane concentration, temperature, and pressure from these degasification wells and gob gas vent holes. Methane composition should be determined either by submitting samples to a lab for analysis, or from the use of methanometers at the degasification monitoring site. Follow the sampling protocols for sampling of methane emissions from ventilation shafts, as described in §98.324(b)(1). You must record the date of sampling, flow, temperature, pressure, and moisture measurements, the methane concentration (percent), the bottle number of samples collected, and the location of the measurement or collection.	
FF	98.324(d)(2)(iii)	CCH_4	C_{CH_4}	Corrects subscript errors
FF	98.326(a)	(a) Quarterly CH_4 liberated from each ventilation monitoring point (CH_{4Vm}), (metric tons CH_4).	(a) Quarterly CH_4 liberated from each ventilation monitoring point, (metric tons CH_4).	Clarifies rule text
FF	98.326(f)	(f) Quarterly volumetric flow rate for each ventilation monitoring point (scfm), date and location of each measurement, and method of measurement (quarterly sampling or continuous monitoring), used in Equation FF–1 of this subpart.	(f) Quarterly volumetric flow rate for each ventilation monitoring point and units of measure (scfm or acfm), date and location of each measurement, and method of measurement (quarterly sampling or continuous monitoring), used in Equation FF–1 of this subpart.	Harmonizes reporting requirement with equations.
FF	98.326(h)	(h) Weekly volumetric flow rate used to calculate CH_4 liberated from degasification systems (cfm) and method of measurement (sampling or continuous monitoring), used in Equation FF–3 of this subpart.	(h) Weekly volumetric flow rate used to calculate CH_4 liberated from degasification systems and units of measure (acfm or scfm), and method of measurement (sampling or continuous monitoring), used in Equation FF–3 of this subpart.	Harmonizes reporting requirement with equations
FF	98.326(i)	(i) Quarterly CEMS CH_4 concentration (%) used to calculate CH_4 liberated from degasification systems (average from daily data), or quarterly CH_4 concentration data based on results from weekly sampling data) (C).	(i) Quarterly CH_4 concentration (%) used to calculate CH_4 liberated from degasification systems and if the data is based on CEMS or weekly sampling.	Includes the basis of the concentration data in the report.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
FF	98.326(j)	(j) Weekly volumetric flow rate used to calculate CH_4 destruction for each destruction device and each point of offsite transport (cfm).	(j) Weekly volumetric flow rate used to calculate CH_4 destruction for each destruction device and each point of offsite transport, and units of measure (acfm or scfm).	Harmonizes reporting requirement with equations.
FF	98.326(o)	(o) Temperatures (°R), pressure (atm), and moisture content used in Equation FF–1 and FF–3 of this subpart, and the gaseous organic concentration correction factor, if Equation FF–9 was required.	(o) Temperatures (°R), pressure (atm), moisture content, and the moisture correction factor (if applicable) used in Equation FF–1 and FF–3 of this subpart; and the gaseous organic concentration correction factor, if Equation FF–9 was required.	See preamble text for explanation
FF	98.326(r)	(r) Identification information and description for each well and shaft, indication of whether the well or shaft is monitored individually, or as part of a centralized monitoring point. Note which method (sampling or continuous monitoring) was used.	(r) Identification information and description for each well and shaft, including paragraphs (r)(1) through (r)(3) of this section: (1) Indication of whether the well or shaft is monitored individually, or as part of a centralized monitoring point. Note which method (sampling or continuous monitoring) was used. (2) Start date and close date of each well or shaft. (3) Number of days the well or shaft was in operation during the reporting year.	See preamble text for explanation
FF	98.326(t)	No current requirement	(t) Quarterly CH_4 routed to each destruction device or offsite transfer point used in Equation FF-5 of this subpart (metric tons).	See preamble text for explanation
FF	98.326(u)	No current requirement	(u) Mine Safety and Health Administration (MSHA) identification for this coal mine	See preamble text for explanation
HH	98.343(a)(1) Equation HH-1	DOC = Degradable organic carbon from Table HH-1 of this subpart or measurement data, if available [fraction (metric tons C/metric ton waste)].	DOC = Degradable organic carbon from Table HH-1 of this subpart [fraction (metric tons C/metric ton waste)].	See preamble text for explanation
HH	Equation HH-1, 98.345	F = Fraction by volume of CH_4 in landfill gas from measurement data on a dry basis, if available (fraction); default is 0.5.	F = Fraction by volume of CH_4 in landfill gas from measurement data for the current reporting year, if available (fraction, dry basis, corrected to 0 percent oxygen); otherwise, use the default of 0.5.	See preamble text for explanation
HH	98.343(b)(1) Equation HH-4	$(C)_n$	$(CCH_4)_n$	Corrects equation term
HH	98.343(b)(1) Equation HH-4	N = Total number of measurement periods in a year. Use daily averaging periods for a continuous monitoring system and N=365 (or N = 366 for leap years). For weekly sampling, as provided in paragraph (b)(2) of this section, use N=52.	N = Total number of measurement periods in a year. Use daily averaging periods for a continuous monitoring system and N=365 (or N = 366 for leap years). For monthly sampling, as provided in paragraph (b)(2) of this section, use N=12.	See preamble text for explanation
HH	HH-4	0.0423 = Density of CH_4 lb/cfm at 520°R or 60 degrees Fahrenheit and 1 atm.	0.0423 = Density of CH_4 lb/cf at 520°R or 60 degrees Fahrenheit and 1 atm.	Corrects typographical error
HH	98.343(b)(2)(i)	(i) Continuously monitor gas flow rate and	(i) Continuously monitor gas flow rate and determine	Harmonizing change to accommodate

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		determine the cumulative volume of landfill gas each week and the cumulative volume of landfill gas each year that is collected and routed to a destruction device (before any treatment equipment). Under this option, the gas flow meter is not required to automatically correct for temperature, pressure, or, if necessary, moisture content. If the gas flow meter is not equipped with automatic correction for temperature, pressure, or, if necessary, moisture content, you must determine these parameters as specified in paragraph (b)(2)(iii) of this section.	the cumulative volume of landfill gas each month and the cumulative volume of landfill gas each year that is collected and routed to a destruction device (before any treatment equipment). Under this option, the gas flow meter is not required to automatically correct for temperature, pressure, or, if necessary, moisture content. If the gas flow meter is not equipped with automatic correction for temperature, pressure, or, if necessary, moisture content, you must determine these parameters as specified in paragraph (b)(2)(iii) of this section.	monthly sampling of CH_4 concentration
HH	98.343(b)(2)(ii)	(ii) Determine the CH_4 concentration in the landfill gas that is collected and routed to a destruction device (before any treatment equipment) in a location near or representative of the location of the gas flow meter at least once each calendar week; if only one measurement is made each calendar week, there must be at least three days between measurements.	(ii) Determine the CH_4 concentration in the landfill gas that is collected and routed to a destruction device (before any treatment equipment) in a location near or representative of the location of the gas flow meter at least once each calendar month; if only one measurement is made each calendar month, there must be at least fourteen days between measurements.	Harmonizing change to accommodate monthly sampling of CH_4 concentration
HH	98.343(b)(2)(iii)(A)	(A) Determine the temperature and pressure in the landfill gas that is collected and routed to a destruction device (before any treatment equipment) in a location near or representative of the location of the gas flow meter at least once each calendar week; if only one measurement is made each calendar week, there must be at least three days between measurements.	(A) Determine the temperature and pressure in the landfill gas that is collected and routed to a destruction device (before any treatment equipment) in a location near or representative of the location of the gas flow meter at least once each calendar month; if only one measurement is made each calendar month, there must be at least fourteen days between measurements.	Harmonizing change to accommodate monthly sampling of CH_4 concentration
HH	98.343(b)(2)(iii)(B)	(B) If the CH_4 concentration is determined on a dry basis and flow is determined on a wet basis or CH_4 concentration is determined on a wet basis and flow is determined on a dry basis, and the flow meter does not automatically correct for moisture content, determine the moisture content in the landfill gas that is collected and routed to a destruction device (before any treatment equipment) in a location near or representative of the location of the gas flow meter at least once each calendar	(B) If the CH_4 concentration is determined on a dry basis and flow is determined on a wet basis or CH_4 concentration is determined on a wet basis and flow is determined on a dry basis, and the flow meter does not automatically correct for moisture content, determine the moisture content in the landfill gas that is collected and routed to a destruction device (before any treatment equipment) in a location near or representative of the location of the gas flow meter at least once each calendar month; if only one measurement is made each calendar month, there must be at least fourteen days between measurements.	Harmonizing change to accommodate monthly sampling of CH_4 concentration

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		week; if only one measurement is made each calendar week, there must be at least three days between measurements.		
HH	98.343(c)(1) (Eq. HH-5)	OX = Oxidation fraction. Use the default value of 0.1 (10%).	OX = Oxidation fraction. Use the appropriate oxidation fraction default value from Table HH-4 of this subpart.	See preamble text for explanation
HH	98.343(c)(3)(i) (Eq. HH-6)	$(G_{CH_4} - R)$ $R \times (1 - (DE \times f_{Dest}))$	$\left(G_{CH_4} - \sum_{n=1}^{N} R_n\right)$ $\sum_{n=1}^{N} \{R_n \times (1 - (DE_n \times f_{Dest,n}))\}$	See preamble text for explanation
HH	98.343(c)(3)(i) (Eq. HH-6)	(None)	N = Number of landfill gas measurement locations (associated with a destruction device or gas sent off-site). If a single monitoring location is used to monitor volumetric flow and CH_4 concentration of the recovered gas sent to one or multiple destruction devices, then N=1.	Harmonizing with changes to Equation HH-6 for multiple measurement locations and/or multiple destruction devices
HH	98.343(c)(3)(i) (Eq. HH-6)	R = Quantity of recovered CH_4 from Equation HH-4 of this section (metric tons).	R_n = Quantity of recovered CH_4 from Equation HH-4 of this section for the n^{th} measurement location (metric tons).	Harmonizing with changes to Equation HH-6 for multiple measurement locations and/or multiple destruction devices
HH	98.343(c)(3)(i) (Eq. HH-6)	OX = OX = Oxidation fraction. Use the default value of 0.1 (10%).	OX = Oxidation fraction. Use the appropriate oxidation fraction default value from Table HH-4 of this subpart.	See preamble text for explanation
HH	98.343(c)(3)(i) (Eq. HH-6)	DE = Destruction efficiency (lesser of manufacturer's specified destruction efficiency and 0.99). If the gas is transported off-site for destruction, use DE = 1.	DE_n = Destruction efficiency (lesser of manufacturer's specified destruction efficiency and 0.99) for the nth measurement location. If the gas is transported off-site for destruction, use DE = 1. If the volumetric flow and CH_4 concentration of the recovered gas is measured at a single location providing landfill gas to multiple destruction devices (including some gas destroyed on-site and some gas sent off-site for destruction), calculate DE_n as the arithmetic average of the DE values determined for each destruction device associated with that measurement location.	Harmonizing with changes to Equation HH-6 for multiple measurement locations and/or multiple destruction devices
HH	98.343(c)(3)(i) (Eq. HH-6)	f_{Dest} = Fraction of hours the destruction device was operating (annual operating hours / 8760 hours per year). If the gas is destroyed in a back-up flare (or similar device) or if the gas is transported off-site for destruction, use f_{Dest} = 1.	$f_{Dest,n}$ = Fraction of hours the destruction device associated with the n^{th} measurement location was operating during active gas flow calculated as the annual operating hours for the destruction device divided by the annual hours flow was sent to the destruction device as measured at the n^{th} measurement location. If the gas is destroyed in a back-up flare (or	Harmonizing with changes to Equation HH-6 for multiple measurement locations and/or multiple destruction devices and clarifies equation term to more accurately reflect operating hours of the gas collection system.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
			similar device) or if the gas is transported off-site for destruction, use $f_{Dest}= 1$. If the volumetric flow and CH_4 concentration of the recovered gas is measured at a single location providing landfill gas to multiple destruction devices (including some gas destroyed on-site and some gas sent off-site for destruction), calculate $f_{Dest,n}$ as the arithmetic average of the f_{Dest} values determined for each destruction device associated with that measurement	
HH	98.343(c)(3)(ii) (Eq. HH-7)	$MG = \frac{R}{CE \times f_{Rec}} \times (1 - OX) \quad \text{(Eq. HH-7)}$	$MG = \frac{1}{CE} \sum_{n=1}^{N} \left[\frac{R_n}{f_{Rec,n}} \right] \times (1 - OX)$	See preamble for discussion
HH	98.343(c)(3)(ii) (Eq. HH-8)	$\left(\frac{1}{CE} \left\{ \left(\frac{R}{CE \times f_{Rec}} - R \right) \right.\right.$ $\sum_{n=1}^{N} \{ R_n \left(1 - \left(DE \times f_{Dest} \right) \right)$	$\left(\frac{1}{CE} \left\{ \sum_{n=1}^{N} \left[\frac{R_n}{f_{Rec,n}} \right] \right\} - \sum_{n=1}^{N} R_n \right)$ $\sum_{n=1}^{N} \left\{ R_n \times \left(1 - \left(DE_n \times f_{Dest,n} \right) \right) \right\}$	See preamble for discussion
HH	98.343(c)(3)(ii) (Eq. HH-8)	(None)	N = Number of landfill gas measurement locations (associated with a destruction device or gas sent off-site). If a single monitoring location is used to monitor volumetric flow and CH_4 concentration of the recovered gas sent to one or multiple destruction devices, then N=1.	Harmonizing with changes to Equation HH-8 for multiple measurement locations and/or multiple destruction devices
HH	98.343(c)(3)(ii) (Eq. HH-8)	R = Quantity of recovered CH_4 from Equation HH-4 of this section (metric tons CH_4).	R_n = Quantity of recovered CH_4 from Equation HH-4 of this section for the nth measurement location (metric tons CH_4).	Harmonizing with changes to Equation HH-8 for multiple measurement locations and/or multiple destruction devices
HH	98.343(c)(3)(ii) (Eq. HH-8)	f_{Rec} = Fraction of hours the recovery system was operating (annual operating hours/8760 hours per year).	$f_{Rec,n}$ = Fraction of hours the recovery system associated with the nth measurement location was operating (annual operating hours/8760 hours per year or annual operating hours / 8784 per year for a leap year).	Harmonizing with changes to Equation HH-8 for multiple measurement locations and/or multiple destruction devices
HH	98.343(c)(3)(ii) (Eq. HH-8)	OX = Oxidation fraction. Use the default value of 0.1 (10%).	OX = Oxidation fraction. Use appropriate oxidation fraction default value from Table HH-4 of this subpart.	See preamble text for explanation
HH	98.343(c)(3)(ii) (Eq. HH-8)	DE = Destruction efficiency (lesser of manufacturer's specified destruction efficiency and 0.99). If the gas is	DE_n = Destruction efficiency (lesser of manufacturer's specified destruction efficiency and 0.99) for the nth measurement location. If the gas is transported off-site	Harmonizing with changes to Equation HH-8 for multiple measurement locations and/or multiple destruction

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		transported off-site for destruction, use DE = 1.	for destruction, use DE = 1. If the volumetric flow and CH_4 concentration of the recovered gas is measured at a single location providing landfill gas to multiple destruction devices (including some gas destroyed on-site and some gas sent off-site for destruction), calculate DE_n as the arithmetic average of the DE values determined for each destruction device associated with that measurement location.	devices
HH	98.343(c)(3)(ii) (Eq. HH-8)	$F_{Dest,}$ = Fraction of hours the destruction device was operating (device operating hours/8760 hours per year). If the gas is destroyed in a back-up flare (or similar device) or if the gas is transported off-site for destruction, use f_{Dest}= 1.	$f_{Dest,n}$ = Fraction of hours the destruction device associated with the n^{th} measurement location was operating during active gas flow calculated as the annual operating hours for the destruction device divided by the annual hours flow was sent to the destruction device as measured at the n^{th} measurement location. If the gas is destroyed in a back-up flare (or similar device) or if the gas is transported off-site for destruction, use f_{Dest}= 1. If the volumetric flow and CH_4 concentration of the recovered gas is measured at a single location providing landfill gas to multiple destruction devices (including some gas destroyed on-site and some gas sent off-site for destruction), calculate $f_{Dest,n}$ as the arithmetic average of the f_{Dest} values determined for each destruction device associated with that measurement location.	Harmonizing with changes to Equation HH-8 for multiple measurement locations and/or multiple destruction devices and clarifies equation term to more accurately reflect operating hours of gas collection system
HH	98.344(e)	(e) The owner or operator shall document the procedures used to ensure the accuracy of the estimates of disposal quantities and, if applicable, gas flow rate, gas composition, temperature, pressure, and moisture content measurements. These procedures include, but are not limited to, calibration of weighing equipment, fuel flow meters, and other measurement devices. The estimated accuracy of measurements made with these devices shall also be recorded, and the technical basis for these estimates shall be provided.	(e) For landfills electing to measure the fraction by volume of CH_4 in landfill gas (F), follow the requirements in paragraphs (e)(1) and (e)(2) of this section. (1) Use a gas composition monitor capable of measuring the concentration of CH_4 on a dry basis that is properly operated, calibrated, and maintained according to the requirements specified in paragraph (b) of this section. You must either use a gas composition monitor that is also capable of measuring the O_2 concentration correcting for excess (infiltration) air or you must operate, maintain, and calibrate a second monitor capable of measuring the O_2 concentration on a dry basis according to the manufacturer's specifications. (2) Use Equation HH-10 of this section to correct the measured CH_4 concentration to 0% oxygen. If	Harmonizing change to accommodate the correction to 0 percent oxygen for CH_4 content of landfill gas

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
			multiple CH_4 concentration measurements are made during the reporting year, determine F separately for each measurement made during the reporting year, and use the results to determine the arithmetic average value of F for use in Equation HH–1 of this part. $F = (CCH_4/100\%)x[20.9c/(20.9-\%O2)]$ (Eq. HH-10) Where: F = Fraction by volume of CH_4 in landfill gas (fraction, dry basis, corrected to 0 percent oxygen). C_{CH4} = Measured CH_4 concentration in landfill gas (volume percent, dry basis). 20.9_c = Defined O_2 correction basis, (volume percent, dry basis). 20.9 = O_2 concentration in air (volume percent, dry basis). $\%O_2$ = Measured O_2 concentration in landfill gas (volume percent, dry basis).	
HH	98.344(f)	(None)	(f) The owner or operator shall document the procedures used to ensure the accuracy of the estimates of disposal quantities and, if applicable, gas flow rate, gas composition, temperature, pressure, and moisture content measurements. These procedures include, but are not limited to, calibration of weighing equipment, fuel flow meters, and other measurement devices. The estimated accuracy of measurements made with these devices shall also be recorded, and the technical basis for these estimates shall be provided.	Harmonizing change. Moves paragraph to accommodate new paragraph (e)
HH	98.345(c)	(c) For missing daily waste disposal quantity data for disposal in reporting years, the substitute value shall be the average daily waste disposal quantity for that day of the week as measured on the week before and week after the missing daily data.	(c) For missing daily waste disposal quantity data for disposal in the reporting year, the substitute value shall be the average daily waste disposal quantity for that day of the week as measured on the week before and week after the missing daily data.	See preamble text for explanation
HH	98.346(d)(1)	(1) Degradable organic carbon (DOC), methane correction factor (MCF), and fraction of DOC dissimilated (DOCF) values used in the calculations. If an MCF value other than the default of 1 is used, provide an indication of whether active	(1) Degradable organic carbon (DOC) and fraction of DOC dissimilated (DOC_F) values used in the calculations.	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		aeration of the waste in the landfill was conducted during the reporting year, a description of the aeration system, including aeration blower capacity, the fraction of the landfill containing waste affected by the aeration, the total number of hours during the year the aeration blower was operated, and other factors used as a basis for the selected MCF value.		
HH	98.346(e)	(e) Fraction of CH_4in landfill gas (F), and an indication of whether the fraction of $CH_4$was determined based on measured values or the default value	(e) Fraction of CH_4 in landfill gas (F), an indication of whether the fraction of CH_4 was determined based on measured values or the default value, and the methane correction factor (MCF) used in the calculations. If an MCF other than the default of 1 is used, provide an indication of whether active aeration of the waste in the landfill was conducted during the reporting year, a description of the aeration system, including aeration blower capacity, the fraction of the landfill containing waste affected by aeration, the total number of hours during the year the aeration blower was operated, and other factors used as a basis for the selected MCF value.	See preamble for discussion
HH	98.346(h)	(h) For landfills without gas collection systems, the annual methane emissions (i.e., the methane generation, adjusted for oxidation, calculated using Equation HH–5 of this subpart), reported in metric tons CH4, and an indication of whether passive vents and/or passive flares (vents or flares that are not considered part of the gas collection system as defined in §98.6) are present at this landfill.	(h) For landfills without gas collection systems, the annual methane emissions (i.e., the methane generation, adjusted for oxidation, calculated using Equation HH–5 of this subpart), reported in metric tons CH_4, the oxidation fraction used in the calculation, and an indication of whether passive vents and/or passive flares (vents or flares that are not considered part of the gas collection system as defined in §98.6) are present at this landfill.	Harmonizes reporting requirements with calculation method.
HH	98.346(i)(5)	(5) An indication of whether destruction occurs at the landfill facility or offsite. If destruction occurs at the landfill facility, also report an indication of whether a back-up destruction device is present at the landfill, the annual operating hours for the primary destruction device, the annual operating hours for the back-up destruction	(5) An indication of whether destruction occurs at the landfill facility, off-site, or both. If destruction occurs at the landfill facility, also report for each measurement location an indication of whether a back-up destruction device is present at the landfill, the annual operating hours for the primary destruction device, the annual operating hours for the back-up destruction device (if present), and the destruction	Clarification to provide landfills that use both off-site and on-site destruction a clear and accurate reporting option.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		device (if present), and the destruction efficiency used (percent).	efficiency used (percent).	
HH	98.346(i)(8)	(8) Methane generation corrected for oxidation calculated using Equation HH-5 of this subpart, reported in metric tons CH4.	(8) Methane generation corrected for oxidation calculated using Equation HH-5 of this subpart, reported in metric tons CH4, and the oxidation fraction used in the calculation	Harmonizes reporting requirements with calculation method.
HH	98.346(i)(10)	(8) Methane generation corrected for oxidation calculated using Equation HH-7 of this subpart, reported in metric tons CH4.	(8) Methane generation corrected for oxidation calculated using Equation HH-7 of this subpart, reported in metric tons CH4, and the oxidation fraction used in the calculation	Harmonizes reporting requirements with calculation method.
HH	98.346(i)(11)	(8) Methane generation corrected for oxidation calculated using Equation HH-6 of this subpart, reported in metric tons CH4.	(8) Methane generation corrected for oxidation calculated using Equation HH-6 of this subpart, reported in metric tons CH4, and the oxidation fraction used in the calculation	Harmonizes reporting requirements with calculation method.
HH	98.346(i)(12)	(8) Methane generation corrected for oxidation calculated using Equation HH-8 of this subpart, reported in metric tons CH4.	(8) Methane generation corrected for oxidation calculated using Equation HH-8 of this subpart, reported in metric tons CH4, and the oxidation fraction used in the calculation	Harmonizes reporting requirements with calculation method.
HH	98.348	(None)	Landfill capacity means the maximum amount of solid waste a landfill can accept. For the purposes of this subpart, for landfills that have a permit, the landfill capacity can be determined 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. If the owner or operator chooses to convert from volume to mass to determine its capacity, the calculation must include a site-specific density.	Add definition to clarify meaning of term as used in the rule.
HH	98.348	(None)	Leachate recirculation means the practice of taking the leachate collected from the landfill and reapplying it to the landfill by any of one of a variety of methods, including pre-wetting of the waste, direct discharge into the working face, spraying, infiltration ponds, vertical injection wells, horizontal gravity distribution systems, and pressure distribution systems.	Add definition to clarify meaning of term as used in the rule.
HH	Table HH-2	Table HH-2	See Appendix A for changes to Table HH-2	Effect changes that were intended to be made in the October 28, 2010 (75 FR 66474) amendments and revise the last line of this table to read "2009 and all later years".
HH	Table HH-4	None	See Appendix A for Table HH-4	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
II	98.353(d)(2) - Eq. II-6	f_{Dest_1} = Fraction of hours the primary destruction device was operating (device operating hours/hours in the year). If the biogas is transported off-site for destruction, use f_{Dest} = 1.	f_{Dest_1} = Fraction of hours the primary destruction device was operating calculated as the annual hours when the destruction device was operating divided by the annual operating hours of the biogas recovery system. If the biogas is transported off-site for destruction, use f_{Dest} = 1.	Clarifies an equation term to more accurately reflect operating hours of biogas recovery system.
II	98.353(d)(2) - Eq. II-6	f_{Dest_2} = Fraction of hours the back-up destruction device was operating (device operating hours/hours in the year).	f_{Dest_2} = Fraction of hours the back-up destruction device was operating calculated as the annual hours when the destruction device was operating divided by the annual operating hours of the biogas recovery system.	Clarifies equation term to more accurately reflect operating hours of biogas recovery system.
LL	98.386(a)(1)	(1) For each product listed in Table MM-1 of subpart MM of this part that enters the coal-to-liquid facility to be further processed or otherwise used on site, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used. For natural gas liquids, quantity shall reflect the individual components of the product.	(1) [Reserved.]	See preamble text for explanation
LL	98.386(a)(4)	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(1) of this section.	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(2) of this section.	Harmonizing change with 40 CFR 98.386(a)(1).
LL	98.386(a)(5)	(5) For each product (leaving the coal-to-liquid facility) listed in Table MM-1 of subpart MM of this part, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used. For natural gas liquids, quantity shall reflect the individual components of the product. Those products that enter the facility, but are not reported in (a)(1), shall not be reported under this paragraph.	(5) [Reserved.]	See preamble text for explanation
LL	98.386(a)(8)	(8) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(5) of this section.	(8) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(6) of this section.	Harmonizing change with 40 CFR 98.386(a)(5).
LL	98.386(a)(9)(v)	(v) The calculated CO_2 emissions factor.	(v) The calculated CO_2 emissions factor in metric tons CO_2 per barrel or per metric ton of product.	Clarifies units of reporting requirement
LL	98.386(a)(11)(v)	(v) The calculated CO_2 emissions factor.	(v) The calculated CO_2 emissions factor in metric tons CO_2 per barrel or per metric ton of product.	Clarifies units of reporting requirement

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
LL	98.386(a)(13)	(13)For each specific type of biomass that enters the coal-to-liquid facility to be co-processed with fossil fuel-based feedstock to produce a product reported in paragraph (a)(6) of this section, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used.	(13) [Reserved.]	See preamble text for explanation
LL	98.386(a)(15)	(15) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(3) of this section.	(15) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(14) of this section.	Harmonizing change with 40 CFR 98.386(a)(13) and corrects reference
LL	98.386(a)(18)	(18) Annual CO_2 emissions in metric tons that would result from the complete combustion or oxidation of each type of biomass feedstock co-processed with fossil fuel-based feedstocks reported in paragraph (a)(3) of this section, calculated according to §98.393(c).	(18) Annual CO_2 emissions in metric tons that would result from the complete combustion or oxidation of each type of biomass feedstock co-processed with fossil fuel-based feedstocks reported in paragraph (a)(14) of this section, calculated according to §98.393(c).	Harmonizing change with 40 CFR 98.386(a)(13) and corrects reference
LL	98.386(b)(1)	(1) For each product listed in Table MM-1 of subpart MM of this part, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used. For natural gas liquids, quantity shall reflect the individual components of the product.	1) [Reserved.]	See preamble text for explanation
LL	98.386(b)(4)	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (b)(1) of this section.	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (b)(2) of this section.	Harmonizing change with 40 CFR 98.386 (b)(1)
LL	98.386(b)(5)(v)	(v) The calculated CO_2 emissions factor in metric tons.	(v) The calculated CO_2 emissions factor in metric tons CO_2 per barrel or per metric ton of product.	Clarifies units of reporting requirement
LL	98.386(c)(1)	(1) For each product listed in Table MM-1 of subpart MM of this part, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used. For natural gas liquids, quantity shall reflect the individual components of the product.	(1) [Reserved.]	See preamble text for explanation
LL	98.386(c)(4)	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (c)(1) of this	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (c)(2) of this section	Harmonizing change with 40 CFR 98.386 (c)(1)

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		section		
LL	98.386(c)(5)(v)	(v) The calculated CO_2 emissions factor in metric tons.	(v) The calculated CO_2 emissions factor in metric tons CO_2 per barrel or per metric ton of product.	Clarifies units of reporting requirement
LL	98.386(d)(2)	(2) For a product that enters the facility to be further refined or otherwise used on site that is a blended feedstock, producers must meet the reporting requirements of paragraphs (a)(1) and (a)(2) of this section by reflecting the individual components of the blended feedstock.	(2) For a product that enters the facility to be further refined or otherwise used on site that is a blended feedstock, producers must meet the reporting requirements of paragraph (a)(2) of this section by reflecting the individual components of the blended feedstock.	Harmonizing change with 40 CFR 98.386(a)(1).
LL	98.386(d)(3)	(3) For a product that is produced, imported, or exported that is a blended product, producers, importers, and exporters must meet the reporting requirements of paragraphs (a)(5), (a)(6), (b)(1), (b)(2), (c)(1), and (c)(2) of this section, as applicable, by reflecting the individual components of the blended product.	(3) For a product that is produced, imported, or exported that is a blended product, producers, importers, and exporters must meet the reporting requirements of paragraphs (a)(6), (b)(2), and (c)(2) of this section, as applicable, by reflecting the individual components of the blended product.	Harmonizing change with 40 CFR 98.386(a)(1), (b)(1), and (c)(1)
MM	98.393(a)(1)	$Product_i$ = Annual volume of product "i" produced, imported, or exported by the reporting party (barrels). For refiners, this volume only includes products ex refinery gate, and excludes products that entered the refinery but are not reported under 98.396(a)(1). For natural gas liquids, volumes shall reflect the individual components of the product as listed in Table MM-1 to subpart MM.	$Product_i$ = Annual volume of product "i" produced, imported, or exported by the reporting party (barrels). For refiners, this volume only includes products ex refinery gate, and excludes products that entered the refinery but are not reported under 98.396(a)(2). For natural gas liquids, volumes shall reflect the individual components of the product as listed in Table MM-1 to subpart MM.	Updated reference to harmonize with changes to 98.396(a)(1)
MM	98.393(a)(2)	$Product_i$ = Annual mass of product "i" produced, imported, or exported by the reporting party (metric tons). For refiners, this mass only includes products ex refinery gate.	$Product_i$ = Annual mass of product "i" produced, imported, or exported by the reporting party (metric tons). For refiners, this mass only includes products ex refinery gate, and excludes products that entered the refinery but are not reported under §98.396(a)(2).	See preamble text for explanation
MM	98.393(h)(1)	(1) A reporter using Calculation Methodology 1 to determine the emission factor of a petroleum product shall calculate the CO_2 emissions associated with that product using Equation MM–8 of this section in place of Equation MM–1 of this section.	(1) A reporter using Calculation Method 1 to determine the emission factor of a petroleum product shall calculate the CO_2 emissions associated with that product using Equation MM–8 of this section in place of Equation MM–1 of this section.	Harmonizing change with 98.393(f)(1).

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
MM	98.393(h)(2)	A refinery using Calculation Methodology 1 of this subpart to determine the emission factor of a non-crude petroleum feedstock shall calculate the CO_2 emissions associated with that feedstock using Equation MM–9 of this section in place of Equation MM–2 of this section.	(2) A refinery using Calculation Method 1 of this subpart to determine the emission factor of a non-crude petroleum feedstock shall calculate the CO_2 emissions associated with that feedstock using Equation MM–9 of this section in place of Equation MM–2 of this section.	Harmonizing change with 98.393(f)(1).
MM	98.394(a)(1)	(1) The quantity of petroleum products, natural gas liquids, and biomass, as well as the quantity of crude oil measured on site at a refinery, shall be determined as follows:	(1) The quantity of petroleum products, natural gas liquids, and biomass, shall be determined as follows:	See preamble text for explanation
MM	98.394(a)(3)	(3) The quantity of crude oil not measured on site at a refinery shall be determined according to one of the following methods. You may use an appropriate standard method published by a consensus-based standards organization or you may use an industry standard practice.	(3) The annual quantity of crude oil received shall be determined according to one of the following methods. You may use an appropriate standard method published by a consensus-based standards organization or you may use an industry standard practice.	See preamble text for explanation
MM	98.394(b)	(None)	(3) For units and processes that operate continuously with infrequent outages, it may not be possible to complete the calibration of a flow meter or other measurement device without disrupting normal process operation. In such cases, the owner or operator may postpone the calibration until the next scheduled maintenance outage. The best available information from company records may be used in the interim. Such postponements shall be documented in the monitoring plan that is required under §98.3(g)(5).	See preamble text for explanation
MM	98.394(c)	(c) Procedures for Calculation Methodology 2 of this subpart.	(c) Procedures for Calculation Method 2 of this subpart.	Harmonizing change with 98.393(f)(2).
MM	98.394(d)	(d) Measurement of API gravity and sulfur content of crude oil	(4) [Reserved]	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
MM	98.395(a)	(a) <u>Determination of quantity</u>. Whenever the quality assurance procedures in §98.394(a) cannot be followed to measure the quantity of one or more petroleum products, natural gas liquids, types of biomass, feedstocks, or crude oil batches during any period (e.g., if a meter malfunctions), the following missing data procedures shall be used:	(a) <u>Determination of quantity</u>. Whenever the quality assurance procedures in §98.394(a) cannot be followed to measure the quantity of one or more petroleum products, natural gas liquids, types of biomass, feedstocks, or crude oil during any period (e.g., if a meter malfunctions), the following missing data procedures shall be used:	See preamble text for explanation
MM	98.395(b)	(b) Determination of emission factor. Whenever any of the procedures in §98.394(c) cannot be followed to develop an emission factor for any reason, Calculation Methodology 1 of this subpart must be used in place of Calculation Methodology 2 of this subpart for the entire reporting year.	(b) Determination of emission factor. Whenever any of the procedures in §98.394(c) cannot be followed to develop an emission factor for any reason, Calculation Method 1 of this subpart must be used in place of Calculation Method 2 of this subpart for the entire reporting year.	Clarifies method
MM	98.395(c)	(c) <u>Determination of API gravity and sulfur content of crude oil</u>. For missing data on sulfur content or API gravity, the substitute data value shall be the arithmetic average of the quality-assured values of API gravity or sulfur content in the batch preceding and the batch immediately following the missing data incident. If no quality-assured data are available prior to the missing data incident, the substitute data value shall be the first quality-assured values for API gravity and sulfur content obtained from the batch after the missing data period.	(c) [Reserved]	See preamble text for explanation
MM	98.396(a)(1)	(1) For each petroleum product or natural gas liquid listed in table MM–1 of this subpart that enters the refinery to be further refined or otherwise used on site, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used. For natural gas liquids, quantity shall reflect the individual components of the	(1) [Reserved]	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		product.		
MM	98.396(a)(4)	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(1) of this section.	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(2) of this section.	Harmonizing change with 40 CFR 98.396(a)(1).
MM	98.396(a)(5)	(5) For each petroleum product and natural gas liquid (ex refinery gate) listed in Table MM–1 of this subpart, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used. For natural gas liquids, quantity shall reflect the individual components of the product. Petroleum products and natural gas liquids that enter the refinery, but are not reported in (a)(1), shall not be reported under this paragraph.	(5) [Reserved]	See preamble text for explanation
MM	98.396(a)(8)	(8) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(5) of this section.	(8) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(6) of this section.	Harmonizing change with 40 CFR 98.396(a)(5).
MM	98.396(a)(9)	(9) For every feedstock reported in paragraph (a)(2) of this section for which Calculation Methodology 2 of this subpart was used to determine an emissions factor, report:	(9) For every feedstock reported in paragraph (a)(2) of this section for which Calculation Method 2 of this subpart was used to determine an emissions factor, report:	Corrects terminology
MM	98.396(a)(9)(iii)	(iii) The carbon share test results in percentmass	(iii) The carbon share test results in percent mass	Corrects typographical error
MM	98.396(a)(9)(v)	(v) The calculated CO_2 emissions factor in metric tons.	(v) The calculated CO_2 emissions factor in metric tons CO_2 per barrel or per metric ton of product.	Clarifies units of reporting requirement
MM	98.396(a)(10)	(10) For every non-solid feedstock reported in paragraph (a)(2) of this section for which Calculation Methodology 2 of this subpart was used to determine an emissions factor, report:	(10) For every non-solid feedstock reported in paragraph (a)(2) of this section for which Calculation Method 2 of this subpart was used to determine an emissions factor, report:	Clarifies method
MM	98.396(a)(11)	(11) For every petroleum product and natural gas liquid reported in paragraph (a)(6) of this section for which Calculation Methodology2 of this subpart was used to determine an emissions factor, report:	(11) For every petroleum product and natural gas liquid reported in paragraph (a)(6) of this section for which Calculation Method 2 of this subpart was used to determine an emissions factor, report:	Clarifies method
MM	98.396(11)(iii)	(iii) The carbon share test results in percentmass.	(iii) The carbon share test results in percent mass.	Corrects typo

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
MM	98.396(a)(13)	(13) For each specific type of biomass that enters the refinery to be co-processed with petroleum feedstocks to produce a petroleum product reported in paragraph (a)(6) of this section, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used.	(13) [Reserved]	See preamble text for explanation
MM	98.396(a)(15)	(15) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(13) of this section.	(15) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (a)(14) of this section.	Harmonizing change with 40 CFR 98.396(a)(13)
MM	98.396(a)(18)	(18) The CO_2 emissions in metric tons that would result from the complete combustion or oxidation of each type of biomass feedstock co-processed with petroleum feedstocks reported in paragraph (a)(13) of this section, calculated according to §98.393(c).	(18) The CO_2 emissions in metric tons that would result from the complete combustion or oxidation of each type of biomass feedstock co-processed with petroleum feedstocks reported in paragraph (a)(14) of this section, calculated according to §98.393(c).	Harmonizing change with 40 CFR 98.396(a)(13)
MM	98.396(a)(20)	(20) All of the following information for all crude oil feedstocks used at the refinery: (i) Batch volume in barrels. (ii) Weighted average API gravity representing the batch at the point of entry at the refinery. (iii) Weighted average sulfur content representing the batch at the point of entry at the refinery. (iv) Country of origin, of the batch, if known and data in paragraphs (a)(20)(v) and (a)(20)(vi) of this section are unknown. (v) EIA crude stream code and crude stream name of the batch, if known. (vi) Generic name for the crude stream and the appropriate EIA two-letter country or state and production area code of the batch, if known and no appropriate EIA crude stream code exists.	(20) For all crude oil that enters the refinery, report the annual quantity in barrels.	See preamble text for explanation
MM	98.396(a)(21)	(21) The quantity of bulk NGLs in metric tons or barrels received for processing during the reporting year.	(21) The quantity of bulk NGLs in metric tons or barrels received for processing during the reporting year. Report only quantities of bulk NGLs not reported in (a)(2) of this section.	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
MM	98.396(a)(22)	(22) Volume of crude oil in barrels that you injected into a crude oil supply or reservoir. A volume of crude oil that entered the refinery, but was not reported in paragraphs (a)(2) or (a)(20), shall not be reported under this paragraph.	(22) Volume of crude oil in barrels that you injected into a crude oil supply or reservoir.	See preamble text for explanation
MM	98.396(a)(23)	(23) Special provisions for 2010. For reporting year 2010 only, a refiner that knows the information under a specific tier of the batch definition in 40 CFR 98.398, but does not have the necessary data collection and management in place to readily report this information, can use the next most appropriate tier of the batch definition for reporting batch information under paragraph 98.396(a)(20).	(23) [Reserved]	Special provisions for 2010 are no longer necessary.
MM	98.396(b)(1)	(1) For each petroleum product and natural gas liquid listed in Table MM–1 of this subpart, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used. For natural gas liquids, quantity shall reflect the individual components of the product.	(1) [Reserved]	See preamble text for explanation
MM	98.396(b)(2)	(2) For each petroleum product and natural gas liquid listed in Table MM–1 of this subpart, report the annual quantity in metric tons or barrels. For natural gas liquids, quantity shall reflect the individual components of the product as listed in Table MM–1 of this subpart.	(2) For each petroleum product and natural gas liquid listed in Table MM–1 of this subpart, report the annual quantity in metric tons or barrels. For natural gas liquids, quantity shall reflect the individual components of the product.	Clarifies reporting requirements. Reporting is not limited to those components listed in Table MM-1.
MM	98.396(b)(4)	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (b)(1) of this section.	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (b)(2) of this section.	Harmonizing change with 40 CFR 98.396 (b)(1)
MM	98.396(b)(5)	(5) For each product reported in paragraph (b)(2) of this section for which Calculation Methodology 2 of this subpart used was used to determine an emissions factor, report:	(5) For each product reported in paragraph (b)(2) of this section for which Calculation Method 2 of this subpart used was used to determine an emissions factor, report:	Clarifies method
MM	98.396(b)(6)	(6) For each non-solid product reported in paragraph (b)(2) of this section for which	(6) For each non-solid product reported in paragraph (b)(2) of this section for which Calculation Method 2	Clarifies method

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		Calculation Methodology 2 of this subpart was used to determine an emissions factor, report:	of this subpart was used to determine an emissions factor, report:	
MM	98.396(c)(1)	(1) For each petroleum product and natural gas liquid listed in Table MM–1 of this subpart, report the annual quantity in metric tons or barrels by each quantity measurement standard method or other industry standard practice used. For natural gas liquids, quantity shall reflect the individual components of the product.	(1)[Reserved]	See preamble text for explanation
MM	98.396(c)(4)	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (c)(1) of this section.	(4) Each standard method or other industry standard practice used to measure each quantity reported in paragraph (c)(2) of this section.	Harmonizing change with 40 CFR 98.396 (c)(1)
MM	98.396(c)(5)	(5) For each product reported in paragraph (c)(2) of this section for which Calculation Methodology 2 of this subpart was used to determine an emissions factor, report:	(5) For each product reported in paragraph (c)(2) of this section for which Calculation Method 2 of this subpart was used to determine an emissions factor, report:	Clarifies method
MM	98.396(c)(6)	(6) For each non-solid product reported in paragraph (c)(2) of this section for which Calculation Methodology 2 of this subpart used was used to determine an emissions factor, report:	(6) For each non-solid product reported in paragraph (c)(2) of this section for which Calculation Method 2 of this subpart used was used to determine an emissions factor, report:	Clarifies method
MM	98.396(d)(2)	(2) For a product that enters the refinery to be further refined or otherwise used on site that is a blended non-crude feedstock, refiners must meet the reporting requirements of paragraphs (a)(1) and (a)(2) of this section by reflecting the individual components of the blended non-crude feedstock.	(2) For a product that enters the refinery to be further refined or otherwise used on site that is a blended non-crude feedstock, refiners must meet the reporting requirements of paragraphs (a)(2) of this section by reflecting the individual components of the blended non-crude feedstock.	Harmonizing change with 40 CFR 98.396 (a)(1)
MM	98.396(d)(3)	(3) For a product that is produced, imported, or exported that is a blended product, refiners, importers, and exporters must meet the reporting requirements of paragraphs (a)(5), (a)(6), (b)(1), (b)(2), (c)(1), and (c)(2) of this section, as applicable, by reflecting the individual components of the blended product.	(3) For a product that is produced, imported, or exported that is a blended product, refiners, importers, and exporters must meet the reporting requirements of paragraphs (a)(6), (b)(2), and (c)(2) of this section, as applicable, by reflecting the individual components of the blended product.	Harmonizing change with 40 CFR 98.396 (a)(1), (b)(1), and (c)(1)

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
MM	98.397(b)	(b) Reporters shall maintain records to support quantities that are reported under this subpart, including records documenting any estimations of missing data and the number of calendar days in the reporting year for which substitute data procedures were followed. For all reported quantities of petroleum products, natural gas liquids, and biomass, as well as crude oil quantities measured on site at a refinery, reporters shall maintain metering, gauging, and other records normally maintained in the course of business to document product and feedstock flows including the date of initial calibration and the frequency of recalibration for the measurement equipment used.	(b) Reporters shall maintain records to support quantities that are reported under this subpart, including records documenting any estimations of missing data and the number of calendar days in the reporting year for which substitute data procedures were followed. For all reported quantities of petroleum products, natural gas liquids, and biomass, reporters shall maintain metering, gauging, and other records normally maintained in the course of business to document product and feedstock flows including the date of initial calibration and the frequency of recalibration for the measurement equipment used.	Harmonizing change with 40 CFR 98.396(a)(20).
MM	98.397(d)	(d) Reporters shall maintain laboratory reports, calculations and worksheets used in the measurement of density and carbon share for any petroleum product or natural gas liquid for which CO2 emissions were calculated using Calculation Methodology 2.	(d) Reporters shall maintain laboratory reports, calculations and worksheets used in the measurement of density and carbon share for any petroleum product or natural gas liquid for which CO2 emissions were calculated using Calculation Method 2.	Clarifies method
MM	98.398	(None)	<ins>Bulk NGLs for purposes of reporting under this subpart</ins> means mixtures of NGLs that are sold or delivered as undifferentiated product.	See preamble text for explanation
MM	98.398	(None)	<ins>Natural Gas Liquids (NGLs) for the purposes of reporting under this subpart</ins> means hydrocarbons that are separated from natural gas as liquids through the process of absorption, condensation, adsorption, or other methods, and are sold or delivered as differentiated product. Generally, such liquids consist of ethane, propane, butanes, or pentanes plus.	See preamble text for explanation
MM	98.398	Batch means either a volume of crude oil that enters a refinery or the components of such volume (e.g., the volumes of different crude streams that are blended together and then delivered to a refinery). The batch volume is the first appropriate tier in the following list: (1) Up to an annual volume of a type of crude oil identified by an EIA crude stream	(None)	

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		code, if the EIA crude stream code is known. (2) Up to an annual volume of a type of crude oil identified by a generic name for the crude stream and an appropriate EIA two-letter country or state and production area code, if the generic name and EIA two-letter code are known but no appropriate EIA crude stream code exists. (3) Up to a calendar month of crude oil volume from a single known foreign country of origin if the crude stream name is unknown. (4) Up to a calendar month of crude oil volume from the United States if the crude stream name and production area are unknown. (5) Up to a calendar month of crude oil volume if the country of origin is unknown.		
MM	Table MM-1	Table MM-1	See Appendix A for changes to Table MM-1	See preamble text for explanation
NN	98.400(a)	(a) Natural gas liquids fractionators are installations that fractionate natural gas liquids (NGLs) into their consitutent liquid products (ethane, propane, normal butane, isobutane or pentanes plus) for supply to downstream facilities.	(a) Natural gas liquids fractionators are installations that fractionate natural gas liquids (NGLs) into their constituent liquid products or mixtures of products (ethane, propane, normal butane, isobutane or pentanes plus) for supply to downstream facilities.	Clarifies rule text.
NN	98.400(b)	(b) Local Distribution Companies (LDCs) are companies that own or operate distribution pipelines, not interstate pipelines or intrastate pipelines, that physically deliver natural gas to end users and that are regulated as separate operating companies by State public utility commissions or that operate as independent municipally-owned distribution systems.	(b) Local Distribution Companies (LDCs) are companies that own or operate distribution pipelines, not interstate pipelines or intrastate pipelines, that physically deliver natural gas to end users and that are within a single state that are regulated as separate operating companies by State public utility commissions or that operate as independent municipally-owned distribution systems. LDCs do not include pipelines (both interstate and intrastate) delivering natural gas directly to major industrial users and farm taps upstream of the local distribution company inlet.	See preamble text for explanation
NN	98.403(a)(2)	$Fuel_h$ = Total annual volume of product “h” supplied (bbl or Mscf per year)	$Fuel_h$ = Total annual volume of product “h” supplied (volume per year, in Mscf for natural gas and bbl for NGLs).	Clarifies equation term.
NN	98.403(b) (1)	(1) For natural gas that is received for redelivery to downstream gas transmission pipelines and other local distribution	(1) For natural gas that is received for redelivery to downstream gas transmission pipelines and other local distribution companies, use Equation NN–3 of this	Corrects typographical error

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		companies, use eEquation NN–3 of this section and the default values for the CO_2 emission factors found in Table NN–2 of this subpart.***	section and the default values for the CO2 emission factors found in Table NN–2 of this subpart.***.	
NN	98.403(b)(2)(i)	(2)(i) For natural gas delivered to each meter registering a supply equal to or greater than 460,000 Mscf per year, use Equation NN–4 of this section and the default values for the CO_2 emission factors found in Table NN–2 of this subpart.	(2)(i) For natural gas delivered to end-users registering a supply equal to or greater than 460,000 Mscf per year, use Equation NN–4 of this section and the default values for the CO_2 emission factors found in Table NN–2 of this subpart.	See preamble text for explanation
NN	98.403(b)(2)(ii)	CO_{2k} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas received by end-users that receive a supply equal to or greater than 460,000 Mscf per year (metric tons).	CO_{2k} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas delivered to each end-user that receives a supply equal to or greater than 460,000 Mscf per year (metric tons).	Clarifies rule text.
NN	98.403(b)(2)(ii)	Fuel = Total annual volume of natural gas supplied (Mscf per year).	Fuel = Total annual volume of natural gas supplied to this end-user, if known, otherwise, the annual volume supplied to this meter (Mscf per year).	Clarifies the definition of the equation term “Fuel” in Equation NN-4” . The input for the total annual volume of natural gas must be the total annual volume of natural gas supplied to the end-user, if known.
NN	98.403(b)(3)	(3) For natural gas received by the LDC at the city gate that is injected into on-system storage, and/or liquefied and stored, use Equation NN–5 of this section and the default value for the CO_2 emission factors found in Table NN–2 of this subpart. Alternatively, a reporter-specific CO_2 emission factor may be used, provided it is developed using methods outlined in §98.404. CO_{2l} = [$Fuel_1$-$Fuel_2$]*EF (Eq. NN-5) Where: CO_{2l} = Annual CO_2 mass emissions that would result from the combustion or oxidation of the net natural gas that is liquefied and/or stored and not used for deliveries by the LDC within the reported year (metric tons). Fuel1 = Total annual volume of natural gas received by the LDC at the city gate and stored on-system or liquefied and stored in the reporting year (Mscf per year).	(3) For the net change in natural gas stored on system by the LDC during the reporting year, use Equation NN-5a of this section. For natural gas that is received by means other than through the city gate, and is not otherwise accounted for by Equation NN-1 or NN-2 of this section, use Equation NN-5b of this section. (i) For natural gas received by the LDC that is injected into on-system storage, and/or liquefied and stored, and for gas removed from storage and used for deliveries, use Equation NN–5a of this section and the default value for the CO_2 emission factors found in Table NN–2 of this subpart. Alternatively, a reporter-specific CO_2 emission factor may be used, provided it is developed using methods outlined in §98.404. CO_{2l} = [$Fuel_1$-$Fuel_2$]*EF (Eq. NN-5a) Where: CO_{2l} = Annual CO_2 mass emissions that would result from the combustion or oxidation of the net change in natural gas stored on system by the LDC within the reporting year (metric tons). $Fuel_1$ = Total annual volume of natural gas added to storage on-system or liquefied and stored in the	Harmonize with changes to equations - see preamble rationale for a complete explanation of the changes.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		$Fuel_2$ = Total annual volume of natural gas that is used for deliveries in the reporting year that was not otherwise accounted for in Equation NN–1 or NN–2 of this section (Mscf per year). This primarily includes natural gas previously stored on-system or liquefied and stored that is removed from storage and used for deliveries to customers or other LDCs by the LDC within the reporting year. This also includes natural gas that bypassed the city gate and was delivered directly to LDC systems from producers or natural gas processing plants from local production. EF = Fuel-specific CO_2 emission factor (MT CO_2/Mscf).	reporting year (Mscf per year). $Fuel_2$ = Total annual volume of natural gas that is removed from storage or vaporized and removed from storage and used for deliveries to customers or other LDCs by the LDC within the reporting year (Mscf per year). EF = Annual average CO_2 emission factor for natural gas placed into/removed from storage(MT CO_2/Mscf).	
NN	98.403(b)(3)(ii)	(None)	(ii)(ii) For natural gas received by the LDC that bypassed the city gate, use Equation NN-5b of this section. This includes natural gas received directly by LDC systems from producers or natural gas processing plants from local production, received as a liquid and vaporized for delivery, or received from any other source that bypassed the city gate. Use the default value for the CO_2 emission factors found in Table NN–2 of this subpart. Alternatively, a reporter-specific CO_2 emission factor may be used, provided it is developed using methods outlined in §98.404. $CO_{2n} = Fuel_z * EF_z$ Where: CO_{2n} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas received that bypassed the city gate and is not otherwise accounted for by Equation NN-1 or NN-2 of this section (metric tons). $Fuel_z$ = Total annual volume of natural gas received that was not otherwise accounted for by Equation NN-1 or NN-2 of this section (natural gas from producers and natural gas processing plants from local production, or natural gas that was received as a liquid, vaporized and delivered, and any other source that bypassed the city gate) (Mscf per year). EF_z = Fuel-specific CO_2 emission factor (MT CO_2/Mscf).	Harmonize with changes to equations - see preamble rationale for a complete description of the changes.
NN	98.403(b)(4)	(4) Calculate the total CO_2 emissions that	(4) Calculate the total CO_2 emissions that would	Harmonize with changes to equations -

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		would result from the complete combustion or oxidation of the annual supply of natural gas to end-users using Equation NN–6 of this section. CO_2 = Sum(CO_{2i})-Sum(CO_{2j})-Sum(CO_{2k})-Sum(CO_{2l}) Where: CO_2 = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas delivered to LDC customers not covered in paragraph (b)(2) of this section (metric tons). CO_{2i} =Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas delivered to transmission pipelines or other LDCs as calculated in paragraph (b)(1) of this section (metric tons). CO_{2j} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas delivered to transmission pipelines or other LDCs as calculated in paragraph (b)(1) of this section (metric tons). CO_{2k} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas received by end-users that receive a supply equal to or greater than 460,000 Mscf per year as calculated in paragraph (b)(2) of this section (metric tons). CO_{2l} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas received by the LDC and liquefied and/or stored but not used for deliveries within the reported year as calculated in paragraph (b)(3) of this section (metric tons).	result from the complete combustion or oxidation of the annual supply of natural gas to end-users that receive a supply less than 460,000 Mscf per year using Equation NN–6 of this section. $CO_2 = CO_{2i}+CO_{2n}-CO_{2j}-\sum CO_{2k}-CO_{2l}$ (Eq. NN-6) Where CO_2 = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas delivered to LDC end-users not covered in paragraph (b)(2) of this section (metric tons). CO_{2i} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas received at the city gate as calculated in paragraph (a)(1) or (a)(2) of this section (metric tons). CO_{2j} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas delivered to transmission pipelines or other LDCs as calculated in paragraph (b)(1) of this section (metric tons). CO_{2k} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas delivered to each end-user that receives a supply equal to or greater than 460,000 Mscf per year as calculated in paragraph (b)(2) of this section (metric tons). CO_{2l} = Annual CO_2 mass emissions that would result from the combustion or oxidation of the net change in natural gas stored by the LDC within the reported year as calculated in paragraph (b)(3)(i) of this section (metric tons). CO_{2n} = Annual CO_2 mass emissions that would result from the combustion or oxidation of natural gas that was received by the LDC directly from sources bypassing the city gate, and is not otherwise accounted for in Equation NN-1 or NN-2 of this section, as calculated in paragraph (b)(3)(ii) of this section (metric tons).	see preamble rationale for a complete explanation
NN	98.403(c)(2)	(2) Calculate the total CO_2 equivalent emissions that would result from the combustion or oxidation of fractionated NGLs supplied less the quantity received by	(2) Calculate the total CO_2 equivalent emissions that would result from the combustion or oxidation of fractionated NGLs supplied less the quantity received from other fractionators using Equation NN-8 of this	Clarifies rule language

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		other fractionators using Equation NN-8 of this section.	section.	
NN	98.403(c)(2)	CO_2 = Annual CO_2 mass emissions that would result from the combustion or oxidation of fractionated NGLs delivered to customers or on behalf of customers (metric tons).	CO_2 = Annual CO_2 mass emissions that would result from the combustion or oxidation of fractionated NGLs delivered to customers or on behalf of customers less the quantity received from other fractionators (metric tons).	Clarifies calculation result
NN	98.404(a)(5)	(5) For an LDC using Equation NN–1 or NN–2 of this subpart, the point(s) of measurement for the natural gas volume supplied shall be the LDC city gate meter(s).	(5) For an LDC using Equation NN–1 or NN–2 of this subpart, the point(s) of measurement for the natural gas volume received shall be the LDC city gate meter(s).	Clarifies rule language
NN	98.404(a)(7)	(7) An LDC using Equation NN–4 of this subpart shall measure natural gas at the customer meters. The reporter shall consider the volume delivered through a single particluar meter at a single particular location as the volume delivered to an individual end-user.	(7) An LDC using Equation NN–4 of this subpart shall measure natural gas at the end-user's meter(s). Where an end-user is known to have more than one meter located at their facility, the reporter shall measure the natural gas at each meter and sum the annual volume delivered to all meters located at the end-user's facility to determine the total volume delivered to the end- user. Otherwise, the reporter shall consider the total annual volume delivered through each single meter at a single particular location to be the the volume delivered to an individual end-user.	Clarifies rule text.
NN	98.404(a)(8)	(8) An LDC using Equation NN–5 of this subpart shall measure natural gas as follows: (i) $Fuel_1$ shall be measured at the on-system storage injection meters and/or at the meters measuring natural gas to be liquefied. (ii) $Fuel_2$ shall be measured at the meters used for measuring on-system storage withdrawals and/or LNG vaporization injection. If $Fuel_2$ is from a source other than storage, the appropriate meter shall be used to measure the quantity.	(8) An LDC using Equation NN–5a and/or NN-5b of this subpart shall measure natural gas as follows: (i) $Fuel_1$ shall be measured at the on-system storage injection meters and/or at the meters measuring natural gas to be liquefied. (ii) $Fuel_2$ shall be measured at the meters used for measuring on-system storage withdrawals and/or LNG vaporization injection. (iii) $Fuel_z$ shall be measured using established business practices.	Harmonize with changes to equations - see preamble rationale for a complete explanation
NN	98.404(a)(9)	(9) An LDC shall measure all natural gas under the following standard industry temperature and pressure conditions: Cubic foot of gas at a temperature of 60 degrees Fahrenheit and at an absolute pressure of fourteen and seventy-three hundredths (14.73) pounds per square inch.	(9) An LDC shall measure all natural gas under the following standard industry temperature and pressure conditions: Cubic foot of gas at a temperature of 60 degrees Fahrenheit and at an absolute pressure of one atmosphere.	Clarified standard conditions for measurements.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
NN	98.404(c)(2)	(2) When a reporter used the default EF provided in this section to calculate Equation NN–2, NN–3, NN–4, NN–5, or NN–7 of this subpart, the appropriate value shall be taken from Table NN–2 of this subpart.	(2) When a reporter used the default EF provided in this section to calculate Equation NN-2, NN-3, NN-4, NN-5a, NN-5b, or NN-7 of this subpart, the appropriate value shall be taken from Table NN-2 of this subpart.	Harmonize with changes to equations - see preamble rationale for a complete explanation
NN	98.404(d)(1)	(1) Equipment used to measure quantities in Equations NN–1, NN–2, and NN–5 of this subpart shall be calibrated prior to its first use for reporting under this subpart, using a suitable standard method published by a consensus based standards organization or according to the equipment manufacturer's directions.	(1) Equipment used to measure quantities in Equations NN–1, NN–2, NN–5a and NN-5b of this subpart shall be calibrated prior to its first use for reporting under this subpart, using a suitable standard method published by a consensus based standards organization or according to the equipment manufacturer's directions.	Harmonize with changes to equations - see preamble rationale for a complete explanation
NN	98.404(d)(2)	(2) Equipment used to measure quantities in Equations NN–1, NN–2, and NN–5 of this subpart shall be recalibrated at the frequency specified by the standard method used or by the manufacturer's directions.	(2) Equipment used to measure quantities in Equations NN–1, NN–2, NN–5a, and NN-5b of this subpart shall be recalibrated at the frequency specified by the standard method used or by the manufacturer's directions.	Harmonize with changes to equations - see preamble rationale for a complete explanation
NN	98.404(d)(3)	[(None)]	(3) Equipment used to measure quantities in Equations NN-3, and NN-4 of this subpart shall be recalibrated at the frequency commonly used within the industry.	Clarification of when to calibrate equipment made in case of new reporters
NN	98.404(a)(5)	5) For an LDC using Equation NN–1 or NN–2 of this subpart, the point(s) of measurement for the natural gas volume supplied shall be the LDC city gate meter(s).	5) For an LDC using Equation NN–1 or NN–2 of this subpart, the point(s) of measurement for the natural gas volume received shall be the LDC city gate meter(s).	Clarifies rule text.
NN	98.405(c)(3)	(3) Whenever a NGL fractionator cannot follow the quality assurance procedures for developing a reporter-specific HHV, as specified in §98.404, during any period for any reason, the NGL fractionator shall use the default HHV provided in Table NN–1 of this part for that period.	(3) [Reserved]	Deleted duplicate requirement
NN	98.406(a)(4)	(4) Annual quantity (in barrels) of y-grade, bulk NGLs received from others for fractionation.	(4) Annual quantities (in barrels) of y-grade, o-grade, and other bulk NGLs: (i) received. (ii) Supplied to downstream users that are not fractionated by the reporter.	See preamble text for explanation
NN	98.406(a)(7)	(7) Annual CO_2 mass emissions (metric tons) that would result from the combustion or oxidation of fractionated NGLs supplied less the quantity received by other	(7) Annual CO_2 mass emissions (metric tons) that would result from the combustion or oxidation of fractionated NGLs supplied less the quantity received from other fractionators, calculated in accordance	Corrects regulatory text and resolves potential for negative calculation result due to rounding of emission factors.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		fractionators, calculated in accordance with §98.403(c)(2).	with §98.403(c)(2). If the calculated value is negative, the reporter shall report the value as zero.	
NN	98.406(b)(2)	(2) Annual volume in Mscf of natural gas placed into storage.	(2) Annual volume in Mscf of natural gas placed into storage or liquified and stored (Fuel $_1$ in Equation NN-5a).	Includes equation terms for clarity - see preamble rationale line 147.
NN	98.406(b)(3)	(3) Annual volume in Mscf of vaporized liquefied natural gas (LNG) produced at on-system vaporization facilities for delivery on the distribution system that is not accounted for in paragraph (b)(1) of this section.	(3) Annual volume in Mscf of natural gas withdrawn from on-system storage and annual volume in Mscf of vaporized liquefied natural gas (LNG) produced at on-system vaporization facilities withdrawn from storage for delivery on the distribution system (Fuel$_2$ in Equation NN-5a).	Harmonize reporting requirements with calculation changes - see preamble rationale for a complete explanation
NN	98.406(b)(4)	(4) Annual volume in Mscf of natural gas withdrawn from on-system storage (that is not delivered to the city gate) for delivery on the distribution system.	(4) [Reserved]	Reporting of revised definition Fuel 2 in 98.406(b)(3) eliminates the need for this reporting element.
NN	98.406(b)(5)	(5) Annual volume in Mscf of natural gas delivered directly to LDC systems from producers or natural gas processing plants from local production.	(5) Annual volume in Mscf of natural gas that bypassed the city gate(s) and was supplied through the LDC distribution system. This includes natural gas from producers and natural gas processing plants from local production, or natural gas that was vaporized upon receipt and delivered, and any other source that bypassed the city gate (Fuelz in Equation NN-5b).	Harmonize reporting requirements with calculation changes - see preamble rationale for a complete explanation
NN	98.406(b)(7)	(7) Annual volume in Mscf of natural gas delivered by LDC to each meter registering supply equal to or greater than 460,000 Mcsf during the calendar year.	(7) Annual volume in Mscf of natural gas delivered by the LDC to each end-user facility that received from the LDC deliveries equal to or greater than 460,000 Mscf during the calendar year, if known; otherwise, report the annual volume in Mscf of natural gas delivered by the LDC to each meter registering supply equal to or greater than 460,000 Mscf during the calendar year.	See preamble text for explanation
NN	98.406(b)(9)	(9) Annual CO_2 emissions (metric tons) that would result from the complete combustion or oxidation of the annual supply of natural gas to end-users registering less than 460,000 Mcsf, calculated in accordance with §98.403(b)(4).	(9) Annual CO_2 emissions (metric tons) that would result from the complete combustion or oxidation of the annual supply of natural gas to end-users registering less than 460,000 Mscf, calculated in accordance with §98.403(b)(4). If the calculated value is negative, the reporter shall report the value as zero.	Corrects typographical error, and resolves potential for negative calculation result due to rounding of emission factors.
NN	98.406(b)(12)	(12) The customer name, address, and meter number of each meter reading used to report in paragraph (b)(7) of this section.	(12) The customer name, address, and meter number of each end-user reported in paragraph (b)(7) of this section. Additionally, report whether the quantity of natural gas reported in paragraph (b)(7) of this section is the total quantity delivered to the end-user, or the quantity delivered to a specific meter.	Clarifies rule text.
NN	98.407 Introductory	98.407 Records that must be retained. In addition to the information required by	98.407 Records that must be retained. In addition to the information required by §98.3(g),	Corrects requirement.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
	Paragraph	§98.3(g), each annual report must contain the following information:	the reporter shall retain the following records:	
NN	98.408 - Table NN-1	Table NN–1 to Subpart HH of Part 98—Default Factors for Calculation Methodology 1 of This Subpart	See Appendix A for changes to Table NN-1	Corrects title of table, and harmonizes values with Table C-1.
NN	98.408 - Table NN-2	Table NN–2 to Subpart HH of Part 98—Lookup Default Values for Calculation Methodology 2 of This Subpart	See Appendix A for changes to Table NN-2	Corrects title of table, and harmonizes values with Table C-1.
PP	98.423(a)(3)(i)	(3) To aggregate data, use either Equation PP–3a or PP–3b in this paragraph, as appropriate. (i) For facilities with production process units that capture a CO_2 stream and either measure it after segregation or do not segregate the flow, calculate the total CO_2 supplied in accordance with Equation PP–3a.	(3) To aggregate data, use either Equation PP–3a or PP–3b in this paragraph, as appropriate. (i) For facilities with production process units or production wells that capture or extract a CO_2 stream and either measure it after segregation or do not segregate the flow, calculate the total CO_2 supplied in accordance with Equation PP–3a.	See preamble text for explanation
PP	98.426(b)(4)(i) and (ii)	(4) Report density as follows: (i) Quarterly density of CO_2 in metric tons per standard cubic meter if you report the concentration of the CO_2 stream in paragraph (b)(3) of this section in weight percent. (ii) Quarterly density of the CO_2 stream in metric tons per standard cubic meter if you report the concentration of the CO_2 stream in paragraph (b)(3) of this section in volume percent.	(4) Report density as follows: (i) Quarterly density of the CO_2 stream in metric tons per standard cubic meter if you report the concentration of the CO_2 stream in paragraph (b)(3) of this section in weight percent. (ii) Quarterly density of CO_2 in metric tons per standard cubic meter if you report the concentration of the CO_2 stream in paragraph (b)(3) of this section in volume percent.	Clarifies reporting requirement
PP	98.426(f)(10)	(10) Enhanced oil and natural gas recovery	(10) Injection of CO_2 for enhanced oil and natural gas recovery that is covered by subpart UU of this part.	See preamble text for explanation
PP	98.426(f)(11)	(11) Long-term storage (sequestration)	(11) Geologic sequestration of carbon dioxide that is covered by subpart RR of this part.	See preamble text for explanation
QQ	98.433(a)	S_t = Mass of fluorinated GHG per unit of equipment type t or foam type t (charge per piece of equipment or cubic foot of foam, kg).	S_t = Mass of fluorinated GHG per unit of equipment type t or foam type t (charge per piece of equipment, kg) or density of fluorinated GHG in foam (charge per cubic foot of foam, kg per cubic foot).	See preamble text for explanation
QQ	98.433(b)	S_t = Mass in CO_2e of the fluorinated GHGs per unit of equipment type t or foam type t (charge per piece of equipment or cubic foot of foam, kg).	S_t = Mass in CO_2e of the fluorinated GHGs per unit of equipment type t or foam type t (charge per piece of equipment, kg) or density of fluorinated GHG in foam (CO_2e per cubic foot of foam, kg CO_2e per cubic foot).	Clarifies equation term.
QQ	98.434(b)	(b) The inputs to the annual submission must be reviewed against the import or	(b) The inputs to the annual submission must be reviewed against the import or export transaction	Clarifies intent of the requirement.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		export transaction records to ensure that the information submitted to EPA is being accurately transcribed as the correct chemical or blend in the correct pre-charged equipment or closed-cell foam in the correct quantities (metric tons) and units (kg per piece of equipment or cubic foot of foam).	records to ensure that the information submitted to EPA is being accurately transcribed as the correct chemical or blend in the correct pre-charged equipment or closed-cell foam in the correct quantities and units.	
QQ	98.436(a)(3)	(3) For closed-cell foams that are imported inside of appliances, the identity of the fluorinated GHG contained in the foam in each appliance, the mass of the fluorinated GHG contained in the foam in each appliance, and the number of appliances imported with each unique combination of mass and identity of fluorinated GHG within the closed-cell foams.	(3) For closed-cell foams that are imported inside of equipment, the identity of the fluorinated GHG contained in the foam in each appliance, the mass of the fluorinated GHG contained in the foam in each piece of equipment, and the number of pieces of equipment imported with each unique combination of mass and identity of fluorinated GHG within the closed-cell foams.	See preamble text for explanation
QQ	98.436(a)(4)	(4) For closed cell-foams that are not imported inside of appliances, the identity of the fluorinated GHG in the foam, the density of the fluorinated GHG in the foam (kg fluorinated GHG/cubic foot), and the volume of foam imported (cubic feet) for each type of closed-cell foam with a unique combination of fluorinated GHG density and identity.	(4) For closed cell-foams that are not imported inside of equipment, the identity of the fluorinated GHG in the foam, the density of the fluorinated GHG in the foam (kg fluorinated GHG/cubic foot), and the volume of foam imported (cubic feet) for each type of closed-cell foam with a unique combination of fluorinated GHG density and identity.	See preamble text for explanation
QQ	98.436(a)(5)	(5) Dates on which the pre-charged equipment or closed-cell foams were imported.	(5) [Reserved.]	See preamble text for explanation
QQ	98.436(a)(6)(ii)	(ii) For closed-cell foams that are imported inside of appliances, the mass of the fluorinated GHGs in CO2e contained in the foam in each appliance and the number of appliances imported for each type of appliance.	(ii) For closed-cell foams that are imported inside of equipment, the mass of the fluorinated GHGs in CO2e contained in the foam in each piece of equipment and the number of pieces of equipment imported for each equipment type.	See preamble text for explanation
QQ	98.436(a)(6)(iii)	(iii) For closed-cell foams that are not imported inside of appliances, the mass in CO2e of the fluorinated GHGs in the foam (kg CO2e/cubic foot) and the volume of foam imported (cubic feet) for each type of closed-cell foam.	(iii) For closed-cell foams that are not imported inside of equipment, the density in CO2e of the fluorinated GHGs in the foam (kg CO2e/cubic foot) and the volume of foam imported (cubic feet) for each type of closed-cell foam.	See preamble text for explanation
QQ	98.436(a)(6)(iv)	(iv) Dates on which the closed-cell foams were imported.	(iv) [Reserved.]	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
QQ	98.436(b)(3)	(3) For closed-cell foams that are exported inside of appliances, the identity of the fluorinated GHG contained in the foam in each appliance, the mass of the fluorinated GHG contained in the foam in each appliance, and the number of appliances exported with each unique combination of mass and identity of fluorinated GHG within the closed-cell foams.	(3) For closed-cell foams that are exported inside of equipment, the identity of the fluorinated GHG contained in the foam in each piece of equipment, the mass of the fluorinated GHG contained in the foam in each piece of equipment, and the number pieces of equipment exported with each unique combination of mass and identity of fluorinated GHG within the closed-cell foams.	See preamble text for explanation
QQ	98.436(b)(4)	(4) For closed-cell foams that are not exported inside of appliances, the identity of the fluorinated GHG in the foam, the density of the fluorinated GHG in the foam (kg fluorinated GHG/cubic foot), and the volume of foam exported (cubic feet) for each type of closed-cell foam with a unique combination of fluorinated GHG density and identity.	(4) For closed-cell foams that are not exported inside of equipment, the identity of the fluorinated GHG in the foam, the density of the fluorinated GHG in the foam (kg fluorinated GHG/cubic foot), and the volume of foam exported (cubic feet) for each type of closed-cell foam with a unique combination of fluorinated GHG density and identity.	See preamble text for explanation
QQ	98.436(b)(5)	(5) Dates on which the pre-charged equipment or closed-cell foams were exported.	(5) [Reserved.]	See preamble text for explanation
QQ	98.436(b)(6)(ii)	(ii) For closed-cell foams that are exported inside of appliances, the mass of the fluorinated GHGs in CO2e contained in the foam in each appliance and the number of appliances imported for each type of appliance.	(ii) For closed-cell foams that are exported inside of equipment, the mass of the fluorinated GHGs in CO2e contained in the foam in each piece of equipment and the number of pieces of equipment imported for each equipment type.	See preamble text for explanation
QQ	98.436(b)(6)(iii)	(iii) For closed-cell foams that are not exported inside of appliances, the mass in CO2e of the fluorinated GHGs in the foam (kg CO2 e/cubic foot) and the volume of foam imported (cubic feet) for each type of closed-cell foam.	(iii) For closed-cell foams that are not exported inside of equipment, the density in CO2e of the fluorinated GHGs in the foam (kg CO2 e/cubic foot) and the volume of foam imported (cubic feet) for each type of closed-cell foam.	See preamble text for explanation
QQ	98.436(b)(6)iv)	(6)(iv) Dates on which the closed-cell foams were exported.	(6)(iv) [Reserved.]	See preamble text for explanation
QQ	98.438	Closed-cell foam means any foam product, excluding packaging foam that is constructed with a closed-cell structure and a blowing agent containing a fluorinated GHG. Closed-cell foams include but are not limited to polyurethane (PU) appliance foam, PU continuous and discontinuous panel foam, PU one component foam, PU spray foam, extruded polystyrene (XPS)	Closed-cell foam means any foam product, excluding packaging foam that is constructed with a closed-cell structure and a blowing agent containing a fluorinated GHG. Closed-cell foams include but are not limited to polyurethane (PU) foam contained in equipment, PU continuous and discontinuous panel foam, PU one component foam, PU spray foam, extruded polystyrene (XPS) boardstock foam, and XPS sheet foam. Packaging foam means foam used exclusively	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		boardstock foam, and XPS sheet foam. Packaging foam means foam used exclusively during shipment or storage to temporarily enclose items.	<u>during shipment or storage to temporarily enclose items.</u>	
QQ	98.438	<u>Pre-charged electrical equipment component</u> means any portion of electrical equipment that is charged with SF_6 or PFCs prior to sale or distribution or offer for sale or distribution in interstate commerce.	<u>Pre-charged electrical equipment component</u> means any portion of electrical equipment that is charged with a fluorinated greenhouse gas prior to sale or distribution or offer for sale or distribution in interstate commerce.	See preamble text for explanation
RR	98.443 (b)(2)	$S_{r,p}$= Quarterly mass of contents in containers r that is redelivered to another facility without being injected into your well in quarter p (metric tons)	$S_{r,p}$= Quarterly volume of contents in containers r that is redelivered to another facility without being injected into your well in quarter p (standard cubic meters)	Corrects equation term for consistency of units.
RR	98.443(d)(3)	(3) To aggregate production data, you must sum the mass of all of the CO_2 separated at each gas-liquid separator in accordance with the procedure specified in Equation RR–9 of this section. You must assume that the total CO_2 measured at the separator(s) represents a percentage of the total CO_2 produced. In order to account for the percentage of CO_2 produced that is estimated to remain with the produced oil or other fluid, you must multiply the quarterly mass of CO_2 measured at the separator(s) by a percentage estimated using a methodology in your approved MRV plan. If fluids containing CO_2 from injection wells covered under this source category are produced and not processed through a gas-liquid separator, the concentration of CO_2 in the produced fluids must be measured at a flow meter located prior to reinjection or reuse using methods in §98.444(f)(1). The considerations you intend to use to calculate CO_2 from produced fluids for the mass balance equation must be described in your approved MRV plan in accordance with §98.448(d)(5).	(3) To aggregate production data, you must sum the mass of all of the CO_2 separated at each gas-liquid separator in accordance with the procedure specified in Equation RR–9 of this section. You must assume that the total CO_2 measured at the separator(s) represents a percentage of the total CO_2 produced. In order to account for the percentage of CO_2 produced that is estimated to remain with the produced oil or other fluid, you must multiply the quarterly mass of CO_2 measured at the separator(s) by a percentage estimated using a methodology in your approved MRV plan. If fluids containing CO_2 from injection wells covered under this source category are produced and not processed through a gas-liquid separator, the concentration of CO_2 in the produced fluids must be measured at a flow meter located prior to reinjection or reuse using methods in §98.444(f)(1). The considerations you intend to use to calculate CO_2 from produced fluids for the mass balance equation must be described in your approved MRV plan in accordance with §98.448(a)(5).	Corrects reference.
RR	98.443(f)(2)	CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity	CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead, for which a calculation procedure	Harmonizing change to conform the variable definitions in RR-11 and RR-12

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		and the injection wellhead.	is provided in subpart W of this part.	
RR	98.446(b)(5)	(5) The standard or method used to calculate each value in paragraphs (b)(1) and (b)(2) of this section.	(5) The standard or method used to calculate each value in paragraphs (b)(1), (b)(2), and (b)(3) of this section.	See preamble text for explanation
SS	98.453(d)	(d) Estimate the mass of SF_6 or PFCs disbursed to customers in new equipment or cylinders over the period p by monitoring the mass flow of the SF_6 or PFCs into the new equipment or cylinders using a flowmeter or by weighing containers before and after gas from containers is used to fill equipment or cylinders.	(d) Estimate the mass of SF_6 or PFCs disbursed to customers in new equipment or cylinders over the period p by monitoring the mass flow of the SF_6 or PFCs into the new equipment or cylinders using a flowmeter, or by weighing containers before and after gas from containers is used to fill equipment or cylinders, or by using the nameplate capacity of the equipment.	See preamble text for explanation
SS	98.453(h)	(h) The mass of SF_6 or the PFC disbursed to customers in new equipment over the period p must be determined either by using the nameplate capacity of the equipment or, in cases where equipment is shipped with a partial charge, by calculating the partial shipping charge. Calculate the partial shipping charge by multiplying the nameplate capacity of the equipment by the ratio of the densities of the partial charge to the full charge. To determine the equipment's actual nameplate capacity, you must measure the nameplate capacities of a representative sample of each make and model and take the average for each make and model as specified at §98.454(f).	(h) If the mass of SF_6 or the PFC disbursed to customers in new equipment or cylinders over the period p is determined by using the nameplate capacity, or by using the nameplate capacity of the equipment and calculating the partial shipping charge, use the methods in either paragraph (h)(1) or (h)(2) of this section. (1) Determine the equipment's actual nameplate capacity, by measuring the nameplate capacities of a representative sample of each make and model and calculating the mean value for each make and model as specified at §98.454(f); (2) If equipment is shipped with a partial charge, calculate the partial shipping charge by multiplying the nameplate capacity of the equipment by the ratio of the densities of the partial charge to the full charge.	See preamble text for explanation
SS	98.453(i)	MF = The total annual mass of the SF_6 or PFCs, in pounds, used to fill equipment.	MF = The total annual mass of the SF_6 or PFCs, in pounds, used to fill equipment during equipment installation at electric transmission or distribution facilities.	Clarifies a calculation term.
SS	98.456(m)	(m) The values for each hose and valve combination and the associated valve fitting sizes and hose diameters.	(m) The values for EF_{Ci} of Equation SS-5 of this subpart for each hose and valve combination and the associated valve fitting sizes and hose diameters.	Clarifies a reporting requirement.
SS	98.456(o) & (p)	(o) The mean value for each make, model, and group of conditions if the mass of SF_6 or the PFC disbursed to customers in new equipment over the period p is determined by assuming that it is equal to the equipment's nameplate capacity or, in cases where equipment is shipped with a partial	(o) If the mass of SF_6 or the PFC disbursed to customers in new equipment over the period p is determined according to the methods required in §98.453(h) of this subpart, report the mean value of nameplate capacity in pounds for each make, model, and group of conditions. (p) If the mass of SF_6 or the PFC disbursed to	Clarifies a reporting requirement.

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		charge, equal to its partial shipping charge. (p) The number of samples and the upper and lower bounds on the 95 percent confidence interval for each make, model, and group of conditions if the mass of SF_6 or the PFC disbursed to customers in new equipment over the period p is determined by assuming that it is equal to the equipment's nameplate capacity or, in cases where equipment is shipped with a partial charge, equal to its partial shipping charge.	customers in new equipment over the period p is determined according to the methods required in §98.453(h) of this subpart, report the number of samples and the upper and lower bounds on the 95 percent confidence interval for each make, model, and group of conditions.	
TT	98.460(c)(2)(xiii)	(xiii) Other waste material that has a DOC value of 0.3 weight percent (on a wet basis) or less. DOC value must be determined using a 60-day anaerobic biodegradation test procedure identified in § 98.464(b)(4)(i)(A) .	(xiii) Other waste material that has a DOC value of 0.3 weight percent (on a wet basis) or less. DOC value must be determined using a 60-day anaerobic biodegradation test procedure identified in § 98.464(b)(4)(i) .	Corrects cross-reference to 98.464(b)(4)(i) to indicate that all of the requirements in subparagraph (A) through (E) are applicable.
TT	98.463(a)(1)	DOC_F= Fraction of DOC dissimilated (fraction); use the default value of 0.5.	DOC_F= Fraction of DOC dissimilated (fraction); use the default value of 0.5. If measured values of DOC are available using the 60-day anaerobic biodegradation test procedure identified in 98.464(b)(4)(i), use a default value of 1.0 .	See preamble text for explanation
TT	98.463(a)(1) Eq. TT-1	F_x = Fraction by volume of CH_4 in landfill gas (fraction, dry basis, corrected to 0% oxygen). If you have a gas collection system, use the annual average CH_4 concentration from measurement data for the current reporting year; otherwise, use the default value of 0.5.	F = Fraction by volume of CH_4 in landfill gas (fraction, dry basis, corrected to 0% oxygen). If you have a gas collection system, use the annual average CH_4 concentration from measurement data for the current reporting year; otherwise, use the default value of 0.5.	Corrects an equation term. This term corresponds to a factor for the current reporting year, and should not have a subscript indicating that it is a variable that changes with each disposal year.
TT	98.463(a)(2)(ii)(C) Eq. TT-4b	$\sum_{n-1}^{NYrData} W_{meas,n}$	$\sum_{n=1}^{NYrData} W_{meas,n}$	Corrects a typographical error in Equation TT-4b. The summation should start with "n=1" rather than "n-1"
TT	98.463(b)(1) Eq. TT-6	OX = Oxidation fraction. Use the default value of 0.1 (10 percent).	OX = Oxidation fraction from Table HH-4 of subpart HH of this part.	See preamble text for explanation
TT	98.464(b)	(b) For each waste stream placed in the landfill during the reporting year for which you choose to determine volatile solids concentration for the purposes of § 98.460(c)(2)(xii) or choose to determine a landfill-specific DOC_X for use in Equation	(b) For each waste stream placed in the landfill during the reporting year for which you choose to determine volatile solids concentration and/or a waste stream-specific DOC_X, you must collect and test a representative sample of that waste stream using the methods specified in paragraphs (b)(1) through (b)(4)	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		TT-1 of this subpart or for the purposes of § 98.460(c)(2)(xiii) of this subpart, you must collect and test a representative sample of that waste stream using the methods specified in paragraphs (b)(1) through (b)(4) of this section.	of this section, as applicable.	
TT	98.464(b)(4)(i)(E) Eq. TT-7	$DOC_X = \left(\frac{1}{DOC_F}\right)\left(\frac{MCD_{sample,x}}{M_{sample,x}}\right) \Big/ \left(\frac{MCD_{control}}{MC_{control}}\right)$ Where: DOC_X= Degradable organic content of the wa X (weight fraction, wet basis) DOC_F= Fraction of DOC dissimilated (fractio value of 0.5. MCDsample,x= Mass of carbon degraded in t sample in Year X as determined in paragraph section [milligrams (mg)]. $M_{sample,x}$= Mass of waste stream sample used i degradation test in Year X (mg, wet basis). $MCD_{control}$= Mass of carbon degraded in the c determined in paragraph (b)(4)(i)(B) of this se $MC_{control}$= Mass of carbon added to the contro substrate material in the anaerobic degradatio	$Doc_X = \frac{MCD_{sample,x}}{M_{sample,x}}$ Where: DOC_X= Degradable organic content of the waste stream in Year X (weight fraction, wet basis) $MCD_{sample,x}$= Mass of carbon degraded in the waste stream sample in Year X as determined in paragraph (b)(4)(i)(C) of this section [milligrams (mg)]. $M_{sample,x}$= Mass of waste stream sample used in the anaerobic degradation test in Year X (mg, wet basis).	See preamble text for explanation
TT	98.464(c)	(c) For each waste stream for which you choose to determine volatile solids concentration for the purposes of paragraph § 98.460(c)(2)(xii), and that was historically managed in the landfill but was not received during the first reporting year, you must determine volatile solids concentration of the waste stream as initially placed in the landfill using the methods specified in paragraph (c)(1) or (c)(2) of this section, as applicable.	(c) For each waste stream that was historically managed in the landfill but was not received during the first reporting year for which you choose to determine volatile solids concentration and/or a waste stream-specific DOC_X, you must determine volatile solids concentration or DOC_X of the waste stream as initially placed in the landfill using the methods specified in paragraph (c)(1) or (c)(2) of this section, as applicable.	See preamble text for explanation
TT	98.464(c)(1)	(1) If you can identify a similar waste stream to the waste stream that was historically managed in the landfill, you must determine the volatile solids concentration of the similar waste stream using the procedures in paragraphs (b)(1) through (b)(3) of this section.	(1) If you can identify a similar waste stream to the waste stream that was historically managed in the landfill, you must determine the volatile solids concentration or DOC_X of the similar waste stream using the applicable procedures in paragraphs (b)(1) through (b)(4) of this section.	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
TT	98.464(c)(2)	(2) If you cannot identify a similar waste stream to the waste stream that was historically managed in the landfill, you may determine the volatile solids concentration of the historically managed waste stream using process knowledge. You must document the basis for volatile solids concentration as determined through process knowledge.	(2) If you cannot identify a similar waste stream to the waste stream that was historically managed in the landfill, you may determine the volatile solids concentration or DOC_X of the historically managed waste stream using process knowledge. You must document the basis for the volatile solids concentration or DOC_X value as determined through process knowledge.	See preamble text for explanation
TT	98.466(b)(1)	(1) The number of waste steams (including “Other Industrial Solid Waste (not otherwise listed)”) for which Equation TT-1 of this subpart is used to calculate modeled CH_4 generation.	(1) The number of waste steams (including “Other Industrial Solid Waste (not otherwise listed)” and “Inerts ”) for which Equation TT–1 of this subpart is used to calculate modeled CH_4 generation.	See preamble text for explanation
TT	98.466(b)(5)	(None)	(5) For each waste stream, the decay rate (k) value used in the calculations.	See preamble text for explanation
TT	98.466(c)	(c) For each waste stream identified in paragraph (b) of this section, report the following information: (1) The decay rate (k) value used in the calculations. (2) The method(s) for estimating historical waste disposal quantities and the range of years for which each method applies. (3) If Equation TT–2 of this subpart is used, provide: (i) The total number of years (N) for which disposal and production data are both available. (ii) The year, the waste disposal quantity and production quantity for each year used in Equation TT–2 of this subpart to calculate the average waste disposal factor (WDF). (iii) The average waste disposal factor (WDF) calculated for the waste stream.	(c) Report the following historical waste information: (1) [Reserved] (2) For each waste stream identified in paragraph (b) of this section, the method(s) for estimating historical waste disposal quantities and the range of years for which each method applies. (3) For each waste stream identified in paragraph (b) of this section for which Equation TT-2 of this subpart is used, provide: (i) The total number of years (N) for which disposal and production data are both available. (ii) The year, the waste disposal quantity and production quantity for each year used in Equation TT–2 of this subpart to calculate the average waste disposal factor (WDF). (iii) The average waste disposal factor (WDF) calculated for the waste stream.	See preamble text for explanation
TT	98.466(c)(4)	(4) If Equation TT-4 of this subpart is used, provide: (i) The value of landfill capacity (LFC). (ii) YrData. (iii) YrOpen.	(4) If Equation TT–4a of this subpart is used, provide: (i) The value of landfill capacity (LFC). (ii) YrData. (iii) YrOpen.	See preamble text for explanation
TT	98.466(c)(5)	(None)	(5) If Equation TT-4b of this subpart is used, provide: (i) WIP (i.e., the quantity of waste in-place at the start of the reporting year from design drawings or	See preamble text for explanation

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
			engineering estimates (metric tons) or, for closed landfills for which waste in-place quantities are not available, the landfill's design capacity); (ii) The cumulative quantity of waste placed in the landfill for the years for which disposal quantities are available from company record or from Equation TT-3 of this part; (iii) YrLast; (iv) YrOpen; and (v) NYrData.	
TT	98.466(d)(3)	(3) The degradable organic carbon (DOC_X) value (mass fraction) for the specified year and an indication as to whether this was the default value from Table TT-1 to this subpart, a measured value using a 60-day anaerobic biodegradation test as specified in §98.464(b)(4)(i), or a value based on total and volatile solids measurements as specified in §98.464(b)(4)(ii). If DOC_X was determined by a 60-day anaerobic biodegradation test, specify the test method used.	(3) For each waste stream, the degradable organic carbon (DOC_X) value (mass fraction) for the specified year and an indication as to whether this was the default value from Table TT–1 to this subpart, a measured value using a 60-day anaerobic biodegradation test as specified in §98.464(b)(4)(i), or a value based on total and volatile solids measurements as specified in §98.464(b)(4)(ii). If DOC_X was determined by a 60-day anaerobic biodegradation test, specify the test method used.	See preamble text for explanation
TT	98.466(h)	(h) For landfills with gas collection systems, in addition to the reporting requirements in paragraphs (a) through (f) of this section, you must report according to §98.346(i).	(h) For landfills with gas collection systems, in addition to the reporting requirements in paragraphs (a) through (f) of this section, provide: (1) The annual methane generation, adjusted for oxidation, calculated using Equation TT-6 of this subpart, reported in metric tons CH_4; (2) The oxidation factor used in Equation TT-6 of this subpart; and (3) All information required under 40 CFR 98.346(i)(1) through (i)(7) and 40 CFR 98.346(i)(9) through (i)(12).	See preamble text for explanation
TT	98.467	In addition to the information required by §98.3(g), you must retain the calibration records for all monitoring equipment, including the method or manufacturer's specification used for calibration, and all measurement data used for the purposes of paragraph § 98.460(c)(2)(xii) or used to determine landfill-specific DOC_X values.	In addition to the information required by §98.3(g), you must retain the calibration records for all monitoring equipment, including the method or manufacturer's specification used for calibration, and all measurement data used for the purposes of paragraphs §98.460(c)(2)(xii) or (c)(2)(xiii) or used to determine waste stream-specific DOC_X values for use in Equation TT-1 of this subpart.	See preamble text for explanation
TT	Table TT-1	Table TT-1	See Appendix A for changes to Table TT-1	See preamble text for explanation
UU	98.473(a)(2)	D= Density of CO_2 at standard conditions	D= Density of CO_2 at standard conditions (metric	Harmonizing change to conform with the

Subpart	Requirement	Current Rule Text	Proposed Rule Text	Rationale for Change
		(metric tons per standard cubic meter): 0.0018704	tons per standard cubic meter): 0.0018682	density values used in 98.473(b)(2).
UU	98.473(b)(2)	$S_{r,p}$= Quarterly mass of contents in containers r that is redelivered to another facility without being injected into your well in quarter p (standard cubic meters)	$S_{r,p}$= Quarterly volume of contents in containers r that is redelivered to another facility without being injected into your well in quarter p (standard cubic meters)	Corrects equation term for consistency of units.
UU	98.476(b)(5)	(5) The standard or method used to calculate each value in paragraphs (b)(1) and (b)(2) of this section.	(5) The standard or method used to calculate each value in paragraphs (b)(1), (b)(2), and (b)(3) of this section.	See preamble text for explanation
UU	98.476(e)	(None)	(e) Report the following: (1) Whether the facility received a Research and Development project exemption from reporting under 40 CFR Part 98 subpart RR for this reporting year. If you received an exemption, report the start and end dates of the exemption approved by EPA; (2) Whether the facility includes a well or group of wells where a CO_2 stream was injected into subsurface geologic formations to enhance the recovery of oil during this reporting year; (3) Whether the facility includes a well or group of wells where a CO_2 stream was injected into subsurface geologic formations to enhance the recovery of natural gas during this reporting year; (4) Whether the facility includes a well or group of wells where a CO_2 stream was injected into subsurface geologic formations for acid gas disposal during this reporting year; (5) Whether the facility includes a well or group of wells where a CO_2 stream was injected for a purpose other than those listed in (e)(1)through (4) of this section. If you injected CO_2 for another purpose, report the purpose of the injection.	See preamble text for explanation

Attachment A

1. Proposed Amendments to Table A–1 to Subpart A of Part 98—Global Warming Potentials

[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Carbon dioxide	124–38–9	CO2	1
Methane	74–82–8	CH4	25[a]
Nitrous oxide	10024–97–2	N2O	298[a]
HFC–23	75–46–7	CHF3	14,800[a]
HFC–32	75–10–5	CH2F2	675[a]
HFC–41	593–53–3	CH3F	92[a]
HFC–125	354–33–6	C2HF5	3,500[a]
HFC–134	359–35–3	C2H2F4	1,100[a]
HFC–134a	811–97–2	CH2FCF3	1,430[a]
HFC–143	430–66–0	C2H3F3	353[a]
HFC–143a	420–46–2	C2H3F3	4,470[a]
HFC–152	624–72–6	CH2FCH2F	53
HFC–152a	75–37–6	CH3CHF2	124[a]
HFC–161	353–36–6	CH3CH2F	12
HFC–227ea	431–89–0	C3HF7	3,220[a]
HFC–236cb	677–56–5	CH2FCF2CF3	1,340
HFC–236ea	431–63–0	CHF2CHFCF3	1,370
HFC–236fa	690–39–1	C3H2F6	9,810a
HFC–245ca	679–86–7	C3H3F5	693a
HFC–245fa	460–73–1	CHF2CH2CF3	1,030
HFC–365mfc	406–58–6	CH3CF2CH2CF3	794
HFC–43–10mee	138495–42–8	CF3CFHCFHCF2CF3	1,640[a]
Sulfur hexafluoride	2551–62–4	SF6	22,800[a]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Trifluoromethyl sulphur pentafluoride	373–80–8	SF5CF3	17,700
Nitrogen trifluoride	7783–54–2	NF3	17,200
PFC–14 (Perfluoromethane)	75–73–0	CF4	7,390[a]
PFC–116 (Perfluoroethane)	76–16–4	C2F6	12,200[a]
PFC–218 (Perfluoropropane)	76–19–7	C3F8	8,830[a]
Perfluorocyclopropane	931–91–9	C-C3F6	17,340
PFC–3–1–10 (Perfluorobutane)	355–25–9	C4F10	8,860[a]
Perfluorocyclobutane	115–25–3	C-C4F8	10,300[a]
PFC–4–1–12 (Perfluoropentane)	678–26–2	C5F12	9,160[a]
PFC–5–1–14 (Perfluorohexane)	355–42–0	C6F14	9,300[a]
PFC–9–1–18	306–94–5	C10F18	7,500
HCFE–235da2 (Isoflurane)	26675–46–7	CHF2OCHClCF3	350
HFE–43–10pccc (H–Galden 1040x)	E1730133	CHF2OCF2OC2F4OCHF2	1,870
HFE–125	3822–68–2	CHF2OCF3	14,900
HFE–134	1691–17–4	CHF2OCHF2	6,320
HFE–143a	421–14–7	CH3OCF3	756
HFE–227ea	2356–62–9	CF3CHFOCF3	1,540
HFE–236ca12 (HG–10)	78522–47–1	CHF2OCF2OCHF2	2,800
HFE–236ea2 (Desflurane)	57041–67–5	CHF2OCHFCF3	989
HFE–236fa	20193–67–3	CF3CH2OCF3	487
HFE–245cb2	22410–44–2	CH3OCF2CF3	708
HFE–245fa1	84011–15–4	CHF2CH2OCF3	286
HFE–245fa2	1885–48–9	CHF2OCH2CF3	659
HFE–254cb2	425–88–7	CH3OCF2CHF2	359
HFE–263fb2	460–43–5	CF3CH2OCH3	11
HFE-329mcc2	67490-36-2	CF3CF2OCF2CHF2	919

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
HFE–338mcf2	156053–88–2	CF3CF2OCH2CF3	552
HFE–338pcc13 (HG–01)	188690–78–0	CHF2OCF2CF2OCHF2	1,500
HFE–347mcc3	28523–86–6	CH3OCF2CF2CF3	575
HFE–347mcf2	E1730135	CF3CF2OCH2CHF2	374
HFE–347pcf2	406–78–0	CHF2CF2OCH2CF3	580
HFE–356mec3	382–34–3	CH3OCF2CHFCF3	101
HFE–356pcc3	160620–20–2	CH3OCF2CF2CHF2	110
HFE–356pcf2	E1730137	CHF2CH2OCF2CHF2	265
HFE–356pcf3	35042–99–0	CHF2OCH2CF2CHF2	502
HFE–365mcf3	378–16–5	CF3CF2CH2OCH3	11
HFE–374pc2	512–51–6	CH3CH2OCF2CHF2	557
HFE–449sl (HFE–7100) Chemical blend	163702–07–6 163702–08–7	C4F9OCH3 (CF3)2CFCF2OCH3	297
HFE–569sf2 (HFE–7200) Chemical blend	163702–05–4 163702–06–5	C4F9OC2H5 (CF3)2CFCF2OC2H5	59
Sevoflurane	28523–86–6	CH2FOCH(CF3)2	345
HFE–356mm1	13171–18–1	(CF3)2CHOCH3	27
HFE–338mmz1	26103–08–2	CHF2OCH(CF3)2	380
(Octafluorotetramethylene)hydroxymethyl group	NA	X-(CF2)4CH(OH)-X	73
HFE–347mmy1	22052–84–2	CH3OCF(CF3)2	343
Bis(trifluoromethyl)-methanol	920–66–1	(CF3)2CHOH	195
2,2,3,3,3-pentafluoropropanol	422–05–9	CF3CF2CH2OH	42
PFPMIE	NA	CF3OCF(CF3)CF2OCF2OCF3	10,300
HFC-1234ze [b]	29118-24-9	C3H2F4	6
hexafluoropropylene (HFP) [b]	116-15-4	C3F6	0.25
perfluoromethyl vinyl ether (PMVE)[b]	1187-93-5	CF(CF3)OCF3	3

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
tetrafluoroethylene (TFE)[b]	116-14-3	C2F4	0.02
trifluoro propene (TFP)[b]	677-21-4	C3H3F3	3
vinyl fluoride (VF)[b]	75-02-5	C2H3F	0.7
vinylidiene fluoride (VF2)[b]	75-38-7	C2H2F2	0.9
carbonyl fluoride [b]	353-50-4	COF2	2
perfluoropropyl vinyl ether[b]	1623-05-8	C5F10O	3
perfluoroethyl vinyl ether[b]	10493-43-3	C4F8O	3
HFC-1234yf [b]	754-12-1	C3H2F4	4
perfluorethyl iodide (2-I)[b]	354-64-3	C2F5I	3
perfluorbutyl iodide (PFBI, 42-I) [b]	423-39-2	C4F9I	3
perfluorhexyl iodide (6-I)[b]	355-43-1	CF3CF2CF2CF2CF2 CF2IC6F13I	2
perfluoroctyl iodide (8-I)[b]	507-63-1	C8F17I	2
1,1,1,2,2-pentafluoro-4-iodo butane (22-I) [b]	40723-80-6	C4H4F5I	2
1,1,1,2,2,3,3,4,4-nonafluoro-6-iodo hexane (42-I) [b]	2043-55-2	C6H4F9I	2
perfluorobutyl ethene (42-U)[b]	19430-93-4	C6H3F9	2
perfluorohexyl ethene (62-U)[b]	25291-17-2	C8H3F13	1
perfluorooctyl ethene (82-U)[b]	21652-58-4	C10H3F17	1
1H,1H, 2H,2H-perfluorohexan-1-ol (42-AL)[b]	2043-47-2	C6H5F9O	5
FK-5-1-12 Perfluoroketone; FK-5-1-12myy2; n-Perfluorooctane; Octanedecafluorooctane[b]	756-13-8	CF3CF2C(O)CF (CF3)2	1.8
C7 Fluoroketone, Novec 774/ FK-6-1-12	813-44-5 and 813-45-6	C7F14O Chemical Blend	1
trans-1-chloro-3,3,3-trifluoroprop-1-ene [b]	2730-43-0	C3H2ClF3	7
Hexadecofluoroheptane [b] (PFC-6-1-12)	335-57-9	C7F16	7930

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
octadecafluorooctane [b] (PFC-7-1-18)	307-34-6	C8F18	8340

a The GWP for this compound is different than the GWP in the version of Table A-1 to subpart A of part 98 published on October 30, 2009.

b The GWP for this compound was not provided in the version of Table A-1 to subpart A of part 98 published on October 30, 2009.

NA – Not available

3. Proposed Amendments to Table A-6 to 40 CFR part 98, subpart A:

Table A–6 to Subpart A of Part 98—Data Elements That Are Inputs to Emission Equations and for Which the Reporting Deadline Is March 31, 2013

Subpart	Rule citation (40 CFR part 98)	Specific data elements for which reporting date is March 31, 2013 (“All” means all data elements in the cited paragraph are not required to be reported until March 31, 2013)
C	98.36(d)(1)(iv)	All.
C	98.36(d)(2)(ii)(G)	All.
C	98.36(d)(2)(iii)(G)	All.
C	98.36(e)(2)(iv)(G)	All.
C	98.36(e)(2)(viii)(A)	All.
C	98.36(e)(2)(viii)(B)	All.
C	98.36(e)(2)(viii)(C)	All.
C	98.36(e)(2)(x)(A)	All.
C	98.36(e)(2)(xi)	All.
DD	98.306(a)(2)	All.
DD	98.306(a)(3)	All.
DD	98.306(d)	All.
DD	98.306(e)	All.
DD	98.306(f)	All.

Subpart	Rule citation (40 CFR part 98)	Specific data elements for which reporting date is March 31, 2013 (“All” means all data elements in the cited paragraph are not required to be reported until March 31, 2013)
DD	98.306(g)	All.
DD	98.306(h)	All.
DD	98.306(i)	All.
DD	98.306(j)	All.
DD	98.306(k)	All.
DD	98.306(l)	All.
FF	98.326(a)	All.
FF	98.326(b)	All.
FF	98.326(c)	All.
FF	98.326(f)	Only quarterly volumetric flow rate.
FF	98.326(g)	Only quarterly CH_4 concentration.
FF	98.326(h)	Only weekly volumetric flow used to calculate CH_4 liberated from degasification systems.
FF	98.326(j)	All.
FF	98.326(k)	All.
FF	98.326(o)	All.
FF	98.326(p)	Only assumed destruction efficiency for the primary destruction device and assumed destruction efficiency for the backup destruction device.
HH	98.346(a)	Only year in which landfill first accepted waste, last year the landfill accepted waste (if used as an input in Equation HH–3), capacity of the landfill (if used as an input in Equation HH–3), and waste disposal quantity for each year of landfilling.
HH	98.346(b)	Only quantity of waste determined using the methods in §98.343(a)(3)(i), quantity of waste

Subpart	Rule citation (40 CFR part 98)	Specific data elements for which reporting date is March 31, 2013 ("All" means all data elements in the cited paragraph are not required to be reported until March 31, 2013)
		determined using the methods in §98.343(a)(3)(ii), population served by the landfill for each year, and the value of landfill capacity (LFC) used in the calculation.
HH	98.346(c)	All.
HH	98.346(d)(1)	Only degradable organic carbon (DOC) value, and fraction of DOC dissimilated (DOCF) values.
HH	98.346(d)(2)	All.
HH	98.346(e)	Only fraction of CH_4 in landfill gas and methane correction factor (MCF) values.
HH	98.346(f)	Only surface area associated with each cover type.
HH	98.346(g)	All.
HH	98.346(i)(5)	Only annual operating hours for the primary destruction device, annual operating hours for the backup destruction device, destruction efficiency for the primary destruction device, and destruction efficiency for the backup destruction device.
HH	98.346(i)(6)	All.
HH	98.346(i)(7)	Only surface area specified in Table HH–3, estimated gas collection system efficiency, and annual operating hours of the gas collection system.
HH	98.346(i)(9)	Only CH_4 generation value.
II	98.356(b)(1)	All.
II	98.356(b)(2)	All.
II	98.356(b)(3)	All.

Subpart	Rule citation (40 CFR part 98)	Specific data elements for which reporting date is March 31, 2013 (“All” means all data elements in the cited paragraph are not required to be reported until March 31, 2013)
II	98.356(b)(4)	All.
II	98.356(b)(5)	All.
II	98.356(d)(1)	All.
II	98.356(d)(7)	All.
II	98.356(d)(8)	Only annual operating hours for the primary destruction device, annual operating hours for the backup destruction device, destruction efficiency of the primary destruction device, and destruction efficiency of the backup destruction device.
SS	98.456(a)	All.
SS	98.456(b)	All.
SS	98.456(c)	All.
SS	98.456(d)	All.
SS	98.456(e)	All.
SS	98.456(f)	All.
SS	98.456(g)	All.
SS	98.456(h)	All.
SS	98.456(i)	All.
SS	98.456(j)	All.
SS	98.456(m)	All.
SS	98.456(n)	All.
SS	98.456(o)	All.
SS	98.456(q)	All.
SS	98.456(r)	All.
SS	98.456(s)	All.
SS	98.456(t)	Only for any missing data the substitute parameters used to

Subpart	Rule citation (40 CFR part 98)	Specific data elements for which reporting date is March 31, 2013 (“All” means all data elements in the cited paragraph are not required to be reported until March 31, 2013)
		estimate emissions in their absence.
TT	98.466(a)(2)	All.
TT	98.466(a)(3)	Only last year the landfill accepted waste (for closed landfills using Equation TT–4).
TT	98.466(a)(4)	Only capacity of the landfill in metric tons (for closed landfills using Equation TT–4).
TT	98.466(c)(1)	All.
TT	98.466(c)(4)(i)	All.
TT	98.466(c)(4)(ii)	All.
TT	98.466(c)(4)(iii)	All.
TT	98.466(d)(1)	All.
TT	98.466(d)(2)	Only degradable organic carbon (DOC_X) value used in calculations.
TT	98.466(d)(3)	Only fraction of CH_4 in landfill gas.
TT	98.466(e)(2)	Only surface area (in square meters) at the start of the reporting year for the landfill sections that contain waste and that are associated with the selected cover type (for facilities using a landfill gas collection system).
TT	98.466(f)	All.

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4. Proposed Amendments to Table C-1 to 40 CFR part 98, subpart C:

Table C–1 to Subpart C—Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel

Fuel type	Default high heat value	Default CO_2 emission factor
Coal and coke	mmBtu/short ton	kg CO_2/mmBtu
Anthracite	25.09	103.69
Waste Anthracite (Culm)	See footnote 1	103.69
Bituminous	24.93	93.28
Waste Bituminous (Gob)	See footnote 1	93.28
Subbituminous	17.25	97.17
Lignite	14.21	97.72
Coal Coke	24.80	113.67
Mixed (Commercial sector)	21.39	94.27
Mixed (Industrial coking)	26.28	93.90
Mixed (Industrial sector)	22.35	94.67
Mixed (Electric Power sector)	19.73	95.52
Natural gas	mmBtu/scf	kg CO_2/mmBtu
(Weighted U.S. Average)	1.026×10^{-3}	53.06
Petroleum products	mmBtu/gallon	kg CO_2/mmBtu
Distillate Fuel Oil No. 1	0.139	73.25
Distillate Fuel Oil No. 2	0.138	73.96
Distillate Fuel Oil No. 4	0.146	75.04
Residual Fuel Oil No. 5	0.140	72.93
Residual Fuel Oil No. 6	0.150	75.10
Used Oil	0.138	74.00
Kerosene	0.135	75.20
Liquefied petroleum gases (LPG)[2]	0.092	61.71
Propane[2]	0.091	62.87
Propylene[2]	0.091	67.77
Ethane[2]	0.068	59.60

Fuel type	**Default high heat value**	**Default** CO_2 **emission factor**
Ethanol	0.084	68.44
Ethylene[3]	0.058	65.96
Isobutane[2]	0.099	64.94
Isobutylene[2]	0.103	68.86
Butane[2]	0.103	64.77
Butylene[2]	0.105	68.72
Naphtha (<401 deg F)	0.125	68.02
Natural Gasoline	0.110	66.88
Other Oil (>401 deg F)	0.139	76.22
Pentanes Plus	0.110	70.02
Petrochemical Feedstocks	0.125	71.02
Petroleum Coke	0.143	102.41
Special Naphtha	0.125	72.34
Unfinished Oils	0.139	74.54
Heavy Gas Oils	0.148	74.92
Lubricants	0.144	74.27
Motor Gasoline	0.125	70.22
Aviation Gasoline	0.120	69.25
Kerosene-Type Jet Fuel	0.135	72.22
Asphalt and Road Oil	0.158	75.36
Crude Oil	0.138	74.54
Other fuels-solid	mmBtu/short ton	kg CO_2/mmBtu
Municipal Solid Waste	9.95[4]	90.7
Tires	28.00	85.97
Plastics	38.00	75.00
Petroleum Coke	30.00	102.41
Other fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Blast Furnace Gas	0.092×10^{-3}	274.32

Fuel type	**Default high heat value**	**Default** CO_2 **emission factor**
Coke Oven Gas	0.599×10^{-3}	46.85
Propane Gas	2.516×10^{-3}	61.46
Fuel Gas[5]	1.388×10^{-3}	59.00
Biomass fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Wood and Wood Residuals(dry basis)[6]	17.48	93.80
Agricultural Byproducts	8.25	118.17
Peat	8.00	111.84
Solid Byproducts	10.39	105.51
Biomass fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Landfill Gas	0.485×10^{-3}	52.07
Other Biomass Gases	0.655 x 10^{-3}	52.07
Biomass Fuels—Liquid	mmBtu/gallon	kg CO_2/mmBtu
Ethanol	0.084	68.44
Biodiesel (100%)	0.128	73.84
Rendered Animal Fat	0.125	71.06
Vegetable Oil	0.120	81.55

[1] Provisions of the rule referencing “default HHVs from Table C-1” do not apply to culm and gob. The HHV for culm and gob must be determined according to the procedures specified in the Tier 2 Calculation Methodology.

[2] The HHV for components of LPG determined at 60°F and saturation pressure with the exception of ethylene.

[3] Ethylene HHV determined at 41°F (5°C) and saturation pressure.

[4] Use of this default HHV is allowed only for: (a) Units that combust MSW, do not generate steam, and are allowed to use Tier 1; (b) units that derive no more than 10 percent of their annual heat input from MSW and/or tires; and (c) small batch incinerators that combust no more than 1,000 tons of MSW per year.

[5] Reporters subject to subpart X of this part that are complying with §98.243(d) or subpart Y of this part may only use the default HHV and the default CO_2 emission factor for fuel gas combustion under the conditions prescribed in §98.243(d)(2)(i) and (d)(2)(ii) and §98.252(a)(1) and (a)(2), respectively. Otherwise, reporters subject

to subpart X or subpart Y shall use either Tier 3 (Equation C–5) or Tier 4.

[6] Use the following formula to calculate a wet basis HHV for use in Equation C-1: $HHV_w=((100-M)/100)*HHV_d$ where HHV_w = wet basis HHV, M = moisture content(percent) and HHV_d=dry basis HHV from Table C-1.

5. Proposed Amendments to Table C-2 to 40 CFR part 98, subpart C:

Table C–2 to Subpart C—Default CH_4 and N_2O Emission Factors for Various Types of Fuel

Fuel type	Default CH_4 emission factor (kg CH_4/mmBtu)	Default N_2O emission factor (kg N_2O/mmBtu)
Coal and Coke (All fuel types in Table C–1)[1]	1.1×10^{-02}	1.6×10^{-03}
Anthracite for FBCs only[2]	1.1×10^{-02}	1.6×10^{-01}
Waste Anthracite (Culm) for FBCs only[2]	1.1×10^{-02}	4.0×10^{-01}
Bituminous for FBCs only[2]	1.1×10^{-02}	1.3×10^{-01}
Waste Bituminous (Gob) for FBCs only[2]	1.1×10^{-02}	2.9×10^{-01}
Subbituminous for FBCs only[2]	1.1×10^{-02}	6.5×10^{-02}
Lignite for FBCs only[2]	1.1×10^{-02}	1.1×10^{-01}
Natural Gas	1.0×10^{-03}	1.0×10^{-04}
Petroleum (All fuel types in Table C–1)	3.0×10^{-03}	6.0×10^{-04}
Fuel Gas	3.0×10^{-03}	6.0×10^{-04}
Municipal Solid Waste	3.2×10^{-02}	4.2×10^{-03}
Tires	3.2×10^{-02}	4.2×10^{-03}
Blast Furnace Gas	2.2×10^{-05}	1.0×10^{-04}
Coke Oven Gas	4.8×10^{-04}	1.0×10^{-04}
Biomass Fuels—Solid (All fuel types in Table C–1, except wood and wood residuals)	3.2×10^{-02}	4.2×10^{-03}
Wood and wood residuals	7.2×10^{-3}	3.6×10^{-3}
Biomass Fuels-Gaseous (All fuel types in Table C-1)	3.2×10^{-03}	6.3×10^{-04}
Biomass Fuels—Liquid (All fuel types in Table C–1)	1.1×10^{-03}	1.1×10^{-04}

[1] Use of the default emission factors for the coal and coke category may not be used to estimate emissions from combusting anthracite, waste anthracite, bituminous, waste bituminous, subbituminous, or lignite coal burned in an FBC.

[2] Use of these default emission factors is required for FBCs burning the specified coal type.

Note: Those employing this table are assumed to fall under the IPCC definitions of the “Energy Industry” or “Manufacturing Industries and Construction”. In all fuels except for coal the values for these two categories are identical. For coal combustion, those who fall within the IPCC “Energy Industry” category may employ a value of 1g of CH&ihel4;/mmBtu.

6. Proposed Amendments to Table AA-1 to 40 CFR part 98, subpart AA:

Table AA–1 to Subpart AA of Part 98—Kraft Pulping Liquor Emissions Factors for Biomass-Based CO_2, CH_4, and N_2O

Wood furnish	Biomass-based emissions factors (kg/mmBtu HHV)		
	CO_2 [a]	CH_4	N_2O
North American Softwood	94.4	0.0019	0.00042
North American Hardwood	93.7	0.0019	0.00042
Bagasse	95.5	0.0019	0.00042
Bamboo	93.7	0.0019	0.00042
Straw	95.1	0.0019	0.00042

[a] Includes emissions from both the recovery furnace and pulp mill lime kiln.

7. Proposed Amendments to Table AA-2 to 40 CFR part 98, subpart AA:

Table AA–2 to Subpart AA of Part 98—Kraft Lime Kiln and Calciner Emissions Factors for CH_4 and N_2O

Fuel	Fossil fuel-based emissions factors (kg/mmBtu HHV)			
	Kraft lime kilns		Kraft calciners	
	CH_4	N_2O	CH_4	N_2O
Residual Oil (any type)	0.0027	0	0.0027	0.0003
Distillate Oil (any type)	0.0027	0	0.0027	0.0004
Natural Gas	0.0027	0	0.0027	0.0001
Biogas	0.0027	0	0.0027	0.0001
Petroleum coke	0.0027	0	NA[a]	NA[a]
Other Fuels	See Table C-2	0	See Table C-2	See Table C-2

[a] Emission factors for kraft calciners are not available.

8. Proposed Amendments to Table HH-1 to 40 CFR part 98, subpart HH:

Table HH–1 to Subpart HH of Part 98—Emissions Factors, Oxidation Factors and Methods

Factor	Default value	Units
DOC and k values—Bulk waste option		
DOC (bulk waste)	0.20	Weight fraction, wet basis.
k (precipitation plus recirculated leachate[a]<20 inches/year)	0.02	yr−1
k (precipitation plus recirculated leachate[a]20–40 inches/year)	0.038	yr−1
k (precipitation plus recirculated leachate[a]>40 inches/year)	0.057	yr−1
DOC and k values—Modified bulk MSW option		
DOC (bulk MSW, excluding inerts and C&D waste)	0.31	Weight fraction, wet basis.
DOC (inerts, e.g., glass, plastics, metal, concrete)	0.00	Weight fraction, wet basis.
DOC (C&D waste)	0.08	Weight fraction, wet basis.
k (bulk MSW, excluding inerts and C&D waste)	0.02 to 0.057[b]	yr−1
k (inerts, e.g., glass, plastics, metal, concrete)	0.00	yr−1
k (C&D waste)	0.02 to 0.04[b]	yr−1
DOC and k values—Waste composition option		
DOC (food waste)	0.15	Weight fraction, wet basis.
DOC (garden)	0.2	Weight fraction,

Factor	Default value	Units
		wet basis.
DOC (paper)	0.4	Weight fraction, wet basis.
DOC (wood and straw)	0.43	Weight fraction, wet basis.
DOC (textiles)	0.24	Weight fraction, wet basis.
DOC (diapers)	0.24	Weight fraction, wet basis.
DOC (sewage sludge)	0.05	Weight fraction, wet basis.
DOC (inerts, e.g., glass, plastics, metal, cement)	0.00	Weight fraction, wet basis.
k (food waste)	0.06 to 0.185[c]	yr−1
k (garden)	0.05 to 0.10[c]	yr−1
k (paper)	0.04 to 0.06[c]	yr−1
k (wood and straw)	0.02 to 0.03[c]	yr−1
k (textiles)	0.04 to 0.06[c]	yr−1
k (diapers)	0.05 to 0.10[c]	yr−1
k (sewage sludge)	0.06 to 0.185[c]	yr−1
k (inerts e.g., glass, plastics, metal, concrete)	0.00	yr−1
Other parameters—All MSW landfills		
MCF	1.	
DOC_F	0.5	
F	0.5	
OX	See Table HH-4 of this subpart	

Factor	**Default value**	**Units**
DE	0.99	

[a] Recirculated leachate (in inches/year) is the total volume of leachate recirculated from company records or engineering estimates divided by the area of the portion of the landfill containing waste with appropriate unit conversions. Alternatively, landfills that use leachate recirculation can elect to use the k value of 0.057 rather than calculating the recirculated leachate rate.

[b] Use the lesser value when precipitation plus recirculated leachate is less than 20 inches/year. Use the greater value when precipitation plus recirculated leachate is greater than 40 inches/year. Use the average of the range of values when precipitation plus recirculated leachate is 20 to 40 inches/year (inclusive). Alternatively, landfills that use leachate recirculation can elect to use the greater value rather than calculating the recirculated leachate rate.

[c] Use the lesser value when the potential evapotranspiration rate exceeds the mean annual precipitation rate plus recirculated leachate. Use the greater value when the potential evapotranspiration rate does not exceed the mean annual precipitation rate plus recirculated leachate. Alternatively, landfills that use leachate recirculation can elect to use the greater value rather than assessing the potential evapotranspiration rate or recirculated leachate rate.

9. Proposed Amendments to Table HH-2 to 40 CFR part 98, subpart HH:

Table HH–2 to Subpart HH of Part 98—U.S. Per Capita Waste Disposal Rates

Year	**Waste per capita** ton/cap/yr
1950	0.63
1951	0.63
1952	0.63
1953	0.63
1954	0.63
1955	0.63
1956	0.63
1957	0.63
1958	0.63
1959	0.63
1960	0.63
1961	0.64
1962	0.64

Year	**Waste per capita** ton/cap/yr
1963	0.65
1964	0.65
1965	0.66
1966	0.66
1967	0.67
1968	0.68
1969	0.68
1970	0.69
1971	0.69
1972	0.70
1973	0.71
1974	0.71
1975	0.72
1976	0.73
1977	0.73
1978	0.74
1979	0.75
1980	0.75
1981	0.76
1982	0.77
1983	0.77
1984	0.78
1985	0.79
1986	0.79
1987	0.80
1988	0.80
1989	0.83
1990	0.82
1991	0.76
1992	0.74
1993	0.76
1994	0.75
1995	0.70
1996	0.68
1997	0.69
1998	0.75
1999	0.75
2000	0.80
2001	0.91
2002	1.02
2003	1.02
2004	1.01
2005	1.060.98
2006	1.060.95
2007	0.95

Year	**Waste per capita** ton/cap/yr
2008	0.95
2009 and all later years	0.95

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10. Proposed Table HH-4 to 40 CFR part 98, subpart HH:

Table HH–4 to Subpart HH of Part 98—Landfill Methane Oxidation Fractions

If your methane flux rate[a] for the reporting year is:	**Use this landfill methane oxidation fraction:**
Less than 10 grams per square meter per day ($g/m^2/d$)	0.35
10 to 70 $g/m^2/d$	0.25
Greater than 70 $g/m^2/d$	0.10

[a] Methane flux rate (in grams per square meter per day; $g/m^2/d$) is the mass flow rate of methane per unit area at the bottom of the surface soil prior to any oxidation and is calculated as follows.

For Equation HH-5 of this subpart, or for Equation TT-6 of subpart TT of this part,

$$\mathrm{MF} = \mathrm{K} \times \mathrm{G}_{\mathrm{CH4}} \big/ \mathrm{SArea}$$

For Equation HH-6 of this subpart,

$$\mathrm{MF} = \mathrm{K} \times \left(\mathrm{G}_{\mathrm{CH4}} - \sum_{n-1}^{N} \mathrm{R}_{\mathrm{n}} \right) \Big/ \mathrm{SArea}$$

For Equations HH-7 of this subpart,

$$\mathrm{MF} = \mathrm{K} \times \left(\frac{1}{\mathrm{CE}} \sum_{n-1}^{N} \left[\frac{\mathrm{R}_{\mathrm{n}}}{\mathrm{f}_{\mathrm{Rec,n}}} \right] \right) \Big/ \mathrm{SArea}$$

For Equation HH-8 of this subpart,

$$\mathrm{MF} = \mathrm{K} \times \left(\frac{1}{\mathrm{CE}} \left\{ \sum_{n-1}^{N} \left[\frac{\mathrm{R}_{\mathrm{n}}}{\mathrm{f}_{\mathrm{Rec,n}}} \right] \right\} - \sum_{n-1}^{N} \mathrm{R}_{\mathrm{n}} \right) \Big/ \mathrm{SArea}$$

Where:

MF = Methane flux rate from the landfill in the reporting year (grams per square meter per day, $g/m^2/d$).

K = unit conversion factor = $10^6/365$ (g/metric ton per days/year) or $10^6/366$ for a leap year.

SArea = The surface area of the landfill containing waste at the beginning of the reporting year (square meters, m^2).

G_{CH4} = Modeled methane generation rate in reporting year from Equation HH–1 of this subpart, or, for application with Equation HH-6 only, the greater of the modeled methane generation rate in reporting year from Equation HH–1 of this subpart and the quantity of recovered CH_4 from Equation HH–4 of this subpart (metric tons CH_4).

CE = Collection efficiency estimated at landfill, taking into account system coverage, operation, and cover system materials from Table HH–3 of this subpart. If area by soil cover type information is not available, use default value of 0.75 (CE4 in table HH–3 of this subpart) for all areas under active influence of the collection system.

N = Number of landfill gas measurement locations (associated with a destruction device or gas sent off-site). If a single monitoring location is used to monitor volumetric flow and CH_4 concentration of the recovered gas sent to one or multiple destruction devices, then N=1.

R_n = Quantity of recovered CH_4 from Equation HH–4 of this subpart for the n^{th} measurement location (metric tons).

$f_{Rec,n}$ = Fraction of hours the recovery system associated with the n^{th} measurement location was operating (annual operating hours/8760 hours per year or annual operating hours/8784 hours per year for a leap year).

11. Proposed Amendments to Table MM-1 to 40 CFR part 98, subpart MM:

Table MM–1 to Subpart MM of Part 98—Default Factors for Petroleum Products and Natural Gas Liquids[12]

Products	Column A: density (metric tons/bbl)	Column B: carbon share (% of mass)	Column C: emission factor (metric tons CO_2/bbl)
Finished Motor Gasoline			
Conventional—Summer			
Regular	0.1181	86.66	0.3753
Midgrade	0.1183	86.63	0.3758
Premium	0.1185	86.61	0.3763
Conventional—Winter			
Regular	0.1155	86.50	0.3663
Midgrade	0.1161	86.55	0.3684
Premium	0.1167	86.59	0.3705
Reformulated—Summer			
Regular	0.1167	86.13	0.3686
Midgrade	0.1165	86.07	0.3677
Premium	0.1164	86.00	0.3670
Reformulated—Winter			
Regular	0.1165	86.05	0.3676
Midgrade	0.1165	86.06	0.3676
Premium	0.1166	86.06	0.3679
Gasoline—Other	0.1185	86.61	0.3763
Blendstocks			
CBOB—Summer			
Regular	0.1181	86.66	0.3753
Midgrade	0.1183	86.63	0.3758
Premium	0.1185	86.61	0.3763
CBOB—Winter			
Regular	0.1155	86.50	0.3663
Midgrade	0.1161	86.55	0.3684
Premium	0.1167	86.59	0.3705

Products	**Column A: density (metric tons/bbl)**	**Column B: carbon share (% of mass)**	**Column C: emission factor (metric tons CO_2/bbl)**
RBOB—Summer			
Regular	0.1167	86.13	0.3686
Midgrade	0.1165	86.07	0.3677
Premium	0.1164	86.00	0.3670
RBOB—Winter			
Regular	0.1165	86.05	0.3676
Midgrade	0.1165	86.06	0.3676
Premium	0.1166	86.06	0.3679
Blendstocks—Other	0.1185	86.61	0.3763
Oxygenates			
Methanol	0.1268	37.48	0.1743
GTBA	0.1257	64.82	0.2988
MTBE	0.1181	68.13	0.2950
ETBE	0.1182	70.53	0.3057
TAME	0.1229	70.53	0.3178
DIPE	0.1156	70.53	0.2990
Distillate Fuel Oil			
Distillate No. 1			
Ultra Low Sulfur	0.1346	86.40	0.4264
Low Sulfur	0.1346	86.40	0.4264
High Sulfur	0.1346	86.40	0.4264
Distillate No. 2			
Ultra Low Sulfur	0.1342	87.30	0.4296
Low Sulfur	0.1342	87.30	0.4296
High Sulfur	0.1342	87.30	0.4296
Distillate Fuel Oil No. 4	0.1452	86.47	0.4604
Residual Fuel Oil No. 5 (Navy Special)	0.1365	85.67	0.4288
Residual Fuel Oil No. 6	0.1528	84.67	0.4744

Products	**Column A: density (metric tons/bbl)**	**Column B: carbon share (% of mass)**	**Column C: emission factor (metric tons CO_2/bbl)**
(a.k.a. Bunker C)			
Kerosene-Type Jet Fuel	0.1294	86.30	0.4095
Kerosene	0.1346	86.40	0.4264
Diesel—Other	0.1452	86.47	0.4604
Petrochemical Feedstocks			
Naphthas (< 401 °F)	0.1158	84.11	0.3571
Other Oils (> 401 °F)	0.1390	87.30	0.4450
Unfinished Oils			
Heavy Gas Oils	0.1476	85.80	0.4643
Residuum	0.1622	85.70	0.5097
Other Petroleum Products and Natural Gas Liquids			
Aviation Gasoline	0.1120	85.00	0.3490
Special Naphthas	0.1222	84.76	0.3798
Lubricants	0.1428	85.80	0.4492
Waxes	0.1285	85.30	0.4019
Petroleum Coke	0.1818	92.28	0.6151
Asphalt and Road Oil	0.1634	83.47	0.5001
Still Gas	0.1405	77.70	0.4003
Ethane[3]	0.0579	79.89	0.170
Ethylene[4]	0.0492	85.63	0.154
Propane[3]	0.0806	81.71	0.241
Propylene[3]	0.0827	85.63	0.260
Butane[3]	0.0928	82.66	0.281
Butylene[3]	0.0972	85.63	0.305
Isobutane[3]	0.0892	82.66	0.270
Isobutylene[3]	0.0949	85.63	0.298
Pentanes Plus	0.1055	83.63	0.3235
Miscellaneous Products	0.1380	85.49	0.4326

[1] In the case of products blended with some portion of biomass-based fuel, the carbon share in Table MM–1 of this subpart represents only the petroleum-based components.

[2] Products that are derived entirely from biomass should not be reported, but products that were derived from both biomass and a petroleum product (i.e., co-processed) should be reported as the petroleum product that it most closely represents.

[3] The density and emission factors for components of LPG determined at 60ºF and saturation pressure (LPGs other than ethylene)

[4] The density and emission factor for ethylene determined at 41ºF and saturation pressure.

12. Proposed Amendments to Table NN-1 to 40 CFR part 98, subpart NN:

Table NN–1 to Subpart NN of Part 98—Default Factors for Calculation Methodology 1 of This Subpart

Fuel	**Default higher heating value**[1]	**Default CO_2 emission factor (kg CO_2/MMBtu)**
Natural Gas	1.026 MMBtu/Mscf	53.06
Propane	3.84 MMBtu/bbl	62.87
Normal butane	4.34 MMBtu/bbl	64.77
Ethane	2.85 MMBtu/bbl	59.60
Isobutane	4.16 MMBtu/bbl	64.94
Pentanes plus	4.62 MMBtu/bbl	70.02

[1] Conditions for higher heating values presented in MMBtu/bbl are 60ºF and saturation pressure.

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13. Proposed Amendments to Table NN-2 to 40 CFR part 98, subpart NN:

Table NN–2 to Subpart NN of Part 98—Default Values for Calculation Methodology 2 of This Subpart

Fuel	**Unit**	**Default CO_2 emission value (MT CO_2/Unit)** [1]
Natural Gas	Mscf	0.0544
Propane	Barrel	0.241
Normal butane	Barrel	0.281
Ethane	Barrel	0.170

Fuel	**Unit**	**Default** CO_2 **emission value (MT** CO_2**/Unit)** [1]
Isobutane	Barrel	0.270
Pentanes plus	Barrel	0.324

[1] Conditions for emission value presented in MT CO_2/bbl are 60ºF and saturation pressure.

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14. Proposed Amendments to Table TT-1 to 40 CFR part 98, subpart TT:

Table TT–1 to Subpart TT—Default DOC and Decay Rate Values for Industrial Waste Landfills

Industry/Waste Type	**DOC (weight fraction, wet basis)**	**k [dry climate[a]] (yr**$^{-1}$**)**	**k [moderate climate[a]] (yr**$^{-1}$**)**	**k [wet climate[a]] (yr**$^{-1}$**)**
Food Processing (other than sludge)	0.22	0.06	0.12	0.18
Pulp and Paper (other than sludge)	0.20	0.02	0.03	0.04
Wood and Wood Product (other than sludge)	0.43	0.02	0.03	0.04
Construction and Demolition	0.08	0.02	0.03	0.04
Industrial Sludge	0.09	0.02	0.04	0.06
Inert Waste [*i.e.,* wastes listed in §98.460(c)(2)]	0	0	0	0
Other Industrial Solid Waste (not otherwise listed)	0.20	0.02	0.04	0.06

[a] The applicable climate classification is determined based on the annual rainfall plus the recirculated leachate application rate. Recirculated leachate application rate (in inches/year) is the total volume of leachate recirculated from company records or engineering estimates and applied to the landfill divided by the area of the portion of the landfill containing waste [with appropriate unit conversions].

(1) Dry climate = precipitation plus recirculated leachate less than 20 inches/year

(2) Moderate climate = precipitation plus recirculated leachate from 20 to 40 inches/year (inclusive)

(3) Wet climate = precipitation plus recirculated leachate greater than 40 inches/year

Alternatively, landfills that use leachate recirculation can elect to use the k value for wet climate rather than calculating the recirculated leachate rate.

(1) Dry climate = precipitation plus recirculated leachate less than 20 inches/year.