U.S. EPA Region I Webinar: Understanding EPA's Area Source Boiler Rule – Energy Assessment Requirements
June 5, 2013 1:00-2:00 p.m. EST

- **Introductions**, George Frantz, U.S. EPA Region 1
- **Area Source Boiler Rule Overview**, Susan Lancey, U.S. EPA Region 1
- **Energy Assessment Requirements**, Patrick Bird, U.S. EPA Region 1
- **Compliance Tools**, George Frantz, U.S. EPA Region 1
- **Q&A**, U.S. EPA Region 1 and U.S. EPA HQ (Jim Eddinger, Mary Johnson, Sara Ayres)

Overview
Area Source Boiler Rule

Susan Lancey

U.S. EPA Region I

EPA Region I Webinar: Understanding EPA's Area Source Boiler Rule – Energy Assessment Requirements

June 5, 2013

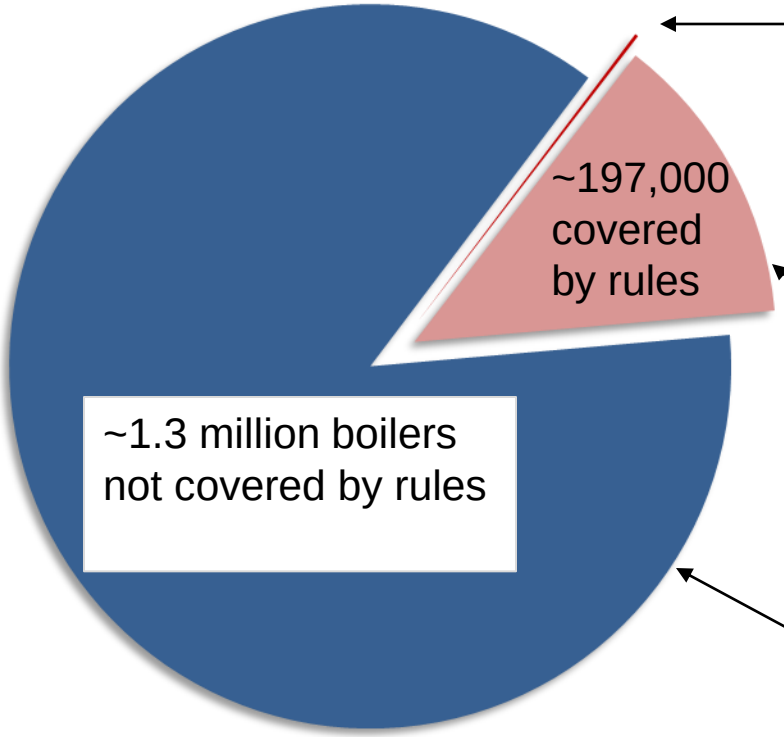
Background

- National Emission Standard for Hazardous Air Pollutants (NESHAP) for Area Sources: Industrial, Commercial, and Institutional Boilers, 40 CFR Part 63 Subpart JJJJJJ (6J)
  - Final Rule published March 21, 2011
  - Final Rule amendments published February 1, 2013
  - Includes requirement for a one time energy assessment for certain boilers

- NESHAP for Major Source Industrial, Commercial, Institutional Boilers and Process Heaters, 40 CFR Part 63 Subpart DDDDD (5D)
  - Final Rule published March 21, 2011
  - Final Rule amendments published January 31, 2013
  - Includes a requirement for a one time energy assessment for certain boilers and process heaters

The Right Standards for the Right Boilers

Of 1.5 million boilers in the U.S., less than 1% will need to meet numerical emission limits under the Boiler NESHAPs



<1% (about 2,300) would need to meet numerical emission limits to minimize toxics. Most of these are larger boilers located at industrial facilities.

13% (about 197,000) would need to follow work practice standards, such as annual tune ups, to minimize toxics.

86% are clean and not covered by these rules. Many of these boilers are at places like hospitals, schools and churches.

Rules Reduce Toxic Emissions and Protects Human Health

- Burning biomass, coal, and oil results in emissions of mercury, dioxin, furans, formaldehyde, lead, and hydrochloric acid.
- The technologies to reduce toxic air pollution have largely been available and in use for decades.
- Health effects are significant:
  - Mercury can cause adverse effects on children's developing brains, including effects on IQ, learning and memory.
  - Air toxics can cause cancer and other serious health effects in adults and children.
  - Controlling air toxics will also reduce fine particle pollution and carbon monoxide.
    - Fine particles are linked to serious cardiovascular and respiratory effects, even premature death.
    - Carbon monoxide reduces oxygen delivery to heart and brain, can cause angina and other problems for people with heart disease.

Boiler Area Source NESHAP Rule 40 CFR Part 63 Subpart 6J

- Applies to an area source facility which emits or has potential to emit less than 10 tons per year (tpy) of any single HAP and less than 25 tpy of any combination of HAP.

- Expected to apply to about 183,000 boilers located primarily at commercial facilities (e.g., hotels, office buildings, restaurants) and institutional facilities (e.g., schools, universities, hospitals, prisons), as well as industrial facilities.

- Rule **applies to coal, biomass, and oil-fired boilers.** Rule does NOT apply to boilers that are gas-fired, as defined.

Are any boilers not subject to Subpart 6J?

- **Hot water heaters** with a capacity of no more than 120 gallons combusting oil, gas or biomass. Gas, oil, and biomass **hot water boilers (e.g., not generating steam) rated at less than 1.6 million Btu per hour are included in this definition and not covered by the rule**
- **Gas-fired boilers** that burn gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply interruptions, startups, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.
- **Residential boilers** intended primarily for heat or power for a residential unit of up to four families, or a single unit residence that has been converted or subdivided into apartments or condos
- **Temporary boilers** used temporarily in place of another boiler while that unit is being replaced or repaired, generally over an operational period of less than 12 months, unless an extension approved

Are any boilers not subject to Subpart 6J? (cont'd)

- **Electric boilers**
- Boilers regulated under another Part 63 rule
- **Boilers burning waste** and covered under incinerator rules
  - Any boiler specifically listed as an affected source in another standard(s) established under section 129 of the Clean Air Act.
  - A boiler required to have a permit under section 3005 of the Solid Waste Disposal Act or covered by subpart EEE of this part (e.g., hazardous waste boilers).
- **Research and development boilers**
- **Boilers used as a control device** to comply with another subpart of part 60, 61, 63, or 65
  - provided that at least 50 percent of the heat input to the boiler is provided by the gas stream that is regulated under another subpart.

Table 1. Summary of Boiler Area Source NESHAP Emission Limit and Work/Management Practice Requirements

Subcategory			Summary of Requirement
Existing large area source boilers[1]	i.e., commenced construction or reconstruction of the boiler on or before June 4, 2010; greater than or equal to 10 MMBtu/hr	Gas (all types)	• No requirements (not covered by the rule)
		Coal (excluding limited-use boilers)	• Numeric emission limits for mercury (Hg) and carbon monoxide (CO) • One-time energy assessment
		Biomass and Oil	• Tune-up every other year or every 5 years • One-time energy assessment • No numeric emission limits
		Limited-use coal	• Tune-up every 5 years • No energy assessment • No numeric emission limits
Existing small area source boilers[1]	i.e., commenced construction or reconstruction of the boiler on or before June 4, 2010; less than 10 MMBtu/hr	Gas (all types)	• No requirements (not covered by the rule)
		Coal, Biomass and Oil	• Tune-up every other year or every 5 years • No numeric emission limits

[1] An existing dual-fuel fired boiler meeting the definition of gas-fired boiler that meets the applicability requirements of subpart JJJJJJ after June 4, 2010 due to a fuel switch from gaseous fuel to solid fossil fuel, biomass, or liquid fuel is considered to be an existing source under this subpart as long as the boiler was designed to accommodate the alternate fuel.

Table 1. Summary of Boiler Area Source NESHAP Emission Limit and Work/Management Practice Requirements

Subcategory			Summary of Requirement
New large area source boilers[2]	i.e., commenced construction or reconstruction of the boiler after June 4, 2010; greater than or equal to 10 MMBtu/hr	Gas (all types)	• No requirements (not covered by rule)
		Coal (excluding limited-use boilers)	• Numeric emission limits for Hg, CO, and particulate matter (PM)
		Biomass and Oil (excluding limited-use and seasonal boilers)	• Numeric emission limit for PM[3] • Tune-up every other year or every 5 years
		Limited-use coal	• Tune-up every 5 years • No numeric emission limits
		Limited-use and seasonal biomass and oil	• Tune-up every 5 years • No numeric emission limits
New small area source boilers[2]	i.e., commenced construction or reconstruction of the boiler after June 4, 2010; less than 10 MMBtu/hr	Gas (all types)	• No requirements (not covered by the rule)
		Coal, Biomass and Oil	• Tune-up every other year or every 5 years • No numeric emission limits

[2] A new or reconstructed dual-fuel gas-fired boiler that meets the applicability criteria of subpart JJJJJJ after June 4, 2010 due to a fuel switch from gaseous fuel to solid fossil fuel, biomass, or liquid fuel is considered to be a new source.

[3] New oil-fired boilers that combust only oil with no more than 0.50 weight % sulfur or a mixture of 0.50 weight % sulfur oil with other fuels not subject to a PM emission limit under this subpart and that do not use a post-combustion technology (except a wet scrubber) to reduce PM or SO_2 emissions are not subject to the PM emission limit.

Energy Conservation Requirements

- EPA has established pollution prevention (P2) as one of its highest priorities. One opportunity for P2 lies in simply using energy efficient technologies to minimize emissions.
- **Tune-ups**
  - Applicable to small coal-fired boilers < 10 MMBtu/hr, all biomass-fired boilers, and all oil-fired boilers.
  - Rationale – by improving combustion efficiency, fuel usage is reduced which results in decreased emissions.
- **Energy Assessment**
  - Applicable to existing large boilers ≥ 10 MMBtu/hr, except limited use boilers (with a federally enforceable capacity factor of no more than 10 percent)
  - Provides valuable information on improving energy efficiency
  - Leads to reductions in emissions through process changes and other efficiency modifications but energy conservation measures identified are not required to be implemented

Compliance Dates

- Existing Sources (commenced construction on or before June 4, 2010)
  - Tune-ups, compliance with emission limits and energy assessment by March 21, 2014
- New Sources (commenced construction after June 4, 2010)
  - Must comply by May 20, 2011, or upon startup, whichever is later

Notifications and Reports

- **Initial Notifications due by January 20, 2014** or within 120 days after the source becomes subject to standard
- **Notification of Intent to Conduct Performance Test** due at least 60 days before the performance stack test
- **Compliance Certification Reports** must be prepared, by March 1 of each year, and submitted to the delegated authority upon request for the previous calendar year.
  - must submit the report by March 15 if you had any deviations from applicable requirements.
  - For boilers subject only to a requirement to conduct a tune-up and not subject to emission limits or operating limits, you are only required to prepare a **Biennial or Five Year Compliance Report**

Notifications and Reports

- **Notification of Compliance Status (NOCS)** due no later than 120 days after the applicable compliance date, unless you must conduct a performance stack test. If you must conduct a performance stack test, NOCS due within 60 days of completing the performance stack test.
  - e.g., **NOCS following the energy assessment is due no later than July 19, 2014** for existing sources
  - Rule requires **electronic reporting of the NOCS** reports using the Compliance and Emissions Data Reporting Interface (CEDRI) through EPA's Central Data Exchange (www.epa.gov/cdx), once EPA completes the reporting template. EPA is currently developing a reporting template for the NOCS, expected in the fall of 2013. EPA is accepting paper NOCS only until the electronic reporting template is ready.

For More Information

For Information on Area Source Boiler NESHAP Rule:

http://www.epa.gov/boilercompliance/

For Information on Major and Area Source Boiler NESHAP Rules:

http://www.epa.gov/ttn/atw/boiler/boilerpg.html

Area Source Boiler Contact Information

- For questions from sources in New England:

  Susan Lancey, U.S. EPA New England

  (617) 918-1656

- For questions about NESHAP energy assessments in New England:

  Patrick Bird, U.S. EPA New England

  (617) 918-1287

- To find a contact in other regions, visit:

http://www.epa.gov/boilercompliance/whereyoulive.html

Area Source Boiler Rule: Energy Assessment Requirements

Patrick Bird
U.S. EPA, Region 1
June 5, 2013

Energy Assessment Requirements

- The Basics

- Required for existing oil, biomass, and coal-fired boilers with design heat input capacity of 10 MMBtu/hr or greater, except limited-use boilers
- One-time assessment
- Conducted by *qualified energy assessor*
- Must be completed by March 21, 2014
  - Energy assessments completed after January 1, 2008 that meet (or are amended to meet) requirements may be used in lieu of new assessment and the energy assessor qualifications waived
- Source operating under an energy management system compatible with ISO 50001 satisfies the energy assessment requirement

Energy Assessment Requirements

- EPA's Rationale

- Initially proposed in June 4, 2010 to encourage:
  - Energy efficiency improvements
  - Pollution prevention
  - Productivity improvements
- Purpose is to reduce facility energy demand
  - Reduces operating and maintenance costs
  - Decreases fuel use
  - Decreases emissions of hazardous air pollutants (HAP) and non-HAP
- Department of Energy assessments
  - Assessments conducted at selected manufacturing facilities have yielded 10 -15% fuel reduction/energy use, plus corresponding emissions reductions

Energy Assessment Requirements

The energy assessment must include the following 7 items:

1. A visual inspection of the boiler system (e.g. cracks, corrosion, leaks, insulation);
2. An evaluation of operating characteristics of the affected boiler systems, specifications of energy use systems, operating and maintenance procedures, and unusual operating constraints;
3. An inventory of major systems consuming energy (i.e., energy use systems) from affected boiler(s) and which are under the control of the boiler owner or operator;
4. A review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage;

Energy Assessment Requirements

The energy assessment must include the following 7 items: (cont.)

5. A list of major energy conservation measures that are within the facility's control;
6. A list of the energy savings potential of the energy conservation measures identified; and
7. A comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.

Energy Assessment Requirements

- Duration of Assessment

If your facility has Boiler Annual Heat Input, as measured in Trillion Btu/yr (Tbtu/yr), of…	Then the length of the energy assessment, in on-site technical labor hours[a], need not exceed[b]…	And should include any on-site energy use systems that account for this percent of the energy production from these affected boilers…
Less than 0.3	8 hours	At least 50%
0.3 to 1	24 hours	At least 33%
Greater than 1.0	24 hours for the first TBtu/yr plus 8 hours for every additional TBtu/yr, not to exceed 160 hours	At least 20%

[a] The on-site technical hours are required for items 1 through 4 of the energy assessment.

[b] The length may be longer at the discretion of the owner or operator of the affected source.

Energy Assessment Requirements

Energy assessments must evaluate the:

- *Boiler system*
  1. Boiler; and
  2. Associated components, such as, the feedwater systems, combustion air systems, fuel systems (including burners), blowdown systems, combustion control systems, steam systems, and condensate return systems, directly connected to and serving the energy use systems
- *Energy use systems (meeting energy production threshold)*
  1. Process heating; compressed air systems; machine drive (motors, pumps, fans); process cooling; facility heating, ventilation, and air conditioning systems; hot heater systems; building envelope, and lighting; or
  2. Other systems that use steam, hot water, process heat, or electricity, provided by the affected boiler
  3. Energy use systems are only those systems using energy clearly produced by affected boilers.

Energy Assessment Requirements

- Energy Use Systems

- Does not encompass energy use systems located off-site
- Does not encompass energy use systems using purchased electricity from an off-site source
- Limited to energy use systems:
  - Located on-site; and
  - Associated with the affected boiler
- Energy use systems may be segmented in the most logical manner as applicable to specific facility being assessed
  - e.g., heating and cooling system, compressed air systems, production area, or a specific building

Energy Assessment Requirements

- Frequently Asked Questions

- Boiler Annual Heat Input
  - Heat input capacity for each boiler calculated based on 8,760 hr/yr
  - A measurement of the *facility's* total boiler capacity
    - Add together heat input capacity for each boiler subject to energy assessment requirement
  - Measured in Trillion Btu/yr (TBtu/yr)
- Example:

A facility has two (2) existing oil-fired boilers, each with a heat input capacity of 10 MMBtu/hr.

The facility's Boiler Annual Heat Input would equal:

2 x (10,000,000 Btu/hr x 8,760 hr/yr) = 175,200,000,000 Btu/yr

or 0.1752 TBtu/yr

Energy Assessment Requirements

- Frequently Asked Questions

- Using our previous example:

  The two boilers provide energy to five (5) distinct energy use systems, each consuming 20% of the boilers' output.

  With Boiler Annual Heat Input (0.1752 TBtu/yr) < 0.3 Tbtu/yr, only the boilers would need to be included in an energy assessment because none of the energy use systems meet or exceed the 50% threshold.

  If, the two boilers provide energy to one (1) energy use system, consuming 100% of the boilers' output, the boilers and the energy use system would have to be evaluated in an energy assessment.

Energy Assessment Requirements

Qualified energy assessor means:

1. Someone who has demonstrated capabilities to evaluate energy savings opportunities for steam generation and major energy using systems, including, but not limited to:
   i. Boiler combustion management.
   ii. Boiler thermal energy recovery, including
      A. Conventional feed water economizer,
      B. Conventional combustion air preheater, and
      C. Condensing economizer.
   iii. Boiler blowdown thermal energy recovery.
   iv. Primary energy resource selection, including
      A. Fuel (primary energy source) switching, and
      B. Applied steam energy versus direct-fired energy versus electricity.
   v. Insulation issues.
   vi. Steam trap and steam leak management.
   vii. Condensate recovery.
   viii. Steam end-use management.

Energy Assessment Requirements

Qualified energy assessor means (cont.):

2. Capabilities and knowledge includes, but is not limited to:
    i. Background, experience, and recognized abilities to perform the assessment activities, data analysis, and report preparation.
    ii. Familiarity with operating and maintenance practices for steam or process heating systems.
    iii. Additional potential steam system improvement opportunities including improving steam turbine operations and reducing steam demand.
    iv. Additional process heating system opportunities including effective utilization of waste heat and use of proper process heating methods.
    v. Boiler-steam turbine cogeneration systems.
    vi. Industry specific steam end-use systems.

Energy Assessment Requirements

- Qualified Energy Assessors

- The qualified energy assessor may be a company employee or outside specialist
- The energy assessor qualification requirement is waived in instances where past or amended energy assessments are used to meet the energy assessment requirement.
  - So long as the past or amended energy assessment was completed on or after January 1, 2008
- Region 1 List of Qualified Energy Assessors
  - http://www.epa.gov/boilercompliance/whereyoulive.html#region1

Energy Assessment Requirements

- Compliance Dates, Notifications, and Recordkeeping

- Energy assessment must be completed by March 21, 2014
- Source must keep a copy of energy assessment report
- Source is required to submit Notice of Compliance Status (NOCS) for energy assessments by July 14, 2014
- NOCS to be submitted via electronic reporting portal
  - Using the Compliance and Emissions Data Reporting Interface (CEDRI) through EPA's Central Data Exchange (www.epa.gov/cdx)
  - EPA is currently developing a reporting template for the NOCS, expected in the fall of 2013
  - EPA is accepting paper NOCS only until the electronic reporting template is ready

Energy Assessment Requirements

- Energy Management Programs

- Facilities operating under an energy management program compatible with ISO 50001 satisfy energy assessment requirement.
  - Program must include affected boiler, associated components, and applicable energy use systems.
- Must be operating under ISO 50001-compatible program by compliance date (March 21, 2014)
- EPA considers these energy management programs to be equivalent to the one-time energy assessment
  - Programs requires facilities to operate under a set of practices and procedures designed to manage energy use on an ongoing basis.

Energy Assessment Requirements

- Major Source Rule, 40 CFR Part 63, Subpart DDDDD (5D)

- Similar energy assessment requirements to Area Source Rule requirements, except:
  - Applies to **all size existing boilers** or **process heaters**, except limited use boilers or process heaters
  - Includes **gas-fired boilers** and **process heaters,** except limited use units
  - Must be completed by no later than **January 31, 2016**
  - Requires a review of the facility's energy management practices and provide recommendations for improvements consistent with the definition of energy management practices in Subpart 5D, if identified

Energy Assessment Requirements

Contact Information for Sources in New England:

Patrick Bird
U.S. EPA, Region 1
Phone: 617-918-1287
Email: bird.patrick@epa.gov

For information on EPA contacts in your region, visit:
www.epa.gov/boilercompliance/whereyoulive.html

Area Source Boiler Rule; Energy Assessment Webinar

40 CFR PART 63

SUMMARY OF TOOLS RE: ENERGY ASSESSMENT

JUNE 5, 2013

GEORGE FRANTZ, EPA R1

Tools for Compliance

- EPA's area source boiler website: http://www.epa.gov/boilercompliance/
- Boiler compliance brochure: http://www.epa.gov/ttn/atw/boiler/imptools/areaboilerbrochure.pdf
- Small Entity Compliance Guide http://www.epa.gov/ttn/atw/boiler/imptools/areaboilerbrochure.pdf
- Technology Transfer Network - http://www.epa.gov/ttn/atw/eparules.html

DOE Energy Assessment Webpage

An energy assessment is an evaluation of a company's energy use to identify the most cost-effective, energy saving-opportunities.

http://www1.eere.energy.gov/manufacturing/tech_deployment/energy_assessment.html

- Search recommendations from completed assessments to find energy-saving ideas.
- Obtain an assessment with assistance from DOE's Advanced Manufacturing Office (AMO). AMO offers assessments to demonstrate the effectiveness of a tool or protocol in identifying energy savings opportunities.
- Review the assessment process to prepare for and make the most of an assessment.
- Contact an Energy Expert or a Qualified Specialist in your area who applies DOE's software tools during assessments of energy systems.

Energy Assessment Tools

- Summary of Energy Assessment Requirements
  - http://www.epa.gov/ttn/atw/boiler/imptools/SummaryEnergyAssessmentsAreaSourceBoilersFinal.pdf
- How do I find a Qualified Energy Assessor in New England?
  - http://www.epa.gov/boilercompliance/whereyoulive.html#region1
- Department of Energy : http://www1.eere.energy.gov/manufacturing/tech_assistance/energy_assessment.html
- To contact EPA assistance in your area of the country:
  - http://www.epa.gov/boilercompliance/whereyoulive.html

Review Compliance Dates

- Changed deadline for initial notification for existing area source boilers to January 20, 2014.
- Boiler tuneups – delayed initial compliance date for existing area source boilers tune-up requirement, by two years, until March 21, 2014
- Existing boilers of >10 MM BTU/hr capacity, which are subject to the energy assessment requirement must still achieve compliance no later than March 21, 2014.
- Deadline for submitting the notification of compliance status (NOCS) for energy assessments and tune-ups is now July 19, 2014.

Tools for Compliance

- Upcoming Webinars… for the regulated community, two webinars focused on compliance requirements and timelines.
- Hosted by EPA New England (Region 1), the information applies everywhere in the U.S., so boiler owners & operators in other areas may attend as well.
  - EPA Region 1 - Webinars for the Regulated Community: Understanding EPA's Area Source Boiler Rule – Requirements and Timelines.
  - Go to: http://www.epa.gov/boilercompliance/

    Click on the link to register for your preferred date:
    - Tue, Jun 25, 2013 1:00 PM - 2:30 PM EDT
    - Thu, Jun 27, 2013 11:00 AM - 12:30 PM EDT

For Additional Information

- Boiler compliance - http://epa.gov/boilercompliance
- R1 Boiler Help Line – 617-918-8805
- Patrick Bird (EPA R1) – 617-918-1287 bird.patrick@epa.gov
- Susan Lancey (EPA R1) – 617-918-1656 lancey.susan@epa.gov
- George Frantz (EPA R1)–617-918-1883 frantz.george@epa.gov
- Mary Johnson(EPA HQ)–919-541-5025 johnson.mary@epa.gov