

# **U.S. EPA Region I Webinar: Understanding EPA's Area Source Boiler Rule November 13 and 19, 2013**

- **Introductions**, George Frantz, U.S. EPA Region 1
- **Area Source Boiler Rule Overview**, Susan Lancey, U.S. EPA Region 1 and Mary Johnson, U.S. EPA HQ
- **Energy Assessment Requirements**, Patrick Bird, U.S. EPA Region 1
- **Electronic Reporting**, Colin Boswell, U.S. EPA HQ
- **Compliance Tools**, George Frantz, U.S. EPA Region 1
- **Question & Answers**, U.S. EPA Region 1 and U.S. EPA HQ (Mary Johnson, Sara Ayres, and Colin Boswell)

# Overview

## Area Source Boiler Rule

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Mary Johnson, U.S. EPA Headquarters



EPA Region I Webinar: Understanding  
EPA's Area Source Boiler Rule

November 13 and 19, 2013

# Presentation Overview

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- Background Recent EPA Air Toxics Rules for Boilers
- Overview of Area Source Rule for Boilers
  - National Emission Standard for Hazardous Air Pollutants (NESHAP) for Area Sources: Industrial, Commercial, and Institutional Boilers, 40 CFR Part 63 Subpart JJJJJJ (6J)
- Resources for More Information
- Appendix
  - Summary Table - Major Source Boiler NESHAP Requirements
  - Emission Limit Tables - Major Source and Area Source NESHAP Boiler Rules

# Background

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- 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
- 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

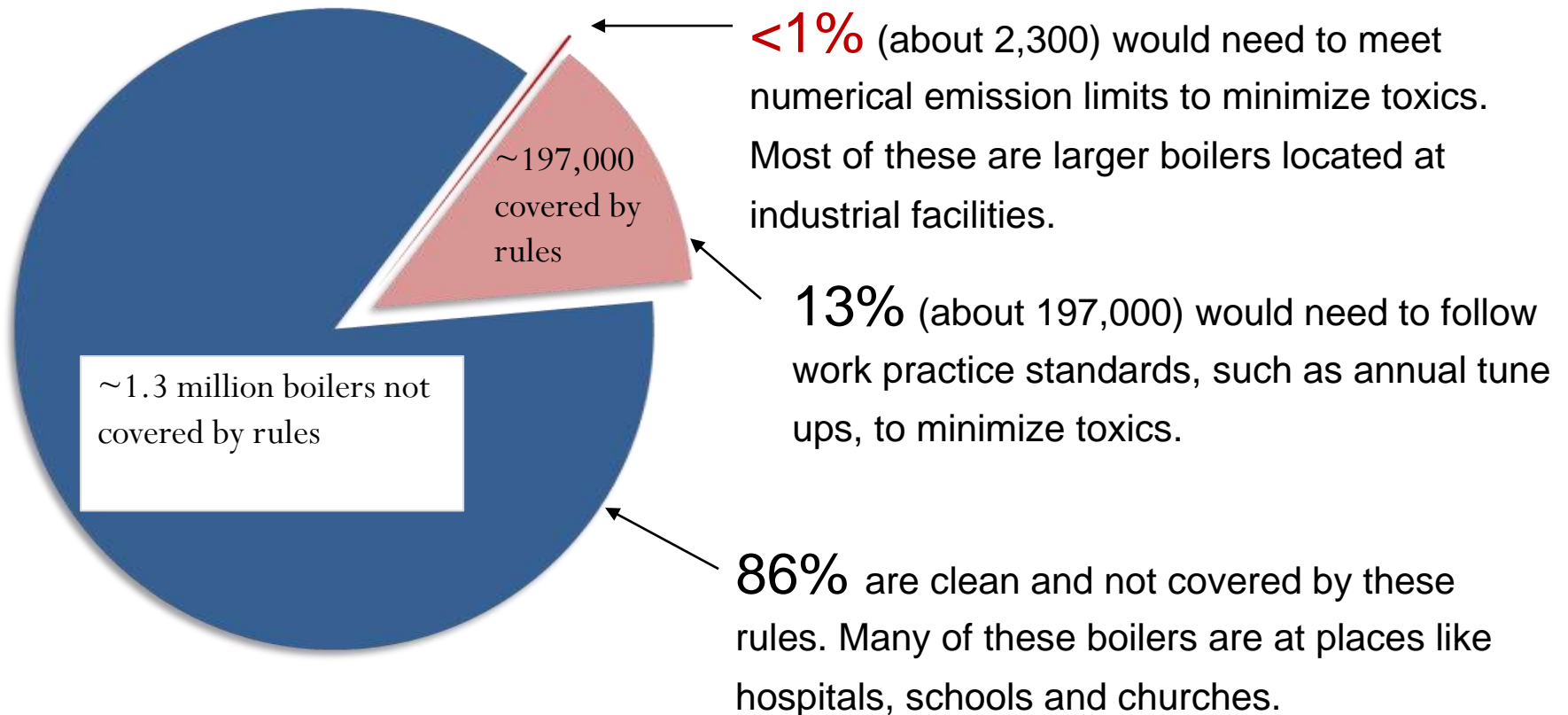
# Current Status

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- EPA received three petitions for reconsideration of the February 1, 2013 final rule amendments
- On August 5, 2013, EPA issued letters to petitioners granting reconsideration on five specific issues raised in the petitions
  - Definitions of startup and shutdown periods;
  - Alternative particulate matter standard for new oil-fired boilers that combust low-sulfur oil;
  - Establishment of a subcategory and separate requirements for limited-use boilers;
  - Establishment of a provision that eliminates further performance testing for PM for certain boilers based on their initial compliance test; and
  - Establishment of a provision that eliminates further fuel sampling for mercury for certain coal-fired boilers based on their initial compliance demonstration.
- The petitions for reconsideration indicated that the public lacked an opportunity to comment on these provisions. Although these provisions were added in response to public comments on the proposal, we granted reconsideration to provide an opportunity for public comment on these issues.

# 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



# Reduces Toxic Emissions and Protects Human Health

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- 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

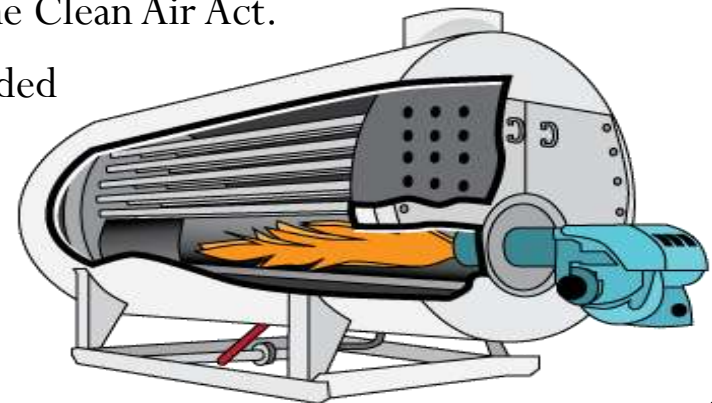
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- Applies to an area source facility which emits or has potential to emit less than 10 tons per year (tpy) of any single HAP and less than 25 tpy of any combination of HAP.
- Expected to apply to about 183,000 boilers located primarily at commercial 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.



# What is a boiler?

- Boilers burn fuel, including natural gas, fuel oil, coal, biomass (e.g., wood), or other gas to produce steam or hot water. The steam is used to produce electricity, drive an industrial process, or provide heat.
- From the outside, a boiler looks like a large, rounded tank. The pipes deliver fuel, air, and water to the boiler. Stacks vent emissions to air pollution control equipment or the atmosphere. Controls on the tank regulate fuel, oxygen and pressure. Inside the boiler, fuel is burned to produce steam or hot water that is piped away from the tank to produce electricity or provide heat elsewhere.
- A device combusting solid waste is not a boiler under Subpart 6J, unless the boiler is exempt from the incineration unit definition under section 129 of the Clean Air Act.  
Waste heat boilers, process heaters and autoclaves are excluded from the definition in Subpart 6J.



# Boiler Area Source Rule – Subpart 6J

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- **Three subcategories based on design type:**
  - Coal-fired units
    - 3,700 units
      - 2% of area source boilers
      - 85% less than 10 million Btu/hr
  - Biomass-fired units
    - 11,000 units
      - 6% of area source boilers
      - 68% less than 10 million Btu/hr
  - Liquid fuel-fired units
    - 168,000 units
      - 92% of area source boilers
      - 95% less than 10 million Btu/hr



# Area Source Subcategories

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- **Oil subcategory**
  - Any boiler that burns any liquid fuel and is not in biomass or coal subcategories. Gas-fired boilers that burn liquid fuel during periods of gas curtailment, gas supply interruption, startups, or periodic testing up to 48 hours per calendar year not included
- **Coal subcategory**
  - Any boiler that burns any solid fossil fuel and no more than 15 percent biomass on an annual heat input basis
- **Biomass subcategory**
  - Any boiler that burns any biomass and not in the coal subcategory
- **Seasonal, Oil-fired  $\leq 5$  MMBtu/hr, Limited-use, Boilers with oxygen trim systems that maintain optimum air-to-fuel ratio**



# Are any boilers not subject to Subpart 6J?

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- **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)

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- **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**
- **Process heaters**
- **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.
- **Electric Utility Steam Generating Units (EGUs)** covered by Part 63 Subpart UUUUU

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

Subcategory		Summary of Requirement	
Existing large area source boilers <sup>1</sup>	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)	<ul style="list-style-type: none"> <li>No requirements (not covered by the rule)</li> </ul>
		Coal (excluding limited-use boilers)	<ul style="list-style-type: none"> <li>Numeric emission limits for mercury (Hg) and carbon monoxide (CO)</li> <li>One-time energy assessment</li> </ul>
		Biomass and Oil	<ul style="list-style-type: none"> <li>Tune-up every other year or every 5 years</li> <li>One-time energy assessment</li> <li>No numeric emission limits</li> </ul>
		Limited-use coal	<ul style="list-style-type: none"> <li>Tune-up every 5 years</li> <li>No energy assessment</li> <li>No numeric emission limits</li> </ul>
Existing small area source boilers <sup>1</sup>	i.e., commenced construction or reconstruction of the boiler on or before June 4, 2010; less than 10 MMBtu/hr	Gas (all types)	<ul style="list-style-type: none"> <li>No requirements (not covered by the rule)</li> </ul>
		Coal, Biomass and Oil	<ul style="list-style-type: none"> <li>Tune-up every other year or every 5 years</li> <li>No numeric emission limits</li> </ul>

<sup>1</sup> An existing dual-fuel fired boiler meeting the definition of gas-fired boiler that meets the applicability requirements of subpart JJJJJ 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 <sup>2</sup>	i.e., commenced construction or reconstruction of the boiler after June 4, 2010; greater than or equal to 10 MMBtu/hr	Gas (all types)	<ul style="list-style-type: none"> <li>No requirements (not covered by rule)</li> </ul>
		Coal (excluding limited-use boilers)	<ul style="list-style-type: none"> <li>Numeric emission limits for Hg, CO, and particulate matter (PM)</li> </ul>
		Biomass and Oil (excluding limited-use and seasonal boilers)	<ul style="list-style-type: none"> <li>Numeric emission limit for PM<sup>3</sup></li> <li>Tune-up every other year or every 5 years</li> </ul>
		Limited-use coal	<ul style="list-style-type: none"> <li>Tune-up every 5 years</li> <li>No numeric emission limits</li> </ul>
		Limited-use and seasonal biomass and oil	<ul style="list-style-type: none"> <li>Tune-up every 5 years</li> <li>No numeric emission limits</li> </ul>
New small area source boilers <sup>2</sup>	i.e., commenced construction or reconstruction of the boiler after June 4, 2010; less than 10 MMBtu/hr	Gas (all types)	<ul style="list-style-type: none"> <li>No requirements (not covered by the rule)</li> </ul>
		Coal, Biomass and Oil	<ul style="list-style-type: none"> <li>Tune-up every other year or every 5 years</li> <li>No numeric emission limits</li> </ul>

<sup>2</sup> A new or reconstructed dual-fuel gas-fired boiler that meets the applicability criteria of subpart JJJJJ 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.

<sup>3</sup> 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<sub>2</sub> emissions are not subject to the PM emission limit.

# Particulate matter alternative for new oil-fired boilers

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- **New oil-fired units may combust low sulfur oil\*** as an **alternative method of meeting the particulate matter (PM) emission standard** (provided the boiler does not use a post-combustion control technology (except a wet scrubber) to reduce PM or sulfur dioxide emissions).

\*  $\leq$  .5 weight percent sulfur content requirements



# Tune-up Frequency Requirements

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- Requiring **tune-ups every 5 years**, instead of every 2 years, **for:**
  - **Seasonal boilers**, oil and biomass boilers which undergo a shut down for at least 7 consecutive months each 12-month period due to seasonal conditions, except for period testing (not to exceed 15 days in the 7 month shutdown)
  - **Limited-use boilers** with a federally enforceable annual average capacity factor of no more than 10 percent
  - **Oil-fired boilers with heat input capacity  $\leq 5$  MMBtu/hr**
  - **Boilers with oxygen trim systems**
- **Initial tune-ups are not required for new boilers**

# Fuel switch requirements for dual-fuel fired boilers

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- **Existing dual-fuel fired boilers** (i.e., commenced construction or reconstruction on or before June 4, 2010) **that fuel switch fuels from gas to coal, biomass or oil after June 4, 2010 remain existing sources**, as long as the boiler was designed to accommodate the alternate fuel
- New dual-fuel fired boilers that make such a fuel switch would continue to be considered new sources

# Area Source Rule

## Performance Testing Requirements

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- Boilers 10 million Btu/hour or greater with emission limits
  - Initial and triennial stack testing requirements for PM, mercury, CO (as applicable)
  - Fuel sampling analyses requirements for units subject to a mercury emission limit, except boilers burning a single fuel
    - Reducing fuel sampling and performance testing requirements under certain circumstances
      - **Coal boilers demonstrating initial compliance with the Hg emission limit through fuel sampling:** if Hg constituents in the fuel or fuel mixture are measured to  $\leq$  half of the Hg emission limit, no need to conduct further fuel analysis sampling. If  $>$  half of the Hg limit, quarterly sampling required.
      - **Boilers demonstrating initial compliance with the PM emission limit:** if the performance test results show that the PM emissions are  $\leq$  half of the PM emission limit, no need to conduct further PM emissions testing.

# Area Source Rule

## Monitoring Requirements

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- Boilers 10 million Btu/hour or greater with emission limits
  - Establish operating parameter limits during initial tests:
    - For example, pressure drop, injection rate, power input, oxygen
  - Continuously monitor process parameter or opacity
  - Boilers using a CO continuous emissions monitoring system (CEMS) are exempt from initial CO stack testing and oxygen concentration operating limit

# Energy Conservation Requirements

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- 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  $\geq$  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

# What are the Tune-up Requirements?

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## Tune-up Requirements:

- (1) As applicable, **inspect the burner**, and clean or replace any components of the burner as necessary\*
- (2) **Inspect the flame pattern**, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available.
- (3) **Inspect the system controlling the air-to-fuel ratio**, as applicable, and ensure that it is correctly calibrated and functioning properly.\*
- (4) **Optimize total emissions of carbon monoxide**. This optimization should be consistent with the manufacturer's specifications, if available, and with any nitrogen oxide requirement

\*you may delay the inspection until the next scheduled unit shutdown, not to exceed: 36 months from previous inspection for sources requiring biennial tune-up; or 72 months from previous inspection for sources requiring 5 year tune-up

# What are the Tune-up Requirements? (cont'd)

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- (5) **Measure the concentrations** in the effluent stream of **carbon monoxide** in parts per million, by volume, and **oxygen** in volume percent, **before and after the adjustments** are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made).
- (6) Maintain onsite and submit, if requested by the Administrator, biennial or five year report containing this information:
  - (i) The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured before and after the tune-up of the boiler
  - (ii) A description of any tune-up corrective actions taken
  - (iii) The type and amount of fuel used over the 12 months prior to the biennial tune-up of the boiler, but only if the unit is physically and legally capable of burning more than one fuel

# What are the Tune-up Requirements? (cont'd)

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- (7) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of startup
- You must conduct the tune-up while burning the fuel that provided the majority of the heat input to the boiler in the last 12 months before the tune-up (or both fuels if the boiler routinely burns two types of fuels at the same time)
- **Early tune-ups:** A tune-up may be conducted early as long as the tune-up included all elements of the tune-up specified in the rule. In addition, the next tune-up is due no later than 25 months or 61 months, as applicable, after the date of the early tune-up.



# Energy Assessment Requirements

# Energy Assessment Requirements

## The Basics

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- 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

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- 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

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The energy assessment must include the following 7 items:

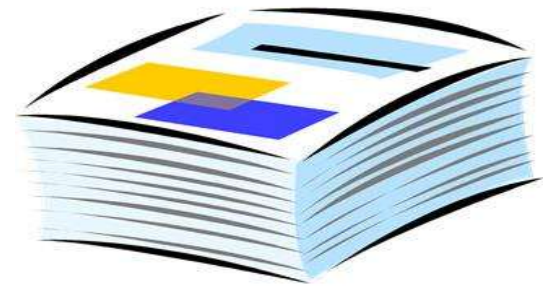
1. A visual inspection of the boiler system (e.g. cracks, corrosion, leaks, insulation);
2. An evaluation of operating characteristics of the affected boiler systems, specifications of energy use systems, operating and maintenance procedures, and unusual operating constraints;
3. An inventory of major 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

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The energy assessment must include the following 7 items, cont'd:

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

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<b>If your facility has Boiler Annual Heat Input, as measured in Trillion Btu/yr (Tbtu/yr), of...</b>	<b>Then the length of the energy assessment, in on-site technical labor hours<sup>a</sup>, need not exceed<sup>b</sup>...</b>	<b>And should include any on-site energy use systems that account for this percent of the energy production from these affected boilers...</b>
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%

<sup>a</sup> The on-site technical hours are required for items 1 through 4 of the energy assessment.

<sup>b</sup> The length may be longer at the discretion of the owner or operator of the affected source.

# Energy Assessment Requirements

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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 Use Systems

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- 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 Assessments Requirements

## Frequently Asked Questions

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- 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:

$$2 \times (10,000,000 \text{ Btu/hr} \times 8,760 \text{ hr/yr}) = 175,200,000,000 \text{ Btu/yr}$$

or 0.1752 TBtu/yr

# Energy Assessments Requirements

## Frequently Asked Questions

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- 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 ( $0.1752 \text{ TBtu/yr}$ )  $< 0.3 \text{ Tbtu/yr}$ , 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.

# Qualified Energy Assessors

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- 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 blow down 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.

# Qualified Energy Assessors (cont'd)

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- 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.

# Qualified Energy Assessors (cont'd)

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- 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/wherelive.html#region1>

# Energy Management Programs

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- 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 Case Examples

Industry Type (State)	Energy Efficiency Upgrade	Cost	Savings (Annual)	Payback (Years)
Small Hardware Manufacturer (MA)	a) Install/repair insulation on condensate lines	\$168	\$396	0.42
Fabricated Rubber Products (CT)	a) Repair or replace steam traps	\$600	\$13,251	0.05
	b) Keep boiler tubes clean	\$750	\$3,296	0.23
Disposable Labware Producer (ME)	a) Replace obsolete burners with more efficient ones	\$11,800	\$7,447	1.58
Recyclable Paper Producer (NH)	a) Insulate steam/hot water lines	\$3,720	\$9,100	0.41
	b) Direct warmest air to combustion intake	\$4,162	\$2,845	1.46
Ice Cream Maker (MA)	a) Install turbulator	\$2,200	\$636	3.46
	b) Use computer program to optimize HVAC	\$1,700	\$728	2.34
Surgical Appliance and Supply Company (RI)	a) Analyze flue gas for proper air/fuel ratio	\$1,500	\$977	1.54
	b) Repair or replace steam traps	\$533	\$3,789	0.14
Dairy Producer (VT)	a) Operate boilers on high fire setting	\$4,000	\$3,110	1.29

Source: U.S. DOE Industrial Assessment Centers Database, <http://iac.rutgers.edu/database/>

# Compliance Dates

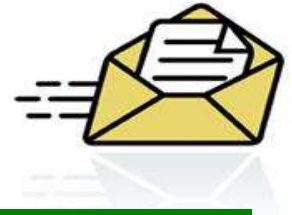
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- Existing Sources (commenced construction on or before June 4, 2010)
  - Complete initial tune-up, compliance with emission limits and energy assessment by March 21, 2014
- New Sources (commenced construction after June 4, 2010)
  - Must comply by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



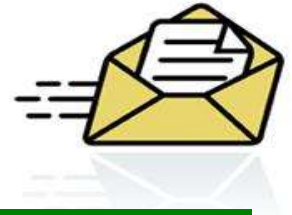


# Notifications and Reports



- **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 and tune-up is due no later than July 19, 2014** for existing sources
- **Fuel switch/changes notification** – If you have switched fuels, or made a physical change to the boiler, or have taken a permit limit which results in you being in a different subcategory, or becoming subject to Subpart 6J, or no longer being subject to Subpart 6J due to a switch to 100% natural gas, **you must provide notice within 30 days** of the fuel switch, the physical change or the permit issuance

# Notifications and Reports



- **Electronic Reporting:** Rule requires electronic reporting of the Notification of Compliance Status (NOCS), test results, and continuous emissions monitoring system (CEMS) relative accuracy test audit (RATA) results, using the Compliance and Emissions Data Reporting Interface (CEDRI) through EPA's Central Data Exchange ([www.epa.gov/cdx](http://www.epa.gov/cdx)).
- **NOCS report required to be submitted electronically**, once EPA completes the reporting template. EPA is currently developing a reporting template for the NOCS, expected in the fall 2013. EPA is accepting paper NOCS only until the electronic reporting template is ready.
- **Test results and RATA results are required electronically** for the test methods listed on EPA's Electronic Reporting Tool (ERT) website ([www.epa.gov/ttn/chief/ert/index.html](http://www.epa.gov/ttn/chief/ert/index.html)). For test methods or RATA pollutants not listed on the website, paper submissions are required.
- **All other reports and notifications are required as paper submissions** under the rule.

# New Source Performance Standards (NSPS)

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- 40 CFR Part 60 Subpart Dc, NSPS for Small Industrial-Commercial-Institutional (ICI) Steam Generating Units
  - Applies to ICI boilers modified, constructed, or reconstructed after June 9, 1989 with a maximum design heat input capacity  $\leq 100$  MMBtu/hr and  $\geq 10$  MMBtu/hr
- For information on all NSPS Rules for boilers
  - <http://www.epa.gov/ttn/atw/nsps/boilernsps/boilernsps.html>

# For More Information

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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>

For Information on Major Boiler MACT Technical Assistance from U.S. DOE's Clean Energy Application Centers (CEAC)

<http://www1.eere.energy.gov/manufacturing/distributedenergy/boilermact.html>

U.S. DOE's Northeast CEAC

<http://www.northeastcleanenergy.org/projectstartup/overview.php>

# Area Source Boiler Contact Information

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- Mary Johnson, U.S. EPA Headquarters, (919) 541-5025
- Sara Ayres, U.S. EPA Headquarters, (312) 353-6266
- For questions from sources in New England:
  - Susan Lancey, U.S. EPA New England, (617) 918-1656
  - George Frantz, U.S. EPA New England, (617) 918-1883
- 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>

# Appendix

**Table 1: Summary of Boiler MACT Emission Limits and Work Practice Requirements**

Subcategory		Summary of Requirement	
Existing large major source boilers and process heaters	i.e., commenced construction or reconstruction of the unit on or before June 4, 2010; heat input capacity of 10 MMBtu/hr or greater	Clean Gas (Natural gas, refinery gas)	<ul style="list-style-type: none"> <li>• Tune-up every year<sup>f</sup></li> <li>• One-time energy assessment</li> <li>• No numeric emission limits</li> </ul>
		Coal, Biomass, Oil, and Process Gas	<ul style="list-style-type: none"> <li>• Numeric emission limits for mercury (Hg), carbon monoxide (CO), hydrogen chloride (HCl), and either particulate matter (PM) or total selected metals (TSM)<sup>h</sup></li> <li>• Tune-up every year<sup>a</sup></li> <li>• One-time energy assessment</li> </ul>
		Limited-Use <sup>e</sup>	<ul style="list-style-type: none"> <li>• Tune-up every 5 years</li> <li>• No numeric emission limits</li> </ul>
Existing small major source boilers and process heaters	i.e., commenced construction or reconstruction of the boiler on or before June 4, 2010; less than 10 MMBtu/hr	Coal, Biomass, Oil, and Gas	<ul style="list-style-type: none"> <li>• Tune-up every other year<sup>d</sup></li> <li>• No numeric emission limits</li> <li>• One-time energy assessment</li> </ul>
		Limited-Use	<ul style="list-style-type: none"> <li>• Tune-up every 5 years</li> <li>• No numeric emission limits</li> </ul>
New large major source boilers and process heaters	i.e., commenced construction/reconstruction after June 4, 2010; 10 MMBtu/hr or greater	Clean Gas (Natural gas, refinery gas)	<ul style="list-style-type: none"> <li>• Tune-up every year<sup>a</sup></li> <li>• No numeric emission limits</li> </ul>
		Coal, Biomass, Oil, and Process Gas	<ul style="list-style-type: none"> <li>• Numeric emission limits for Hg, CO, HCl, and PM (or TSM)<sup>h</sup></li> <li>• Tune-up every year<sup>a</sup></li> </ul>
		Limited-Use	<ul style="list-style-type: none"> <li>• Tune-up every 5 years</li> <li>• No numeric emission limits</li> </ul>
Subcategory		Summary of Requirement	
New small major source boilers and process heaters	i.e., commenced construction/reconstruction after June 4, 2010; less than 10 MMBtu/hr	Coal, Biomass, Oil, and Gas	<ul style="list-style-type: none"> <li>• Tune-up every other year<sup>d</sup></li> <li>• No numeric emission limits</li> </ul>
		Limited-Use	<ul style="list-style-type: none"> <li>• Tune-up every 5 years</li> <li>• No numeric emission limits</li> </ul>



# Energy Assessment Requirements – Major Source Boiler Rule

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- 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

# Emission Limits for Existing Major Source Boilers

Subcategory	#Units	Limits in 2011 Final Rule, lb/MMBtu unless noted					Limits for Reconsideration Final Rule, lb/MMBtu, unless noted				
		Hg, lb/TBtu	HCl	PM	CO, ppm	D/F, ng/dscm	Hg, lb/TBtu	HCl	PM	CO, ppm (CO CEMS-based)	D/F
Coal stoker	391	Solid fuel subcat.	Solid fuel subcat.	Solid fuel subcat.	270	0.003	Solid fuel subcat.	Solid fuel subcat.	0.040	160 (340)	Work practice
Coal fluid. Bed	35				82	0.002			0.040	130 (230)	Work practice
Coal PC	190				160	0.004			0.040	130 (320)	Work practice
Biomass wet stoker—revised subcategory	304				490	0.005			0.037	1,500 (720)	Work practice
Biomass fuel cell	14				690	4			0.020	1,100	Work practice
Biomass fluid. Bed	24				430	0.02			0.11	470 (310)	Work practice
Biomass dutch oven/pile burner—revised subcategory	24				470	0.2			0.28	770 (520)	Work practice
Biomass susp./grate	18				3,500	0.2			0.44	2,800 (900)	Work practice
Biomass suspension—revised subcategory	47				470	0.2			0.051	2,400 (2,000)	Work practice
Biomass dry stoker—new subcategory	74				490	0.005			0.32	460	Work practice
Heavy liquid-new subcategory	320	3.4	0.00033	0.0075	10	4	2.0	0.0011	0.062	130	Work practice
Light liquid-revised subcategory	581	3.4	0.00033	0.0075	10	4	2.0	0.0011	0.0079	130	Work practice
Gas 2	129	13	0.0017	0.043	9.0	0.08	7.9	0.0017	0.0067	130	Work practice
Non-cont. liquid		0.78	0.00033	0.0075	160	4	2.0	0.0011	0.27	130	Work practice

New and existing small (<10 MMBtu/hr) units, natural gas-fired units, metal process furnaces, units combusting other clean gases, and limited use units will be subject to work practice standards.

# Emission Limits for New Major Source Boilers

Subcategory	Limits in 2011 Final Rule, lb/MMBtu unless noted					Limits for Reconsideration Final Rule, lb/MMBtu, unless noted				
	Hg, lb/TBtu	HCl	PM	CO, ppm	D/F, ng/dscm	Hg, lb/Tbtu	HCl	PM	CO, ppm (CO CEMS-Based)	D/F
Coal stoker	3.5 Solid fuel subcat.	0.0022 Solid fuel subcat.	0.0011 Solid fuel subcat.	6	0.003	0.80 Solid fuel subcat.	0.022 Solid fuel subcat.	0.0011	130 (340)	Work practice
Coal fluid. bed				18	0.002			0.0011	130 (230)	Work practice
Coal PC				12	0.003			0.0011	140 (150)	Work practice
Biomass wet stoker— revised subcategory				160	0.005			0.030	620 (390)	Work practice
Biomass fuel cell				470	0.003			0.020	910	Work practice
Biomass fluid. Bed				260	0.02			0.0098	230 (310)	Work practice
Biomass dutch oven/pile burner				470	0.2			0.0032	330 (520)	Work practice
Biomass susp./grate				1,500	0.2			0.026	1,100 (900)	Work practice
Biomass suspension								0.030	2,400 (2,000)	Work practice
Biomass dry stoker								0.030	460	Work practice
Heavy liquid	0.21	0.00033	0.0013	3	0.002	0.48	0.00044	0.013	130	Work practice
Light liquid	0.21	0.00033	0.0013	3	0.002	0.48	0.00044	0.0011	130	Work practice
New gas 2	7.9	0.0017	0.0067	3	0.08	7.9	0.0017	0.0067	130	Work practice
New non-cont. liquid	0.78	0.00033	0.0013	51	0.002	0.48	0.00044	0.023	130	Work practice

New and existing small (<10 MMBtu/hr) units, natural gas-fired units, metal process furnaces, units combusting other clean gases, and limited use units will be subject to work practice standards.

# Emission Limits for Area Source Boilers

Subcategory	2011 Final Rule Emission Limits			Reconsideration Final Rule Emission Limits		
	Hg, lb/TBtu	CO, ppm	PM, lb/MMBtu	Hg, lb/TBtu	CO, ppm 3% oxygen	PM, lb/MMBtu
New Coal ≥ 10 MMBtu/h	4.8	400	0.03 (≥ 30 MMBtu/h)  0.42 (10 to 30 MMBtu/h)	22.0	420	No Change
New Biomass ≥ 10 MMBtu/h	-	-	0.03 (≥ 30 MMBtu/h)  0.07 (10 to 30 MMBtu/h)	-	-	No Change
New Oil ≥ 10 MMBtu/h	-	-	0.03	-	-	No Change
Existing Coal ≥ 10 MMBtu/h (600 units)	4.8	400	-	22.0	420	No Change
Existing Coal < 10 MMBtu/h (3,100 units)	-	-	-	-	-	-
Existing Biomass (168,000 units)	-	-	-	-	-	-
Existing Oil (11,000 units)	-	-	-	-	-	-

New and existing small (<10 MMBtu/h) **coal-fired** boilers, new and existing biomass-fired boilers, and new and existing oil-fired boilers are subject to a biennial tune-up requirement.

**New and existing seasonal boilers, limited-use boilers, oil-fired boilers with heat input capacity ≤ 5 MMBtu/h, and boilers with an oxygen trim system are subject to a 5-year tune-up requirement.**

**Existing coal-fired, biomass-fired, or oil-fired boilers with heat input capacity ≥ 10 MMBtu/h (not including limited-use boilers) are subject to a one-time energy assessment requirement.**

# Area Source Boiler Rule; Compliance Assistance Webinar

1

**FOR REGULATED ENTITIES**

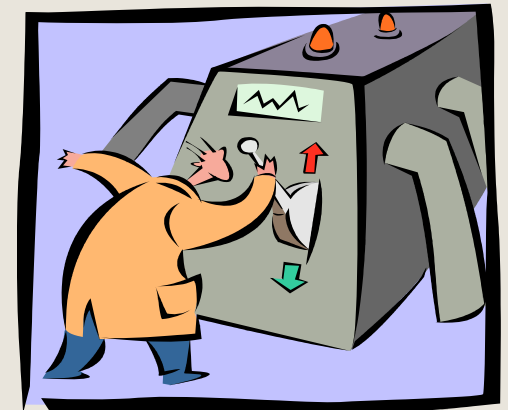
**40 CFR PART 63; SUBPART 6J  
SUMMARY OF TOOLS FOR COMPLIANCE  
NOVEMBER 13 & 19, 2013  
GEORGE FRANTZ, EPA R1**

# Tools for Compliance

2

The place you need to start:

- EPA's area source boiler website:  
<http://www.epa.gov/boilercompliance/>
  - Contains all the facts, forms, links needed for compliance
  - Links to register for webinars
  - Info on tune-up requirements
  - Forms for initial notification & compliance status
  - Electronic reporting
  - Contacts in your part of the country



For more technical information, go to:

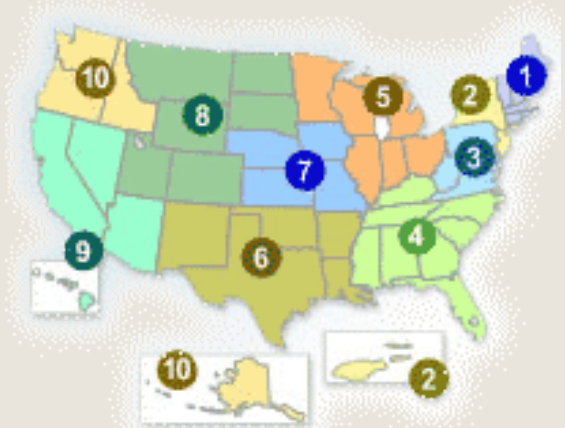
- Technology Transfer Network -  
<http://www.epa.gov/ttn/atw/eparules.html>

# Tools for Compliance

3

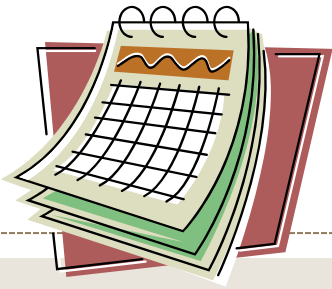
Click on the map for information in your area, including:

- who to contact for questions
- where to send notification forms
- workshops, webinars, and other assistance



Other tools...

- Combustion Portal: <http://combustionportal.org/#> provides general information on industrial, commercial & institutional boilers
  - ✦ Emissions calculator: <http://combustionportal.org/bcalc4.cfm>



# Compliance Dates – Area Sources

4

- Changed deadline for **initial notification** for existing area source boilers to January 20, 2014.
- Boiler tune-ups – 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 tune-ups** is now July 19, 2014.



# DOE Energy Assessment Webpage

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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](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

6

- 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/wherelive.html#region1>
- Department of Energy :  
[http://www1.eere.energy.gov/manufacturing/tech\\_assistance/energy\\_assessment.html](http://www1.eere.energy.gov/manufacturing/tech_assistance/energy_assessment.html)

# For Additional Information

7

- Boiler compliance - <http://epa.gov/boilercompliance>
- EPA Region I Boiler Help Line – 617-918-8805
- Patrick Bird (EPA R1) – 617-918-1287 [bird.patrick@epa.gov](mailto:bird.patrick@epa.gov)
- Susan Lancey (EPA R1) – 617-918-1656 [lancey.susan@epa.gov](mailto:lancey.susan@epa.gov)
- George Frantz (EPA R1)–617-918-1883 [frantz.george@epa.gov](mailto:frantz.george@epa.gov)
- Mary Johnson(EPA HQ)–919-541-5025 [johnson.mary@epa.gov](mailto:johnson.mary@epa.gov)
  
- To contact EPA assistance in your area of the country:
  - <http://www.epa.gov/boilercompliance/wherelive.html>