United States Air Force

National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers

Guide

40 CFR Part 63 Subpart JJJJJJ

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USAF BOILER NESHAP GUIDE FOR AREA SOURCES

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Based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

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EXECUTIVE SUMMARY

Boilers are commonly used at United States Air Force (USAF) facilities, such as power plants, hospitals, schools, dormitories, cafeterias, and laundries. Boilers burn natural gas, coal, wood, oil, or other fuel to produce hot water or steam for power production or heat. A boiler uses controlled flame combustion to burn fuels such as gas, coal, oil, and biomass to produce steam which is then used for energy or heat. The combustion of these fuels result in emissions of various Hazardous Air Pollutants (HAPs), including dioxins and furans, hydrochloric acid, and mercury. HAPs are toxic air pollutants suspected to cause cancer or other serious health effects and are regulated by the Clean Air Act.

The purpose of this document is to provide certain United States Air Force (USAF) personnel (technicians, boiler operators, etc.) with a basic understanding of key requirements for complying with 40 CFR 63 Subpart JJJJJJ, *National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers* (commonly referred to as Subpart JJJJJJ).

Subpart JJJJJJ covers boilers located at commercial, industrial, and institutional Area Source facilities that burn coal, oil, biomass, or other solid and liquid non-waste materials. An Area Source of HAPs emits less than 10 tons per year of any single air toxic or less than 25 tons per year of any combination of air toxics. The Rule does NOT apply to residential boilers, electric boilers, waste heat boilers, temporary boilers, boilers used for research and development, boilers that burn only gaseous fuels or any solid waste, boilers used as control devices for other standards, or boilers that are subject to another National Emission Standard for Hazardous Air Pollutants.

The Environmental Protection Agency (EPA) regulates Area Source boilers based on the type of fuel burned in the boiler, whether the boiler is new/reconstructed or existing, and the size of the boiler.

- Fuel based boiler categories are coal, oil, and biomass. Gas-fired boilers are not subject to the rule.
- A “new” boiler was built or reconstructed after 4 June 2010. All other boilers are “existing.”
- Boiler size is categorized as having a designed heat input capacity of 10 million British thermal units per hour (MMBtu/hr) or greater or having a designed heat input capacity less than 10 MMBtu/hr.

Subpart JJJJJJ requirements can be as simple as periodic tune-ups for most boilers. The requirements can also be as complex as complying with emission and operating limits to control emissions of Filterable Particulate Matter (PM), Carbon Monoxide (CO) and/or Mercury (Hg) through performance (stack) testing and/or fuel analysis (new boilers 10 MMBtu/hr or larger that burn oil or biomass and all coal boilers 10 MMBtu/hr or larger). Facilities with existing coal, oil, and biomass fired boilers 10 MMBTu/hr or larger are also subject to a one-time energy assessment.

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1 INTRODUCTION

The United States Environmental Protection Agency (EPA) was mandated by Section 112 of the Clean Air Act (CAA) to develop National Emission Standards for Sources of Hazardous Air Pollutants (NESHAPs) for specific industries, such as industrial, commercial, and institutional boilers. The regulations stipulate compliance requirements such as work practice standards (i.e., tune-ups, energy assessments) and/or emission and operation limits, based on the boiler's size, construction/reconstruction date, and fuel type.

1.1 Purpose

The purpose of this document is to provide certain United States Air Force (USAF) personnel (air program managers, technicians, boiler operators, etc.) with guidance for complying with NESHAPs for industrial, Commercial, and institutional Boilers located at Area Sources [40 Code of Federal Regulations (CFR) Part 63 Subpart JJJJJJ], also known as Area Source NESHAP, Subpart JJJJJJ, Boiler GACT, or Boiler 6J Rule. The intent of the Rule is to substantially reduce emissions of toxic air pollutants from industrial, commercial and institutional boilers located at Area Sources of Hazardous Air Pollutants (HAPs).

This Guide is designed to be an in-depth resource of information to provide assistance with navigating the complexities of the Rule. Although sufficient information applicable to the majority of USAF boilers is included within this document to guide the user towards compliance, due to the intricacy of the regulations, the guidance cannot be expected to encompass every type of Boiler or compliance situation. This guidance is not a law or regulation, nor is it intended to replace or revise any underlying regulatory requirements, including federal, state, or local regulations. Furthermore, the information conveyed in this Guide is dynamic and subject to change depending on rules promulgated by the Environmental Protection Agency (EPA). The CFR and the Federal Register (FR) should be consulted for updates on this rule due to the frequent revisions. Citations to the regulatory text in the CFR are used throughout this guide for reference and to assist the user in finding the appropriate regulatory sections.

Any questions concerning this guide, and/or requests for additional information pertaining to the rule, should be directed to the Air Quality Subject Matter Expert; AFCEC Compliance Technical Support Branch (AFCEC/CZTQ); 250 Donald Goodrich Drive, Building #1650, Lackland AFB, TX 78226.

1.2 What is Boiler NESHAP?

The CAA requires EPA to develop and enforce regulations to protect the public from exposure to airborne contaminants that are known to be hazardous to human health. In accordance with

Section 112 of the CAA, EPA established NESHAP for specific industrial sectors. The standards are for identified toxic air pollutants (air toxics) not covered by National Ambient Air Quality Standards (NAAQS).

Boilers are a common source of air pollutants and are typically located at manufacturing facilities, refineries, hotels, hospitals, and universities. Boilers burn gas, oil, coal, wood, or other fuels to produce steam, which is then used to produce hot water, heat, or electricity. The combustion of these fuels results in emissions of various HAPs. These HAPs are known or probable human carcinogens and/or linked to heath conditions affecting the lungs, skin, and central nervous system, particularly for people in vulnerable groups such as children and the elderly.

Although frequently and collectively referred to as "Boiler MACT", there are two separate and distinctly different rules; Boiler MACT (Maximum Achievable Control Technology as defined in 40 CFR Part 63 Subpart DDDDD) and Boiler GACT (Generally Available Control Technologies as defined in 40 CFR Part 63 Subpart JJJJJJ). Standards can be based on either GACT or MACT, depending on whether or not the facility is a "Major" or "Area" source for HAPs. In general, GACT requirements for Area Sources are less cumbersome than the MACT standards

- 40 CFR 63, Subpart DDDDD, also known as Boiler MACT or 5D, applies to industrial, commercial, and institutional boilers that burn gas, coal, biomass, and liquid fuel located at **Major Sources** of HAPs (emits or has the potential-to-emit 10 tons or more of an individual HAP or 25 tons or more of all HAPs combined). The use of MACT to regulate emissions of HAPs is required. MACT standards are derived from the best performing sources in the same category, which in this case, are boilers.

- Subpart JJJJJJ, also known as Boiler GACT or 6J, applies to industrial, commercial, and institutional boilers that burn coal, biomass, and oil located at **Area sources** of HAPs (sources that are not "Major" based on volume of emissions). The use of GACT is required to control and/or limit the emission of HAPs. Generally, GACT consists of less stringent emission standards (than MACT) based on the use of standard technologies and work practices.

"Control Technology" is commonly perceived to refer only to air pollution control devices (filters, scrubbers, sorbent injection, etc.,); however, that is not accurate. Control Technology also includes work practices (tune-ups, Energy Assessments, etc.), equipment modifications, fuel specifications, and other standards to reduce or eliminate HAPs emissions. In general, work practices and emission limits apply to boilers that have a designed heat input capacity of 10 million British thermal units per hour (MMBtu/hr) or greater that burn biomass, coal, and oil. Work practice standards, such as periodic and thorough tune-ups, are considered to be sufficient

to control HAPs emissions for boilers with a designed heat input capacity of less than 10 MMBtu/hr. Work practices typically have monitoring, record keeping, and reporting requirements to verify that the work practice is being conducted according to the rule's standards.

Depending on the fuel burned, boilers can emit a wide variety of HAPs, including arsenic, beryllium, cadmium, lead, chromium, manganese, nickel, ethylene dioxide, and polychlorinated biphenyls, as well as mercury and polycyclic organic matter. Instead of establishing emission limits for each and every regulated HAP, which would be a burden for both facilities and regulators, the EPA frequently uses surrogates. The surrogate pollutants have similar post-combustion characteristics to the original HAP(s) and often can be controlled with similar techniques. For Subpart JJJJJJ, the HAPs were grouped into three common categories: mercury, non-mercury urban metallic HAP, and urban Organic HAP other than Polycyclic Organic Matter (POM). Next, regulated HAPs were evaluated to identify which could be used as surrogates for each category. After considerable debate, research and evaluation, the EPA set 40 CFR 63 Subpart JJJJJJ emission limits and/or work practice standards for the following pollutants (or surrogates):

- Mercury (Hg) - No surrogate.
- Non-mercury Urban Metallic HAP - Filterable Particulate Matter (PM).
- Urban Organic HAP other than POM - Carbon Monoxide (CO).

1.3 Legislative History

Section 112 of the CAA requires the EPA to establish NESHAPs for both major and Area Sources of HAPs. 40 CFR 63 Subpart JJJJJJ was originally issued by the EPA in 2011; however, there have been several modifications since the rule was initially promulgated. A timeline of the legislative history is provided below:

- 4 June 2010 - Proposed rule published.
- 21 March 2011 - Final rule published (rule was reconsidered, but not stayed).
- 23 December 2011 - EPA proposes additional changes.
- 20 December 2012 - Final rule (final action on reconsideration) signed.
- 1 February 2013 – Final rule published in the Federal Register.
- 21 January 2015 - Proposed amendments, changes, and corrections published.
- 14 September 2016 – Final Rule published in the Federal Register.

1.4 Recent Revisions to 40 CFR 63 Subpart JJJJJJ

On 21 January 2015, the EPA published proposed corrections and amendments to Subpart JJJJJJ (80 FR 2871). The corrections were necessary due to typographical errors and omissions in the

latest version of the rule as it appeared in the CFR. The EPA finalized changes to the rule in the Federal Register on 14 September 2016 (81 FR 63112).

Before the September 2016 revisions to the rule, boilers subject to performance testing and/or fuel analysis (generally boilers >10 MMBtu/hr.) could forgo further testing if initial tests demonstrated that the boiler had low emissions of Particulate Matter (PM), the fuel had low mercury (Hg) levels, or the boiler burned low-sulfur fuel, whichever was applicable to the boiler. However, the EPA eliminated those provisions. Boilers that were constructed or reconstructed before 14 September 2016 are provided time to comply to the new requirements (boilers constructed on or after that date must begin compliance upon startup). The following table details some of the changes:

Table 1-1. Major Changes to Performance Testing and Fuel Analysis Requirements

Major Changes to Performance Testing and Fuel Analysis Requirements Effective 14 September 2016 40 CFR Part 63, NESHAP, Subpart JJJJJJ			
Previous Requirement	**New Requirement**	**Compliance Deadline** Boilers constructed or reconstructed before 14 September 2016 must comply by:	**Reference**
Further fuel analysis not required for Mercury (Hg) if initial fuel analysis shows Hg ≤ 50% of limit (>50% quarterly).	Fuel analysis every 12 months for Hg if initial fuel analysis shows Hg ≤ 50% of limit (>50% quarterly).	14 September 2017 (12 months)	§63.11220(d)
Further performance testing not required if initial performance test shows PM emissions ≤ 50% of PM emission limit (>50% every three years).	Performance testing required every five years if initial performance testing shows PM emissions ≤ 50% of PM emission limit (>50% every 3 three years).	14 September 2021 (five years)	§63.11220(b)
New or reconstructed oil-fired boilers that combust only low-sulfur liquid fuel (i.e., ≤ 0.50 weight percent sulfur) are not subject to the PM emission limit.	New or reconstructed oil-fired boilers that combust only ultra-low-sulfur liquid fuel (i.e., ≤ 15 parts per million sulfur) are not subject to the PM emission limit.	14 September 2019 (three years)	§63.11210(f)

1.5 Guide Instructions

This Guide will take the user step-by-step through the process of determining Subpart JJJJJJ rule applicability and the compliance requirements associated with the boiler.

- The first requirement for using this Guide is to verify whether or not Subpart JJJJJJ is applicable to the boiler in question. If Subpart JJJJJJ is applicable, then the boiler needs to be evaluated to determine the appropriate subcategory for the boiler.

- The boiler subcategory dictates which work practices (e.g., tune-ups), operating procedures (e.g., startup and shutdown practices), and/or emission limits (fuel analysis and/or performance testing may be required) are necessary for compliance with Subpart JJJJJJ. The compliance requirements are divided into Tasks within this guide to facilitate understanding of the procedures and their associated order.

- After the compliance requirements are ascertained, then steps must be taken to fulfill those requirements. Recordkeeping is necessary to demonstrate that the proper compliance measures have been taken. Reporting requirements are applicable to some boilers.

NOTE: This Guide will make references to "Administrator", "appropriate Administrator", or "delegated authority", which is meant to include the EPA Administrator and/or the state, local, or tribal agency, whichever is applicable. In many cases, the EPA delegated implementation and enforcement authority of Boiler MACT to the state, regional, local, or tribal agency. The agency becomes the primary authority for the delegated standard, but the EPA retains concurrent authority. In general, the delegated state, local, or tribal agency is responsible for implementation, enforcement, compliance assistance, and approval of minor changes to testing, monitoring, and recordkeeping methods. However, EPA retains oversight of Boiler MACT and can take enforcement actions as appropriate. To ensure national consistency with the rule, some authorities cannot be delegated and are retained by the EPA, including approval of major changes. To determine if the EPA delegated authority for Subpart JJJJJJ contact the applicable EPA Regional Office for the USAF facility's location and/or refer to 40 CFR §63.99. (§63.11236)

1.6 Gathering Boiler Information

RATED HEAT INPUT CAPACITY: The rated design heat input capacity (boiler size) is measured in million British thermal units per hour, or MMBtu/hr. The heat input capacity is specified on the both the nameplates of the boiler and the burner. **The heat input capacity on the burner's nameplate will be used to determine rated heat input capacity** (the heat input capacity on the boiler's and burner's nameplate should be the same, but sometimes they are not).

Occasionally, the boiler's data may be missing from the records or needs verification. If a physical examination of the boiler is necessary to gather information to ascertain applicability, contact shop or maintenance personnel familiar with the equipment; they should know where to locate the nameplates, stickers, or other attachments that can provide model number, serial number, and other important data.

If the nameplate and/or sticker is painted over or otherwise not decipherable, search for the serial number (the serial number is useful when contacting the dealer or manufacturer for information). In those situations, the manufacturer's representative may need to be contacted to obtain/verify the information. When contacting a distributor or manufacturer for information, always be prepared to provide the complete model and serial number to receive accurate and faster assistance. Many manufacturers have a searchable database on their website; however, keep in mind that the boiler may have been customized to meet military requirements, so the exact engine may not be represented.

IMPORTANT: Safety precautions should be followed at ALL times when examining the boiler/burner and any associated equipment. Safe and responsible examination of the unit is of the utmost importance. Always obtain assistance from technicians that are familiar with the equipment and follow all safety related instructions (e.g., the use of safety goggles, hard-hats). Never handle the boiler, burner, or connected equipment (including opening doors) while it is operating. The danger is not only from moving parts, the components can get extremely hot and can cause severe burns (do not touch equipment while running or soon after it is turned off). Additionally, the equipment may be off, but an automatic start mechanism or stored energy may unexpectedly start equipment during inspection. The Occupational Safety and Health Administration created the Lock-Out/Tag-Out standard to prevent the unintentional activation of machinery or equipment while inspection, maintenance, or other servicing activities are performed. The Lock-Out/Tag-Out procedures establish the minimum requirements for the lockout of energy isolating devices whenever servicing or maintenance is done on boilers. For that reason, **always be sure to have the assistance of a person authorized to conduct Lock-Out/Tag-Out procedures if intrusive examination of the boiler or burner is necessary.**

1.7 Applicability

Subpart JJJJJJ applies to new, reconstructed, and existing industrial, commercial, or institutional boilers which are located at, or are part of, a facility that is classified as an Area Source of HAP. The rule does not apply to residential boilers. The rule applies to boilers that combust coal, biomass, or liquid fuel, but does NOT apply to gas-fired boilers or boilers that burn ANY solid waste.

1.7.1 Determining Applicability

NOTE: An Applicability Questionnaire is provided in Appendix A to assist with determining the boiler's applicability to Subpart JJJJJJ.

Step One - The first step to determining applicability is to ascertain whether or not the facility actually has a boiler.

The definitions, per the EPA, of a boiler is as follows:

- Boiler means an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam and/or hot water. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled (§63.11237).

The following are **NOT** boilers:

- **Waste Heat Boiler** – A device that recovers normally unused energy (i.e., hot exhaust gas) and converts it to usable heat. Waste heat boilers are also referred to as heat recovery steam generators. Waste heat boilers are heat exchangers generating steam from incoming hot exhaust gas from an industrial (e.g., thermal oxidizer, kiln, furnace) or power (e.g., combustion turbine, engine) equipment. Duct burners are sometimes used to increase the temperature of the incoming hot exhaust gas (§63.11237).

- **Process Heater** – Process heater means an enclosed device using controlled flame, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material (e.g., glycol or a mixture of glycol and water) for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not come into direct contact with process materials. *Process heaters include units that heat water/water mixtures for pool heating, sidewalk heating, cooling tower water heating, power washing, or oil heating* (§63.11237).

- **Autoclave** – Steam autoclave treatment combines moisture, heat, and pressure to destroy microorganisms. Autoclaves are commonly used in laboratories to sterilize materials that are (or might be) contaminated (the definition of "autoclave" is not in the boiler or NESHAP rules).

- **Solid Waste Incineration Unit** – "Solid waste incineration unit" is a device combusting ANY solid waste material and that includes boilers that combust solid waste. If a boiler is firing a fuel determined to be a solid waste, then the boiler may be required to meet the more stringent standards for Commercial/Industrial Solid Waste Incinerators (CISWI) instead of Subpart JJJJJJ.

The burden of proof is on operator or owner of a boiler to document that the fuel is not a solid waste, this is particularly important when combusting non-traditional fuel. Since the combustion of solid waste is what distinguishes a CISWI emissions unit from a boiler, it is important to understand the difference between traditional fuels, alternative fuels, Non-Hazardous Secondary Material (NHSM), Categorical NHSM, and solid waste:

- **Traditional fuels** – These fuels are produced as fuels and are unused products that have not been discarded and therefore, are not solid wastes, including fuels that have been historically managed as valuable fuel products rather than being managed as waste materials, including fossil fuels (e.g., coal, oil and natural gas), and their derivatives (e.g., petroleum coke, bituminous coke, coal tar oil, refinery gas, synthetic fuel, heavy recycle, asphalts, blast furnace gas, recovered gaseous butane, and coke oven gas).

- **Alternative Traditional Fuels** – Developed from virgin materials that are used as fuel products. <u>These fuels are not secondary materials or solid wastes unless discarded</u> and include currently mined coal refuse that previously had not been usable as coal, clean cellulosic biomass (virgin wood), and used oil which meets the specifications outlined in 40 CFR 279.11.

- **Non-Hazardous Secondary Material (NHSM)** – Secondary materials burned as fuels burned in combustion units <u>are</u> solid wastes unless the material meets the following "legitimacy criteria" specified at 40 CFR Part 241.3(b):

  - The material is managed as a valuable commodity;
  - The material has meaningful heating value (or, for a material considered an ingredient, if it makes a useful contribution to the production or manufacturing process); and
  - The material contains contaminants at levels comparable to or lower than traditional fuels or ingredients.

- **Categorical NHSM** – The EPA can evaluate relevant factors and categorically include a material as a non-waste fuel even if it does not meet one or more of the legitimacy criteria. There are four (4) categories of materials that have been established by the EPA to not be solid wastes when combusted as fuel, they are:

  - Scrap tires that are not discarded and are managed under the oversight of established tire collection programs, including tires removed from vehicles and off-specification tires.
  - Resinated wood are wood products (containing binders and adhesives) produced by primary and secondary wood products manufacturing. Resinated wood includes residues from the manufacture and use of resonated wood, including

materials such as board trim, sander dust, panel trim, and off-specification resinated wood products that do not meet a manufacturing quality or standard
- Coal refuse recovered from legacy piles and processed in the same manner as currently generated coal refuse.
- Dewatered pulp and paper sludge that are not discarded and are generated and burned on-site by pulp and paper mill.

- **Solid Waste** – Any garbage, or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities (40 CFR Part 258.2). Caution: alternative traditional fuels (e.g. clean cellulosic biomass) are NOT solid wastes.

  - Gaseous materials are waste when the gas is enclosed in a container when that combustion takes place.

NOTE: The EPA will make a case-by-case determination if it is unclear whether the fuel is a solid waste and/or meets the legitimacy criteria. Contact AFEC/CZTQ if assistance is needed for fuel determination.

Step Two – Determine if the boiler is located at an Area or Major Source of HAP emissions.

Check with the Base Environmental Management office to confirm if the facility is a Major or Area Source (or synthetic Area/Minor Source) for HAP. Determining between Major and Area Sources is important because the rules affecting boilers at each source differ significantly. *Subpart JJJJJJ applies to boilers located at an Area Source (or synthetic Area/Minor Source).* Subpart DDDDD, which is applicable to Major Sources of HAPs, has far more stringent rules and complexity than Subpart JJJJJJ.

The EPA has multiple uses for the term "source". The term could refer to a facility or to a subset of equipment located at a facility. In the context of determining whether or not a facility is an Area or Major source, PTE is based on facility emissions, not the individual units. PTE is the maximum quantity of HAPs a source could emit in a year given its physical and operational design and limitations.

- An **Area Source** is any stationary source that is not a Major Source of HAPs [emits, or has the Potential-to-Emit (PTE), less than 10 tons per year of any single HAP or less than 25 tons per year of any combination of HAPs]. An Area Source is sometimes referred to as a "true minor" or "natural minor" source.

- A **Synthetic Area Source** (also referred to as a synthetic Minor HAP Source) has the potential-to-emit (PTE) HAPs in quantities at or above the Major Source threshold, but has accepted federally enforceable limitations to keep the emissions below such levels.

- Area Sources subject to Subpart JJJJJJ are NOT required to obtain a Title V permit as a result of being subject to 40 CFR 63 Subpart JJJJJJ. Facilities may already be covered by a permit or may be required to obtain a Title V permit in the future for a reason other than Subpart JJJJJJ.

- A **Major Source** of HAP is defined as a stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the PTE 10 tons or more per year of any single HAP or 25 tons or more per year of any combination of HAPs. A Major Source cannot, or chooses not to, enact federally enforceable limits on emissions and/or operations to reduce PTE to become a synthetic Area Source. If the facility is located at a Major Source of HAPs, refer to 40 CFR 63, Subpart DDDDD for further applicability analysis. There is also a USAF Guide applicable to industrial, commercial, and institutional boilers located at a Major Source.

Step Three – Determine if the boiler is excluded from 40 CFR 63 Subpart JJJJJJ.

Although there are no de Minimis thresholds for applicability, Subpart JJJJJJ excludes the following types of boilers from the requirements of the Rule (although in some cases, the boiler may be subject to a different rule or to another Subpart in 40 CFR 63):

- **Residential boilers as Defined in this Subpart JJJJJJ** – Means a boiler used to provide heat and/or hot water and/or as part of a residential combined heat and power system. This definition includes boilers located at an institutional facility (e.g., university campus, military base, church grounds) or commercial/industrial facility (e.g., farm) used primarily to provide heat and/or hot water for:

  - A dwelling containing four or fewer families, or

  - A single unit residence dwelling that has since been converted or subdivided into condominiums or apartments. [§63.11237 and §63.11195(i)]

- **Gas-fired boiler** – Burns ONLY gaseous fuels or burns gaseous fuels not combined with any solid fuels and only burns liquid fuel during periods of gas curtailment, gas supply interruption, and periodic testing, maintenance, or operator training up to 48 hours per calendar year. Gaseous fuels include, but are not limited to, natural gas (includes propane or propane-derived synthetic natural gas), process gas, coal derived gas, refinery

gas, hydrogen, and biogas (biogas is sometimes called landfill gas, digester gas, or swamp gas) (§63.11237).

- *Gas curtailment or gas supply interruption* – A period of gas curtailment or supply interruption means a period of time during which the supply of gas is interrupted for reasons beyond the control of the facility. Onsite gaseous fuel system emergencies or equipment failures qualify as periods of supply interruption when the emergency or failure is beyond the control of the facility.

  - The act of entering into a contractual agreement with a supplier of natural gas established for curtailment purposes does NOT constitute a reason that is under the control of the facility.

  - An increase in the cost or unit price of natural gas due to normal market fluctuations not during periods of supplier delivery restriction does NOT qualify as a period of natural gas curtailment or supply interruption.

NOTE: Permit restrictions or limits for oil usage is not required; the boiler must only meet the definition of gas-fired boiler to be considered a gas-fired boiler. **Documentation MUST be kept confirming that the boiler is physically capable of burning ONLY gas fuel or that a dual-fuel boiler has burned ONLY gas fuel (except for during of gas curtailment, gas supply interruption and periodic testing, maintenance, or operator training up to 48 hours per calendar year).**

- **Hot water heater** – A closed vessel with a capacity of no more than 120 U.S. gallons in which water is heated by combustion of gaseous, liquid, or biomass fuel and hot water is withdrawn for use external to the vessel. Hot water boilers (i.e., not generating steam) combusting gaseous, liquid, or biomass fuel with a heat input capacity of less than 1.6 million Btu per hour are included in this definition. The 120 U.S. gallon capacity threshold to be considered a hot water heater is independent of the 1.6 million Btu per hour heat input capacity threshold for hot water boilers. Hot water heater also means a tankless unit that provides on-demand hot water. For example, many hot water heaters used to heat bathroom or dishwashing water have capacities no more than 120 U.S. gallons. [§63.11237 and §63.11195(f)].

- **Electric Boilers as Defined by Subpart JJJJJJ** – Means a boiler in which electric heating serves as the source of heat. Electric boilers that burn gaseous or liquid fuel during periods of electrical power curtailment or failure are included in this definition. [§63.11237 and §63.11195(j)]

- **Boilers Subject to other NESHAP Rules** – If the boiler is specifically listed as, or included in the definition of, an affected source in another standard(s) under 40 CFR Part 63 [§63.11237 and §63.11195(a)].

- **Boilers that are used as Control Devices for other NESHAP standards** – If the boiler is used as a control device for another process that is subject to Part 63 and at least 50 percent of the heat input to the boiler is provided by the gas stream that is regulated under another subpart the boiler is exempt from this rule. [§63.11237and §63.11195(g)]

- **Temporary Boiler** – A Temporary Boiler is any gaseous or liquid fuel boiler that is designed to, and is capable of, being carried or moved from one location to another by means of, for example, wheels, skids, carrying handles, dollies, trailers, or platforms. The boiler is not a temporary boiler if any one of the following conditions exists:

    - The equipment is attached to a foundation.

    - The boiler or a replacement remains at a location within the facility and performs the same or similar function for more than 12 consecutive months, unless the regulatory agency approves an extension. An extension may be granted by the regulating agency upon petition by the owner or operator of a unit specifying the basis for such a request. Any temporary boiler that replaces a temporary boiler at a location within the facility and performs the same or similar function will be included in calculating the consecutive time period unless there is a gap in operation of 12 months or more.

    - The equipment is located at a seasonal facility and operates during the full annual operating period of the seasonal facility, remains at the facility for at least 2 years, and operates at that facility for at least 3 months each year.

    - The equipment is moved from one location to another within the facility, but continues to perform the same or similar function and serves the same electricity, steam, and/or hot water system in an attempt to circumvent the residence time requirements of this definition. [§63.11237 and §63.11195(h)]

- **Research and Development Boiler** - If the boiler is used specifically for research and development it is exempt; for example, many universities or boiler manufacturers may have test boilers to develop new designs or combustion modifications. This exemption does not include boilers that solely or primarily provide steam (or heat) to a process or for heating at a research and development facility. This exemption does not prohibit the use of the steam (or heat) generated from the boiler during research and development, however, the boiler must be concurrently and primarily engaged in research and development for the exemption to apply. [§63.11237 and §63.11195(d)]

- **An Electric Utility Steam Generating Unit (EGU)** – Means a fossil fuel-fired combustion unit of more than 25 megawatts that serves a generator that produces electricity for sale. means a fossil fuel-fired combustion unit of more than 25 megawatts that serves a generator that produces electricity for sale. A fossil fuel-fired unit that cogenerates steam and electricity and supplies more than one-third of its potential electric output capacity and more than 25 megawatts electrical output to any utility power distribution system for sale is considered an electric utility steam generating unit. To be "capable of combusting" fossil fuels, an EGU would need to have these fuels allowed in their operating permits and have the appropriate fuel handling facilities on-site or otherwise available (e.g., coal handling equipment, including coal storage area, belts and conveyers, pulverizers, etc.; oil storage facilities). In addition, fossil fuel-fired EGU means any EGU that fired fossil fuel for more than 10.0 percent of the average annual heat input in any three consecutive calendar years or for more than 15.0 percent of the annual heat input during any one calendar year after 16 April 2015. [§63.11237 and §63.11195(k)]

- **Boilers Subject to Section 129 of the Clean Air Act** – If the boiler is specifically listed as an affected source in another standard(s) under section 129 (e.g., Hospital/Infectious Medical Waste Incinerators, Commercial/Industrial Solid Waste Incinerators, Sewage Sludge Incinerators) the boiler is subject to a Section 129 rule instead of this rule. [§63.11195(b)]

- **Hazardous Waste Boilers** - If the boiler is required to have a permit under Section 3005 of the Solid Waste Disposal Act or if the boiler is covered by 40 CFR Part 63 Subpart EEE the boiler is a hazardous waste boiler. [see §63.11195(c)]

IF SUBPART JJJJJJ DOES NOT APPLY, STOP HERE.

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2 BOILER SUBCATEGORY DETERMINATION

2.1 Boiler Subcategories

40 CFR 63, Subpart JJJJJJ regulations are based on the type of fuel burned, whether or not the unit is existing or new (or reconstructed), and the size of the boiler. To determine the correct subcategory of the boiler and the appropriate regulations that will apply, the following information is required:

- The fuel(s) that are combusted in the boiler.
- The percentage of the annual heat input supplied by each fuel.
- The annual capacity factor of the boiler.
- The construction or reconstruction date of the boiler.
- The air pollution control device (if any) used for the boiler (if unit is larger than 10 MMBtu/hr, excluding Limited-Use and Seasonal boilers).

There are 7 subcategories identified in 40 CFR 63 Subpart JJJJJJ (§63.11200). There of the subcategories are based on fuel type (Coal, Biomass, and Oil). There is one subcategory based on size (oil less than 5 MMBtu/hr). Two of the subcategories are based on use limitations (limited use and seasonal boilers) and one subcategory based on a monitoring device (oxygen trim system):

(1) *Coal* – Coal subcategory includes any boiler that burns any solid fossil fuel and no more than 15 percent biomass on an annual heat input basis. *Coal* means all solid fuels classifiable as anthracite, bituminous, sub-bituminous, or lignite by the American Society for Testing and Materials in ASTM D388 (incorporated by reference, §63.14), coal refuse, and petroleum coke. For the purposes of this Subpart JJJJJJ, the definition of "coal" includes synthetic fuels derived from coal including, but not limited to, solvent-refined coal, coal-oil mixtures, and coal-water mixtures. Coal derived gases are excluded from this definition.

(2) *Biomass* – Biomass subcategory includes any boiler that burns any biomass and is not in the coal subcategory (boiler burns at least 15 percent biomass on a total fuel annual heat input basis). Biomass means any biomass-based solid fuel that is not a solid waste. This includes, but is not limited to, wood residue and wood products (e.g., trees, tree stumps, tree limbs, bark, lumber, sawdust, sander dust, chips, scraps, slabs, millings, shavings); animal manure, including litter and other bedding materials; vegetative agricultural materials, such as logging residues (slash), nut and grain hulls and chaff (e.g., almond, walnut, peanut, rice, and wheat), bagasse, orchard prunings, corn stalks, coffee bean hulls

and grounds. This definition of biomass is not intended to suggest that these materials are or are not solid waste.

(3) *Oil subcategory* - Includes any boiler that burns any liquid fuel and is not in either the biomass or coal subcategories. Gas-fired boilers that burn liquid fuel only during periods of gas curtailment, gas supply interruptions, startups, or for periodic testing are not included in this definition. Periodic testing on liquid fuel shall not exceed a combined total of 48 hours during any calendar year. Liquid fuel includes, but is not limited to, distillate oil, residual oil, any form of liquid fuel derived from petroleum, used oil meeting the specification in 40 CFR 279.11, liquid biofuels, biodiesel, and vegetable oil.

(4) *Oil-fired boilers with heat input capacity of equal to or less than 5* MMBtu/hr– Includes any boiler that falls in the Oil Subcategory, but has a heat input capacity less than or equal to 5 MMBtu/hr.

(5) *Seasonal boiler* - A boiler that undergoes a shutdown for a period of at least 7 consecutive months (or 210 consecutive days) each 12-month period due to seasonal conditions, except for periodic testing. Periodic testing shall not exceed a combined total of 15 days during the 7-month shutdown. This definition only applies to boilers that would otherwise be included in the biomass subcategory or the oil subcategory

(6) *Boilers with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up* - Oxygen trim system means a system of monitors that is used to maintain excess air at the desired level in a combustion device over its operating load range. A typical system consists of a flue gas oxygen and/or carbon monoxide monitor that automatically provides a feedback signal to the combustion air controller or draft controller.

(7) *Limited Use boilers* - means any boiler that burns any amount of solid or liquid fuels and has a federally enforceable annual capacity factor of no more than 10 percent.

2.2 Determining Category for a Multi-Fuel Boiler

The type of fuel being combusted by the boiler is a primary factor for establishing the appropriate subcategory. The boiler fuel subcategory is based on the type of fuel consumed by the unit in the 12-month period preceding the compliance demonstration (tune-up, performance test, etc.).

Newly constructed boilers (or a modified boiler with a fuel change) would not have a preceding fuel use period; therefore, the fuel consumption would be calculated using the fuel throughput as limited by equipment capacity or by permit limitations (refer to permit authorizing the construction, installation, or modification).

Determining the fuel type subcategory for a boiler that burns a single fuel is not complicated: compare the fuel type burned during the 12-month fuel use period against the fuel type subcategory descriptions to ascertain the proper fuel subcategory. However, if the boiler burns multiple fuels, the process is more complex. Refer to Section 2.2.1 in this Guide for guidance on determining fuel type for multiple-fueled boilers.

NOTE: A boiler that uses supplemental fuel only for startup, unit shutdown, and transient flame stability purposes still qualifies as a boiler that burns a single type of fuel. §63.11211

2.2.1 Determining Fuel Subcategory for Multiple-Fueled Boiler

A multiple-fueled boiler's fuel subcategory determination is based on the percentage of fuel consumed by the unit in the 12-month period preceding the required compliance demonstration (e.g. the required tune-up or performance test). The Annual Heat Input Basis for each fuel burned in a multiple-fueled boiler needs to be calculated following these steps (a basic example is included within the steps):

Step 1: Determine the Annual Fuel Consumption of Each Fuel.

Add the total amount of each fuel type consumed in the 12 months preceding the compliance demonstration (tune-up or Performance Test). Identify the classification for each fuel burned per the definitions in §63.11237 of 40 CFR Subpart JJJJJJ (definitions are also included in the previous section of this Guide).

Annual Fuel Consumption Total (Short Tons) for Boiler:

		Bituminous Coal	Anthracite	Wood
1	**January**	950	125	1100
2	**February**	1350	110	800
3	**March**	1780	75	820
4	**April**	950	120	600
5	**May**	800	80	500
6	**June**	980	50	0
7	**July**	700	45	250
8	**August**	875	45	0
9	**September**	950	30	0
10	**October**	1225	0	0
11	**November**	1250	0	275
12	**December**	1120	50	850
	Total:	**12,930**	**730**	**5195**

Step 2: Determine the High Heat Value for Each Fuel -

The High Heat Value (HHV) is the amount of heat produced by the complete combustion of a unit quantity of fuel. Determine the HHV for each fuel type combusted by:

- Obtaining the data from the fuel supplier;
- Using the calculation methodologies typically used for EPA Greenhouse Gas reporting (40 CFR Part 98 Subpart C); or
- Conducting a site-specific Performance Test.
- Other published sources of HHV may also be used.

For this example, the HHV for the fuels combusted (MMBtu/short ton) during the year per the default values in 40 CFR Part 98 Subpart C, Table C–1 are:

- Bituminous Coal 24.93
- Anthracite 25.09
- Wood 17.48

Step 3: Calculate the Annual Heat Input of Each Fuel

Multiply the total annual consumption by the HHV of each fuel to determine the annual heat input of each fuel.

$$Heat\ Input_{annual} = Fuel\ Consumption_{annual} \times HHV$$

$$\boldsymbol{Heat\ Input(Wood)_{annual}} = 5195\frac{\cancel{ton}}{yr} \times 17.48\frac{MMBtu}{\cancel{short\ ton}} = \boldsymbol{90,808.6\frac{MMBtu}{yr}}$$

Fuel Consumption Total (ton/yr)	HHV (MMBtu/short ton)	Annual Heat Input (MMBtu/yr)	Fuel Consumption Total (ton/yr)
Bituminous Coal	12930	24.93	322344.9
Anthracite	730	25.09	18315.7
Wood	5195	17.48	90808.6

Step 4: Total the Annual Heat Input from all Fuel Types

Add the calculated annual heat input for all fuel types.

$$\text{Heat Input (total)}_{annual} = \sum_{i=1}^{n}\left(Heat\ Input_{annual_i} + \cdots + Heat\ Input_{annual_n}\right)$$

$$\boldsymbol{\text{Heat Input (total)}} = (322344.9 + 18315.7 + 90808.6) = \boldsymbol{431,469.2\frac{MMBtu}{yr}}$$

Step 5: Total the Annual Heat Input from Each Fuel Classification

Find the total annual heat input from each fuel classification by adding together the calculated annual heat input of each fuel with the same fuel classification.

Solid Fossil Fuel/Coal (MMBtu/yr)		**Biomass (MMBtu/yr)**
Bituminous Coal	Anthracite Coal	Wood
322,344.9	18,315.7	90,808.6
340,660.6		**90,808.6**

Step 6: Determine the Fuel Subcategory Based on the Percent Annual Heat Input of Each Fuel Classification.

Divide the total annual heat input from each fuel classification by the total annual heat input from all fuel types, then multiply by 100%.

$$\%_{Fuel\ Subcategory} = \left(\frac{Annual\ Heat\ Input_{Fuel\ Subcategory}}{Heat\ Input\ (total)_{annual}}\right)$$

$$\%\ (\boldsymbol{Coal}) = \left(\frac{340{,}660.6\ \frac{\cancel{MMBtu}}{\cancel{yr}}}{431{,}469.2\ \frac{\cancel{MMBtu}}{\cancel{yr}}}\right) \times 100 = \mathbf{79}\%$$

Solid Fossil Fuel/Coal		**Biomass**
Bituminous Coal	Anthracite	Wood
(340660.6/431469.2) * 100% = 79%		**90808.6/431469.2) * 100% = 21%**

Step 7: Determine the Fuel Type Subcategory

Finally, compare the percentage of each fuel classification on an annual heat input basis to the listed subcategory and applicable subcategory definitions in §63.11200 and §63.11237 to determine the appropriate fuel subcategory (definitions also available in this Guide). In this example, more than 15% of the fuel combusted in the boiler on an annual heat input basis was biomass (wood); therefore, the boiler is in the Biomass Subcategory.

The calculations should be repeated before every compliance demonstration (e.g. tune-up or Performance Test) to ensure the boiler is complying with requirements of the correct fuel subcategory.

Additional Examples:

The annual heat input basis of boiler combusting biodiesel, wood, and coal is -

Type of Fuel Combusted	Biodiesel	Wood	Coal
% of Fuel on an Annual heat input basis	53%	12%	35%

Even though this boiler burns more biodiesel than wood or coal, the boiler is not in the oil subcategory because it also burns coal and/or biomass. The boiler is not in the biomass subcategory because it burns less than 15 percent biomass (wood) on an annual heat input basis. Therefore, the boiler is in the coal subcategory.

The annual heat input basis of boiler combusting natural gas and oil is -

Type of Fuel Combusted	Natural Gas	Oil*
% of Fuel on an Annual heat input basis	78%	22%

*The boiler burns oil for startups and for periodic testing. Oil was combusted in the boiler for 65 hours due to periodic testing during the calendar year and oil was also burned for other purposes that did not include a gas curtailment or gas supply interruption.

Although this dual-fired boiler consumed more natural gas than oil on an annual heat input basis, the boiler is in the oil subcategory for Subpart JJJJJJ and is not excluded as a gas-fired boiler. The boiler exceeded the 48-hour limit for burning liquid fuel in a calendar year. Additionally, oil was combusted in the boiler for purposes other than gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel.

2.3 Determine if the Boiler is New, Reconstructed, or Existing

Subpart JJJJJJ applies to new, reconstructed, and existing boilers; however, the requirements will differ depending on the date of construction or reconstruction. Construction or reconstruction commences on the date of the contractual obligation to undertake and complete construction or on the date the act of construction or reconstruction of the boiler began.

- New - The boiler is a new source if construction commenced after 4 June 2010 and met the applicability criteria at the time construction commenced.

- Reconstructed - The boiler is a reconstructed source if reconstruction of the boiler commenced after 4 June 2010 and met the applicability criteria at the time reconstruction commenced. Reconstruction is the replacement of components such that the total, fixed

capital cost of the replacement is greater than 50% or more than the fixed capital cost of constructing a comparable, new unit.

- Existing - The boiler is an existing source if construction or reconstruction commenced on or before 4 June 2010 or switched from firing natural gas fuel to a solid fossil fuel, biomass, or liquid fuel after 4 June 2010.

- Fuel Switching for Existing Dual-Fuel Fired Boilers - An existing dual fired boiler that met the definition of a gas-fired boiler before 4 June 2010, but becomes subject to Subpart JJJJJJ after 4 June 2010 due to a switch from gaseous fuel to solid fossil fuel, biomass, or liquid fuel is considered an existing source as long as the boiler was already designed to accommodate the other fuel.

NOTE: A new gas-fired boiler (commenced construction or reconstruction after 4 June 2010) that burns oil for reasons other than those allowed under Subpart JJJJJJ (burns liquid fuel for reasons other than during periods of gas curtailment, gas supply interruption, startups, or for more than 48 hours for periodic during any calendar year) will be considered a new oil-fired boiler, regardless of whether the boiler is physically capable of burning oil or is physically changed such that it can accommodate oil. [§63.11194(c)]

2.4 Determine Size of the Boiler

Boiler size is expressed in terms of rated design heat input capacity and is measured in MMBtu/hr. One British thermal unit (Btu) equals the amount of energy needed to heat one pound of water one-degree Fahrenheit or the energy given off by burning one wooden match.

Boilers frequently have a nameplate listing the rated heat input capacity on the unit. This rated capacity may have also been reported to the entity insuring the boiler or to the State labor and safety inspector. For the purposes of JJJJJJ, the size categories for the boilers are as follows:

- Large - Boilers that have a heat input capacity equal to or greater than 10 MMBtu/hr.
- Small - Boilers that have a heat input capacity less than 10 MMBtu/hr.
- Oil-fired boilers with heat input capacity less than or equal to 5 MMBtu/hr are considered small for some work practice standards (tune-up).
- Oil-fired boilers with heat input capacity greater than 5 MMBtu/hr are considered large for some work practice standards (tune-up).

2.5 Dual-Fueled (Gas and Oil) Boilers

An advantageous feature of Subpart JJJJJJ is that gas-fired boilers are not subject to the rule; however, some facilities maintain a backup fuel for their natural gas fired boilers, such as

distillate fuel oil, to maximize economic and operational flexibility. It is crucial for facilities to carefully manage operations and monitor fuel usage of their dual-fueled boiler (gaseous and liquid fuel) to maintain the gas-fired boiler exclusion. To meet the definition of "gas-fired" per Subpart JJJJJJ, the boiler:

- Must burn only gaseous fuels (e.g., natural gas, process gas, landfill gas, coal-derived gas, refinery gas, hydrogen, or biogas) not combined with any solid fuels.
- Can burn Liquid fuels during periods of gas curtailment, gas supply interruption, startups, or periodic testing of liquid fuels. There is no limit on the number of hours a gas-fired boiler may burn oil during periods of gas curtailment or supply interruption.
- Can burn liquid fuels for periodic testing for a maximum of a combined total of 48 hours during the calendar year**.** The 48 hours refers to operating hours, not fuel capacity or amount of fuel burned.
- Must continue to meet the requirements and definition of gas-fired boiler under Subpart JJJJJJ in order to remain excluded from the rule.

NOTE: Natural gas curtailment or supply interruption means a period of time during which the supply of natural gas to an affected facility is halted for reasons beyond the control of the facility. An increase in the cost or unit price of natural gas does not constitute a period of natural gas curtailment or supply interruption. A boiler will lose its gas-fired status if the boiler switches from natural gas to fuel oil in response to rising natural gas prices. However, a boiler is still considered to be gas-fired if it temporarily switches to fuel oil when the gas supply is curtailed under the conditions of a contract with the gas supplier.

2.5.1 Boiler No Longer Meets Definition of "Gas-Fired"

NOTE: Contact AFCEC/CZTQ if a gas-fired boiler exceeds the 48-hour liquid fuel limit or otherwise no longer meets the definition of a "gas-fired" boiler.

If an exempt gas-fired boiler no longer qualifies as "gas-fired" and becomes subject to Subpart JJJJJJ (switches fuels to save costs, exceeds the 48-hour liquid fuel limit for periodic testing, etc.), facilities must then take action to meet the requirements appropriate for the applicable subcategory. Notification of the fuel switch must be submitted within 30 days and compliance must be demonstrated within 180 days of the effective date of the fuel switch or the physical change [§63.11210(h) and §63.11225(g)].

The compliance requirements, depending on boiler size and construction/reconstruction date, may include the following:

- Notification of Fuel Switch – Due within 30 days of fuel switch. The notice must include, at least, the following information:
    - The name of the owner or operator of the affected source, the location of the source, the boiler(s) that have switched fuels, were physically changed, or took a permit limit, and the date of the notice.
    - The date upon which the fuel switch, physical change, or permit limit occurred.
- Initial Notification of Applicability – Due within 120 days of fuel switch.
- Compliance Requirements (varies by boiler) – Must be conducted within 180 days of fuel switch.
    - The Energy Assessment is conducted "one-time"; therefore, it is only required the first time an existing boiler becomes subject to Subpart JJJJJJ.
    - If it has been more than 2 or 5 years, as applicable, since the boiler's previous tune-up, the tune-up must be performed within 180 days of the fuel switch. The tune-up must be completed in accordance to the requirements of Subpart JJJJJJ.
    - New oil-fired boilers with heat input capacity of 10 MMBtu/hr or greater are subject to an emission limit for Filterable PM.
- Notification of Compliance Status (NOCS) – Due within 60 days of completion of the compliance requirement.
- An existing or new gas-fired boiler that no longer meets the definition due to a fuel switch or operating exceedance on liquid fuel, retains the "existing" or "new" classification:
    - An existing dual-fuel fired boiler that met the definition of a gas-fired boiler prior to 4 June 2010, but then becomes subject to Subpart JJJJJJ after that date as a result of a fuel switch from gaseous fuel to solid fossil fuel, biomass, or liquid fuel is considered to be existing as long as the boiler is designed to accommodate the alternate fuel.
    - A new or reconstructed dual-fuel fired boiler meeting the definition of gas-fired boiler that becomes subject to Subpart JJJJJJ after 4 June 2010 due to a fuel switch from gaseous fuel to solid fossil fuel, biomass, or liquid fuel is considered to be a new boiler.
- The boiler must continue to comply with all applicable Subpart JJJJJJ requirements for oil-fired boilers until the end of the current calendar year (i.e., December 31). To

requalify as a "gas-fired boiler," the boiler must meet the Subpart JJJJJJ definition of "gas-fired boiler" beginning on January 1 of the next calendar year.

2.5.2 Dual-Fueled or Liquid-Fueled Boiler Switching to "Gas-Fired" Boiler

- If a boiler undergoes a physical change or permit limit which results in the boiler being capable of burning only gaseous fuels, the boiler qualifies as "gas-fired" at that time. Notification of the fuel switch or physical change is required to be submitted to the Administrator within 30 days of the physical change or permit limit.

- If the boiler did not meet the definition of "gas-fired" during the calendar year, but meets the definition of "gas-fired" beginning January 1 of the next calendar year (and retains the capability to burn liquid fuel), the Notification of the fuel switch is required to be submitted to the Administrator within 30 days (i.e., 30 days after January 1). [§63.11225(g)]

3 COMPLIANCE

The information gathered in the previous chapter regarding the boiler (fuel subcategory, new/existing, and size), will be needed to determine the proper requirements for compliance with Subpart JJJJJJ. The requirements for some boilers can be as simple as a thorough periodic tune-up and inspection, while other boilers may be subject to emission limits and/or operating limits which involve more rigorous requirements (performance testing, fuel analysis, etc.). Existing boilers are subject to a one-time Energy Assessment.

3.1 Unknown Compliance Status of Boiler

If the compliance status of the boiler is unknown, conduct an evaluation to determine where the boiler is within the compliance process. If it is determined that the boiler has missing requirements and the deadline has passed, immediately contact the AFCEC/CZTQ Air Quality Subject Matter Expert for a consult on developing a compliance strategy. If the deadline has not passed, ensure that the boiler meets applicable compliance requirements on or before the deadline(s). Suggestions for evaluating the compliance status of a boiler include:

- First, check to see if a Notice of Initial Compliance has been completed and submitted to the Administrator (more than one Notice of Compliance may be required, depending on the boiler's subcategory). If the Notice of Initial Compliance(s) has been properly completed and submitted, continuing compliance is indicated. Review the continuous compliance requirements (periodic tune-up schedule, etc.) and ensure all obligations are being met.

- If a Notice of Initial Compliance has not been filed for the boiler in question, verify that a Notice of Applicability has been filed with the Administrator.

- Locate records to determine the date and scope of any tune-up, Energy Assessment, performance testing, and fuel analysis that may or may not have been conducted on the boiler. Compare these records with the initial and continuous (on-going) compliance requirements to determine which, if any, requirements are lacking.

3.2 Compliance Summary

The boiler, including associated air pollution control equipment and monitoring equipment, must be operated and maintained in a manner consistent with safety and good air pollution control practices for minimizing emissions at all times. A summary of the compliance requirements is provided in Table 3-1, *Compliance Requirement Summary for Existing Boilers* and Table 3-2, *Compliance Summary for New Boilers* (derived from Table 1 and Table 2 of 40 CFR 63 Subpart JJJJJJ):

Table 3-1. Compliance Requirement Summary for Existing Boilers

Compliance Summary for Existing Area Source Boilers (Commenced construction or reconstruction on or before 4 June 2010)		
Boiler Size	**Fuel Type**	**Requirements***
Large (≥ 10 MMBtu/hr)	Coal	Hg and CO Emission Limits Startup/Shutdown Work Practices One-Time Energy Assessment
	Oil and Biomass	Initial Tune-up and Tune-up every 2 years One-Time Energy Assessment
	Seasonal	Initial Tune-up and Tune-up every 5 years One-Time Energy Assessment
Small (< 10 MMBtu/hr)	Oil ≤ 5 MMBtu/hr	Initial Tune-up and Tune-up every 5 years
	Oil > 5 MMBtu/hr	Initial Tune-up and Tune-up every 2 years
	Coal and Biomass	Initial Tune-up and Tune-up every 2 years
	Seasonal	Initial Tune-up and Tune-up every 5 years
Limited-Use	Coal, Oil, Biomass	Initial Tune-up and Tune-up every 5 years
***Boilers with Oxygen Trim System require an Initial Tune-up and a Tune-up every 5 years (Coal, Oil, and Biomass Fuels).		

Table 3-2. Compliance Requirement Summary for New Boilers

Compliance Summary for New Area Source Boilers (Commenced construction or reconstruction after 4 June 2010)		
Boiler Size	**Fuel Type**	**Requirements***
Large (≥ 10 MMBtu/hr)	Coal	Hg, CO, and PM Emission Limits Startup/Shutdown Work Practices
	Biomass and Oil	PM Emission Limits** Tune-up every 2 years Startup/Shutdown Work Practices
	Seasonal (Coal, Biomass, Oil)	Tune-up every 5 years Startup/Shutdown Work Practices
	Limited-Use (Coal, Biomass, Oil)	
Small (< 10 MMBtu/hr)	Oil ≤ 5 MMBtu/hr	Tune-up every 5 years
	Oil > 5 MMBtu/hr	Tune-up every 2 years
	Coal and Biomass	Tune-up every 2 years
	Seasonal (Coal, Oil, Biomass)	Tune-up every 5 years
	Limited-Use (Coal, Biomass, Oil)	
*Boilers with Oxygen Trim System require a Tune-up every 5 years (Coal, Oil, and Biomass). **Boilers burning ONLY Ultra-Low-Sulfur-Fuel are not subject to the PM emission limit.		

3.2.1 Initial Compliance Deadlines

Compliance deadlines vary depending on whether or not the boiler is new/reconstructed or existing. A summary of the compliance deadlines is provided in Table 3.5, *Summary of Initial Compliance Requirement Deadlines.*

Table 3-3. Summary of Initial Compliance Requirement Deadlines

Initial Compliance Requirement Deadlines for Subpart JJJJJJ						
If the boiler is....	**Initial Notice of Applicability (§63.11225)**	**Initial Tune-up & Energy Assess. (§63.11210)**	**Performance Test (fuel and stack) CMS Eval. if required (§63.11210)**	**Notification of Compliance (§63.11225)**		
				Initial Tune--up	**Energy Asses.**	**Performance Test**
New or Reconstructed and startup was after 20 May 2011	Within 120 days of start-up[1] or becoming subject to rule	Not Required[2]	Within 180 days of start-up or becoming subject to rule	Not Required		60 Days after test is completed
New or Reconstructed and startup was on or before 20 May 2011	**17 September 2011 (passed)**		**17 September 2011 (passed)**			
Existing (compliance date was 21 March 2014)	**20 Jan 2014 (Passed)**	**21 March 2014 (Passed)**	**18 Sept 2014 (Passed)**	**19 July 2014 (Passed)**		

[1]Submit Notification of Startup within 15 days [§63.9(b)]
[2]First tune-up is due no later than 25 months (if subject to biennial schedule) or 61 months (if subject to 5-year schedule) after the initial startup.

Reminder: If it is determined that the boiler is not in compliance with a requirement, but the deadline has passed, immediately contact the AFCEC/CZTQ Air Quality Subject Matter Expert for a consult on developing a compliance strategy.

3.3 Task Overview

Although 40 CFR 63 Subpart JJJJJJ is not as complex as Subpart DDDDD (the Major Source rule), the rule can be difficult to navigate, particularly if the boiler is subject to emission and operating limits. To assist with compliance, this guide breaks up requirements into the following Tasks:

Submit initial Notification of Applicability

Comply with applicable Work Practice Standards

- Task 1: Conduct Initial Tune-Ups
- Task 2: Conduct One-Time Energy Assessment, if required
- Task 3: Utilize Startup and Shutdown Work Practices, if required

Initial compliance with Emission Limits, if required

- Task 1: Determine Emission Limits based on the fuel type of the boiler
- Task 2: Develop applicable Compliance Plans and submit if required
- Task 3: Comply with Initial Test/Evaluation notification requirements
- Task 4: Conduct Initial Performance (Stack) tests
- Task 5: Conduct Initial Performance (fuel analysis) tests
- Task 6: Establish Operating Limits
- Task 7: Conduct performance evaluations of Continuous Monitoring System
- Task 8: Submit initial Notification of Compliance

Continuous Compliance

- Task 1: Conduct periodic Tune-Ups
- Task 2: Follow Startup and Shutdown Procedures, if required
- Task 3: Conduct periodic Performance testing, if required
- Task 4: Conduct periodic fuel analysis, if required
- Task 5: Demonstrate continuous compliance with operating parameters, if required

Submit other notifications and reports as required

Satisfy Recordkeeping Requirements

3.4 Submit Initial Notification of Applicability

There are notifications which must be submitted before compliance with the requirements. After the boilers applicability, fuel subcategory, qualification as an existing or new source, and size have been determined, an Initial Notification of Applicability is required for sources subject to 40 CFR 63 Subpart JJJJJJ. The Notification is a form required by the EPA to convey to the Administrator if a facility is a Major Source or an Area Source and provide general information regarding the source. The EPA or the delegated administrator frequently have forms available for this purpose.

NOTE: The notification must be signed by a Responsible Official as defined by 40 CFR 70.2 and AFI 32-7040, Air Quality Compliance and Resource Management, which would be the Installation/Center Commander.

Notification Deadline–

Facilities are required to submit the Initial Notification of Applicability within 120 days after the source becomes subject to 40 CFR 63 Subpart JJJJJJ. [§63.11225(a)(2)]

Submit the notification to the appropriate Administrator. To determine whether the State has been delegated the authority for this regulation contact the EPA Regional Office or refer to 40 CFR 63.99. Initial Notifications must include, at a minimum, the following information [40 CFR §63.9(b)(2)]:

- Name and address of the owner or operator.
- The address (i.e., physical location) of the boiler.
- An identification of the relevant standard, or other requirement, that is the basis of the notification (i.e., 40 CFR part 63 subpart JJJJJJ) and the source's compliance date.
- Anticipated compliance with the standard.
- A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of hazardous air pollutants emitted.
- A statement of whether the affected source is a Major Source or an Area Source

NOTE: If there is a change in the boiler's fuel subcategory, a revised Notice of Applicability must be submitted within 30 days of the change and the boiler must be in compliance with the applicable requirements of the new fuel subcategory within 180 days of the effective date of change.

3.5 Comply with Work Practice Standards

The facility must comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 to 40 CFR 63 Subpart JJJJJJ that applies to the boiler. Work practice standards have been found by the EPA to be sufficient to manage HAP emissions for small boilers and some large boilers, other boilers, as identified above, must meet both the work practice standards and emission limits.

3.5.1 Task 1: Conduct Initial Tune-ups and Inspections

NEW BOILERS ARE NOT REQUIRED TO CONDUCT AN INITIAL TUNE UP.

NOTE: Initial Compliance Date for Existing Units - Initial tune-ups must have been completed by 12 March 2014. If an existing boiler was not in operation on this date, a tune-up must be completed within 30 days after restarting on solid fossil fuel, biomass, or liquid fuel. If it is

determined that a boiler's tune-up was not conducted by the appropriate deadline for that boiler, immediately contact the AFCEC/CZTQ Air Quality Subject Matter Expert for a consult on developing a compliance strategy.

Following the initial tune-up, existing sources will undergo regularly scheduled tune-ups. New and reconstructed boilers are not required to undergo an initial tune-up, but they must comply with their first tune-up no later than 25 months or 61 months after startup, whichever is applicable. On-going tune-ups must be conducted for each boiler within the applicable biennial (2-year) or 5-year schedule as specified in 40 CFR 63 Subpart JJJJJJ (as summarized in the table below):

Table 3-4. Periodic Tune-up Schedule

PERIODIC TUNE-UP SCHEDULE	
If the boiler or process requires a tune-up...	Conduct a tune-up and inspection....
Every Two Years	No later than 25 months after the previous tune-up and inspection.
Every Five Years	No later than 61 months after the previous tune-up and inspection.
40 CFR §63.11210(f)	

NOTE: If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of restarting. A tune-up may be conducted early if the next tune-up is due no later than 25 months or 61 months (whichever is applicable to the particular boiler) after the date of the early tune-up and if the tune-up includes all elements as required by the rule.

3.5.1.1 Tune Up Requirements

Although tune-ups are normally considered to be standard maintenance for boilers, requirements in 40 CFR 63 Subpart JJJJJJ exceed what is a typical "tune-up". The primary goal of a boiler tune-up is to improve efficiency with respect to combustion operations. Oxygen and unburned fuel are balanced to provide safe and efficient combustion. Improving combustion efficiency reduces fuel usage resulting in decreased emissions. For example, if coal is not completely burned during combustion, carbon becomes part of PM, which will then need to be managed downstream in the process. Additionally, a thorough inspection can reveal problems such as an improper air-to-fuel ratio or a compromised furnace seal which can lead to high levels of CO emissions. This is particularly important for older models of boilers because they are typically not designed to achieve low CO levels and therefore, proper air-to-fuel ratio is critical to maximize burn efficiency and reduce CO emission.

The tune-up and inspection generally consists of, at a minimum, the following items in accordance with the procedures outlined in [§63.11223(b)]:

- Inspect the burner, and clean or replace any components of the burner as necessary (the inspection can be delayed until the next scheduled unit shutdown, but each burner must be inspected at least once every 36 months).
- Inspect the flame pattern and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available.
- Inspect the system controlling the air-to-fuel ratio and ensure that it is correctly calibrated and functioning properly (the inspection can be delayed until the next scheduled unit shutdown if needed).
- Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any nitrogen oxide requirement.
- Measure the concentrations in the effluent stream of CO 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). Measurements may be taken using a portable CO analyzer.
- Maintain onsite and submit, if requested by the Administrator, biennial or five-year report containing the following information:
    - 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.
    - A description of any tune-up corrective actions taken.
    - 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.
- The tune-up must be conducted 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).

3.5.1.2 Initial Notification of Compliance with Tune-up:

- **For boilers subject to both emission limits and a tune-up**: The initial NOCS for the tune-up and for the performance testing are submitted to the Administrator separately.
- **For boilers subject to both emission limits and an Energy Assessment**: The same or a separate initial NOC may be used to fulfill the notification requirements for both the emission limits and the Energy Assessment (the Energy Assessment, however, is not necessarily required at the same time).

3.5.2 Task 2: Conduct One-Time Energy Assessment

NOTE: This task is included for informational purposes only. A one-time energy assessment was required by 21 March 2014 for existing boilers (construction or reconstruction commenced on or before 4 June 2010) larger than 10 MMBtu/hr (excludes limited-use boilers). New boilers larger than 10 MMBtu/hr are not subject to this requirement. **If the facility has an existing boiler and missed the deadline or has an existing boiler that later becomes subject to Subpart JJJJJJ, immediately contact the AFCEC/CZTQ Air Quality Subject Matter Expert for a consult on developing a compliance strategy.**

- Boilers that become subject to 40 CFR 63 Subpart JJJJJJ **after** the compliance date due to a switch in fuel or physical change, must demonstrate compliance with the Energy Assessment requirement within 180 days of the switch (switches from firing gaseous fuel to solid fossil fuel, biomass, or liquid after 4 June 2010).
    - If the boiler was not designed to accommodate the alternative fuel, the boiler is considered to be new under Subpart JJJJJJ and an Energy Assessment is not required.

- Energy assessments uncover and suggest opportunities to reduce energy usage and increase efficiency of their systems. The EPA does **NOT** require owners and operators of boilers to implement recommendations made by the assessment.

- An Energy Assessment completed on or after 1 January 2008 that meets or is amended to meet the Energy Assessment requirements in Table 2 of 40 CFR 63 Subpart JJJJJJ satisfies the Energy Assessment requirement. A facility that operated under an energy management program developed according to the Energy Star guidelines for energy management or compatible with ISO 50001 for at least one year between 1 January 2008, and the compliance date that included the affected units also satisfies the energy assessment requirement [§63.11201(b)]. Energy assessor approval and qualification requirements are waived by the EPA in instances where past or amended Energy Assessments are used to meet the Energy Assessment requirements. *The Base Civil Engineer will determine if the prior assessment or energy management program meets the Energy Assessment substitution criteria before the Notification of Compliance is submitted to the EPA.*

3.5.2.1 Energy Assessment Requirements

An Energy Assessment is a detailed assessment of a facility's affected boilers and energy use system to identify immediate and long-term opportunities to save energy, including identification of cost-effective energy conservation measures (cost effective means items having a payback period of 2 years or less). The Energy Assessment is limited to only those boilers and energy use

systems associated with the affected boilers and does not encompass energy use systems located off-site or energy use systems using electricity purchased from an off-site source.
The Energy Assessment must be conducted by a Qualified Energy Assessor and includes an audit of the boiler system (components, combustion air systems, fuel systems, etc.) as well as systems using energy produced by the boiler, such as facility heating, ventilation, and air conditioning (HVAC) systems; hot heater systems; compressed air systems; process heating and cooling, and lighting. Assessments entail, but are not limited to, the following [§63.11201 and Table 2 of 40 CFR 63 Subpart JJJJJJ]:

- A visual inspection of the boiler system;
- An evaluation of operating characteristics of the boiler systems, specifications of energy using systems, operating and maintenance procedures, and unusual operating constraints;
- An inventory of major energy use systems consuming energy from affected boilers, which are under the control of the boiler operator;
- A review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage;
- A review of the facility's energy management practices and recommendations for improvements consistent with the definition of energy management practices, if identified;
- A list of cost-effective energy conservation measures that are within the facility's control;
- A list of the energy savings potential of the energy conservation measures identified; and
- A comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping these investments.

3.5.2.2 Qualified Energy Assessor

The Qualified Energy Assessor can be internal or a third-party. The person must have demonstrated capabilities to evaluate energy savings opportunities for steam generation and major energy using systems, including, but not limited to: boiler combustion management, boiler thermal energy recovery, boiler blowdown thermal energy recovery, primary energy resource selection, insulation issues, etc. The Qualified Energy Assessor should have, at a minimum, the background, experience, and recognized abilities to perform the required assessment activities, data analysis, and report preparation (§63.11237).

3.5.2.3 Duration and Scope of Energy Assessment

Table 3-5, *Duration and Scope of Energy Assessment*, summarizes the duration and scope of the energy assessment per the requirements of Subpart JJJJJJ. There are no minimum hours required

for the energy assessment, but the assessment must include all components. However, there is a cap on how many on-site technical labor hours can be expended on the energy assessment (the maximum on-site technical hours may be exceeded at the discretion of the operator or owner). The maximum technical hours are based on combined heat input calculations. To determine which heat input capacity thresholds and associated maximum on-site technology labor hours apply to the Energy Assessment, the "combined heat input" is calculated by adding together the heat input capacity for each boiler subject to the Energy Assessment requirement as further described below:

- Facility heat input capacity is calculated by adding together the heat input capacity for each boiler subject to the Energy Assessment requirement (existing boilers with heat input capacity of 10 MMBtu/hr and greater. Does not include limited-use boilers).
- The combined heat input capacity is a measurement of the facility's total boiler capacity measured in Trillion British thermal units per year (TBtu/yr).
- Heat input capacity for each boiler subject to the Energy Assessment is calculated based on 8,760 hr/yr, then added together.

The combined heat input capacity of the facility is also used to determine the minimum percentage of the on-site energy use system that is required to be evaluated. For example, a facility with a combined heat input capacity of less than 0.3 trillion BTU/yr, will be required to have the boiler system and any on-site energy use systems accounting for at least 50% of the affected boiler's energy (e.g., steam, hot water, or electricity) production included in the assessment, within the limit of the 8-hour maximum on-site technical labor hours. If the facility does not have any on-site energy use systems that account for at least 50% of the boiler's energy production, then only the boiler needs to be evaluated to identify energy savings opportunities.

To determine the scope of the energy assessment, each on-site energy use system is examined separately to determine how much of the boiler's energy production it uses. The on-site energy use systems serving as the basis for the percent of affected boiler(s) energy production may be segmented by production area or energy use area as most logical and applicable to the specific facility being assessed (e.g., product X manufacturing area; product Y drying area; Building Z). The boiler system(s) and any on-site energy use system(s) accounting for at least the percentage of the energy (e.g., steam, process heat, hot water, or electricity) production, as applicable, are required to be evaluated to identify energy savings opportunities.

NOTE: On-site energy use system(s) means any individual energy use system, not combination of energy use systems, accounting for the specified amount of the affected boiler energy,

Table 3-5. Energy Assessment Duration and Scope

If the Facility has Affected Boilers with a Combined Heat Input Capacity of...	The Maximum On-Site Technical Labor Hours is..	The Minimum Percentage of Boiler's On-Site Energy Use System to be Evaluated is...
< 0.3 Trillion Btu year (TBtu/yr)	8 Hours	50% of boiler(s) energy output
> 0.3 TBtu & < 1.0 TBtu/yr	24 Hours	33% boiler(s) energy output
> 1.0 TBtu/yr	24 hours + 8 hours per additional 1.0 TBtu/yr (not to exceed 160 hours)	20% boiler(s) energy output
40 CFR §63.11237		

3.5.2.4 Energy Assessment Report

A report will be prepared by the assessor identifying energy conservation measures and opportunities and establishing cost payback on investments compared to potential energy savings. Although there is no requirement in 40 CFR 63 Subpart JJJJJJ for facilities to follow the recommendations in the Energy Assessment report, the assessment can be a valuable tool. The Energy Assessments can be helpful in determining whether or not affected boilers are capable of meeting emission limits; therefore, the assessment can serve as an instrument for identifying retrofits, upgrades, and other options that may be necessary to achieve compliance.

Facilities are not required to submit Energy Assessment reports to the EPA or delegated authority; however, a Notice of Compliance Status must be submitted to the Administrator with a certified statement that the Energy Assessment has been completed as required. The facility must keep a copy of the notice and the Energy Assessment report as applicable for each affected boiler (must be kept on-site) [40 CFR §63.11225(c)(2)(iii)].

NOTE: The reports can be requested by the EPA, delegated authority, or public; it is important that the assessor balance regulatory requirements with Confidential Business Information when developing the report.

3.5.3 Task 3: Utilize Startup and Shutdown Practices and Procedures

NOTE: This Task applies only to boilers that are subject to Emission Limits per 40 CFR 63 Subpart JJJJJJ (existing or new coal-fired, new biomass-fired, or new oil-fired boilers with heat input capacity of 10 MMBtu/hr or greater).

Boilers subject to emission limits must minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures, if available. If the manufacturer's

recommended procedures are not available, follow the recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available. The definition of shutdown and startup are as follows:

- **Shutdown** - The period in which cessation of operation of a boiler is initiated for any purpose. Shutdown begins when the boiler no longer supplies useful thermal energy (such as steam or hot water) for heating, cooling, or process purposes or generates electricity, or when no fuel is being fed to the boiler, whichever is earlier. Shutdown ends when the boiler no longer supplies useful thermal energy (such as steam or hot water) for heating, cooling, or process purposes or generates electricity, and no fuel is being combusted in the boiler.

- **Startup means either**:
    - The first-ever firing of fuel in a boiler for the purpose of supplying useful thermal energy (such as steam or hot water) for heating and/or producing electricity, or for any other purpose, or the firing of fuel in a boiler after a shutdown event for any purpose. Startup ends when any of the useful thermal energy (such as steam or hot water) from the boiler is supplied for heating and/or producing electricity, or for any other purpose, OR
    - The period in which operation of a boiler is initiated for any purpose. Startup begins with either the first-ever firing of fuel in a boiler for the purpose of supplying useful thermal energy (such as steam or hot water) for heating, cooling or process purposes or producing electricity, or the firing of fuel in a boiler for any purpose after a shutdown event. Startup ends 4 hours after when the boiler supplies useful thermal energy (such as steam or hot water) for heating, cooling, or process purposes or generates electricity, whichever is earlier.

Note: Useful thermal energy means energy (i.e., steam or hot water) that meets the minimum operating temperature, flow, and/or pressure required by any energy use system that uses energy provided by the affected boiler.

3.6 Initial Compliance with Emission Limits

NOTE: The initial compliance demonstration deadline for existing boilers has passed. The initial compliance deadline for new and reconstructed boilers is 180 days after startup. If it is determined that the facility has a boiler required to meet emission limits, but the deadline has passed, immediately contact the AFCEC/CZTQ Air Quality Subject Matter Expert for a consult on developing a compliance strategy.

CAUTION: Prior to 14 September 2016, new or reconstructed oil-fired boilers that combust only low-sulfur liquid fuel (i.e., ≤ 0.50 weight percent sulfur) were not subject to the PM emission limit provided the type of fuel was monitored and recorded on a monthly basis. However, on 14 September 2016, the EPA finalized amendments to Subpart JJJJJJ that eliminated those provisions (81 FR 63112). Boilers that were constructed or reconstructed before 14 September 2016, are provided three years to comply to the new requirements (boilers constructed on or after that date must begin compliance upon start-up).

Major Changes to Initial Compliance Requirements Effective 14 September 2016 40 CFR Part 63, NESHAP, Subpart JJJJJJ			
If a boiler constructed or reconstructed before 14 September 2016 was meeting this requirement:	**The new requirement is:**	**Compliance Deadline is:**	**Reference**
New or reconstructed oil-fired boilers that combust only low-sulfur liquid fuel (i.e., ≤ 0.50 weight percent sulfur) are not subject to the PM emission limit.*	New or reconstructed oil-fired boilers that combust only ultra-low-sulfur liquid fuel (i.e., ≤ 15 parts per million sulfur) are not subject to the PM emission limit.*	14 September 2019 (three years)	§63.11210(f)
*Type of fuel combusted in the boiler must be monitored and recorded on a monthly basis.			

For new or reconstructed oil-fired boilers that commenced construction or reconstruction on or before September 14, 2016, that combust only oil that contains no more than 0.50 weight percent sulfur or a mixture of 0.50 weight percent sulfur oil with other fuels not subject to a particulate matter (PM) emission limit under this subpart and that do not use a post-combustion technology (except a wet scrubber) to reduce PM or sulfur dioxide emissions, you are not subject to the PM emission limit in Table 1 of this subpart until September 14, 2019, providing you monitor and record on a monthly basis the type of fuel combusted. If you intend to burn a new type of fuel or fuel mixture that does not meet the requirements of this paragraph, you must conduct a performance test within 60 days of burning the new fuel. On and after September 14, 2019, you are subject to the PM emission limit in Table 1 of this subpart and you must demonstrate compliance with the PM emission limit in Table 1 no later than March 12, 2020.

Emission Limits are specific allowable levels of pollutants that can be released from pollution sources, such as a boiler. In order to demonstrate compliance with the emission limits, the boiler's emissions need to be calculated and the information reported to the Administrator as

required. Initial compliance with each applicable emission limit is demonstrated by conducting Performance (stack) tests or, alternatively for Hg, conducting fuel analyses.

Emission Limits apply at all times the affected boiler is operating, except during periods of startup and shutdown as defined in §63.11237, during which time compliance with the work practice standards (startup and shutdown provisions) in Table 2 of 40 CFR 63 Subpart JJJJJJ will apply. [§63.11201(d)]

Boilers that have emission limits include (limited-use boilers are excluded and, in some cases, seasonal boilers are also excluded):

- Existing Large Coal (excluding limited-use boilers) - Hg, CO
- New Large Coal (excluding limited-use boilers) - Hg, CO, filterable PM
- New Large Biomass (excluding seasonal boilers and limited-use boilers) - filterable PM
- New Large Oil (excluding seasonal boilers and limited-use boilers) - filterable PM

For affected boilers that demonstrate compliance with any of the emission limits of Subpart JJJJJJ through performance (stack) testing, the initial compliance requirements include:

- Conducting performance tests according to §63.11212 and Table 4 to 40 CFR 63 Subpart JJJJJJ,
- Conducting a fuel analysis for each type of fuel burned in the boiler according to §63.11213 and Table 5 to 40 CFR 63 Subpart JJJJJJ,
- Establishing operating limits according to §63.11222, Table 6 to this subpart and paragraph (b) of §63.11211, as applicable, and
- Conducting CMS performance evaluations according to §63.11224.

3.6.1.1 Compliance Considerations

- New or reconstructed oil-fired boilers that combust only ultra-low-sulfur liquid fuel [a distillate oil that has less than or equal to 15 parts per million (ppm) sulfur], are not subject to the PM emission limits providing the type of fuel combusted is monitored and recorded on a monthly basis. If intending to burn a fuel other than ultra-low-sulfur liquid fuel or gaseous fuels, a performance test must be performed within 60 days of burning the new fuel [§63.11210(f)].

- Compliance with CO emission limits requires CO CEMS or CO stack testing and an oxygen monitoring system. Coal fired boilers larger than 10 MMBtu/hr have an Emission Limit for CO.

- Boilers that use a Continuous Emission Monitoring System (CEMS) for CO are exempt from the initial CO performance testing in Table 4 to 40 CFR 63 Subpart JJJJJJ and the oxygen concentration operating limit requirement specified in Table 3, 40 CFR 63 Subpart JJJJJJ [§63.11212(b)].
- Continuous compliance is achieved through monitoring data and performing subsequent fuel analysis or stack tests as required.

3.6.2 Task 1: Determine Applicable Numerical Emission Standards for the Boiler

Emission Limits are broken down by fuel subcategory, the size of the boiler, and whether or not the boiler is new or existing. Emission Limits are found in Table 1 of 40 CFR 63 Subpart JJJJJJ (they are also provided in Table 3-6, *Emission Limits for Area Source Boilers*, below).

- Performance testing means the collection of data resulting from the execution of a test method used (either by stack testing or fuel analysis) to demonstrate compliance with a relevant emission standard.

- For boilers subject to numerical emission standards, air pollutant emissions are measured through performance testing conducted according to established EPA test methods in Tables 4 (Stack Testing) and Table 5 (Fuel Analysis) of 40 CFR 63, Subpart JJJJJJ (the test methods are listed below in Table 3 7, *Emission Limit Testing Methods*).

- Convert emissions concentration to lb/MMBtu emission rates using Method 19 F-factor methodology at 40 CFR Part 60 Appendix A-7.

Table 3-6. Emission Limits for Area Source Boilers

Area Source Boiler Emission Limits (From Table 1 of 40 CFR 63 Subpart JJJJJJ)		
If the Boiler is in this Subcategory...	**The Boiler has an Emission Limit for the Following Pollutant(s)...**	**The Emission Limit for the Pollutant is...**
New coal-fired boilers with heat input capacity of 30 MMBtu/hr or greater that do not meet the definition of limited-use boiler	Filterable PM	3.0E-02 pounds (lb) per million British thermal units (MMBtu) of heat input.
	Hg	2.2E-05 lb per MMBtu of heat input.
	CO	420 parts per million (ppm) by volume on a dry basis corrected to 3 percent oxygen (3-run average or 10-day rolling average).
New coal-fired boilers with heat input capacity of between 10 and 30 MMBtu/hr that do not meet the definition of limited-use boiler	Filterable PM	4.2E-01 lb per MMBtu of heat input
	Hg	2.2E-05 lb per MMBtu of heat input.
	CO	420 ppm by volume on a dry basis corrected to 3 percent oxygen (3-run average or 10-day rolling average).
New biomass-fired boilers with heat input capacity of 30 MMBtu/hr or greater that do not meet the definition of seasonal boiler or limited-use boiler	Filterable PM	3.0E-02 lb per MMBtu of heat input.
New biomass fired boilers with heat input capacity of between 10 and 30 MMBtu/hr that do not meet the definition of seasonal boiler or limited-use boiler	Filterable PM	7.0E-02 lb per MMBtu of heat input
New oil-fired boilers with heat input capacity of 10 MMBtu/hr or greater that do not meet the definition of seasonal boiler or limited-use boiler	Filterable PM	3.0E-02 lb per MMBtu of heat input.
Existing coal-fired boilers with heat input capacity of 10 MMBtu/hr or greater that do not meet the definition of limited-use boiler	Hg	CO 2.2E-05 lb per MMBtu of heat input
	CO	420 ppm by volume on a dry basis corrected to 3 percent oxygen (3-run average or 10-day rolling average)

Table 3-7. Performance Testing Methods

Performance Testing Methods*			
If the boiler is subject to a numerical emission limit, measure pollutant specific emission concentrations in the sample using the following test methods:			
Stack Testing			
Carbon monoxide (CO)	**Particulate matter (PM)**	**Mercury (Hg)**	**Opacity**
EPA Method 10 EPA Method 10A EPA Method 10B ASTM D6522-00	EPA Method 5 EPA Method 17	EPA Method 29 EPA Method 30A EPA Method 30B EPA Method 101A ASTM D6784-02 ASTM D6722 EPA SW-846-7471B EPA SW-846-7470A	COMS certified under performance specification 1
Fuel Analysis			
		ASTM D6722a (for coal) or EPA SW-846-7471Ba (for solid samples) EPA SW-846-7470Aa (for liquid samples) or equivalent	
*Other Testing Methods may be used only upon approval from the EPA			

3.6.3 Task 2: Develop Applicable Compliance Plans

NOTE: The submittal time-frame is from Subpart JJJJJJ. Local and State agencies may have a different submittal schedule.

3.6.3.1 Required Compliance Plans

Implementation plans are required (if applicable to the boiler) and must be in place **at least 60 days prior** to conducting the compliance demonstration. A copy of the plan must be kept on-site as a record. Generally, plans are not required to be submitted unless requested by an Administrator or unless the facility intends to use an analytical method or approach that differs

from those required by 40 CFR 63 Subpart JJJJJJ. If the facility intends to use an alternative analytical method other than those required by 40 CFR 63 Subpart JJJJJJ, the facility must submit the plan to the Administrator for review and approval no later than 60 days before the date that the facility intends to conduct the compliance demonstration. The following are a list of implementation plans:

- Performance Test (Stack Test)/Quality Assurance (QA) §63.11212(a) – Boilers subject to an emission limit must conduct performance tests and develop a sites specific test plan prior to conducting the performance test. The site-specific stack test plan must be developed according to the requirements in 40 CFR §63.7(c). The plan includes, but is not limited to the following information:
    - Test program summary.
    - Test schedule.
    - Stack sampling location, control devices, testing conditions, etc...
    - Data quality objectives (the pretest expectations of precision, accuracy, and completeness of data).
    - Internal and external quality assurance program.

- Site-Specific Monitoring Plan §63.11205(c) – If compliance is demonstrated with any applicable emission limit through performance stack testing and subsequent compliance is demonstrated with operating limits (including the use of Continuous Parameter Monitoring System (CPMS), with a CEMS, or with a Continuous Opacity Monitoring System (COMS), a site-specific monitoring plan must be developed. This requirement also applies if the facility petitions the Administrator for approval of alternative monitoring parameters under §63.8(f). The performance evaluation, operation, and maintenance of each CMS must be conducted according to the plan. The requirement to develop and submit a site-specific monitoring plan does not apply to affected sources with existing CEMS or COMS operated according to the performance specifications under Appendix B to Part 60 Chapter 40 and that meet the requirements of §63.11224. The plan includes, but is not limited to, the following information:
    - Installation of the CMS sampling probe or other interface at a measurement location relative to each affected process unit such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device);

- Performance and equipment specifications for the sample interface, the pollutant concentration or parametric signal analyzer, and the data collection and reduction systems; and,
- Performance evaluation procedures and acceptance criteria (*e.g.*, calibrations).
- Ongoing operation and maintenance procedures in accordance with the general requirements of §63.8(c)(1)(ii), (c)(3), and (c)(4)(ii);
- Ongoing data quality assurance procedures in accordance with the general requirements of §63.8(d); and
- Ongoing recordkeeping and reporting procedures in accordance with the general requirements of §63.10(c).

3.6.3.2 Internal and External Quality Assurance Program

In order to maintain ongoing quality assurance, the site-specific performance and monitoring plans require the development of an internal and external Quality Assurance (QA) program. The internal QA program shall include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of test data precision (e.g.: sampling and analysis of replicate samples). The external QA program shall include, at a minimum, the following:

- Provisions for a test method performance audit during the Performance Test, in order to provide a measure of test data bias;
- Provisions for systems audits, instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities; and
- Provisions to provide appropriate notice (60 days), to the Administrator, of the Performance Test, performance audit, systems audit, allowing the regulating agency the opportunity to arrange for their own on-site evaluation.

The performance audits shall consist of blind audit samples, provided by an accredited audit sample provider, which shall be taken and analyzed during each Performance Test. The Administrator may request additional relevant information following the receipt and review of the site-specific plan. [40 CFR 63.7(c)]

3.6.4 Task 3: Comply with Initial Test/Evaluation Notification Requirements

Notification of intent to conduct a Performance Test and/or CMS Performance Evaluation must be submitted at least 60 days before the Performance Test or Performance Evaluation is

scheduled to begin. The Administrator will likely request that the applicable site-specific plan(s) be submitted with the notifications. This allows the Administrator to review and approve the plan(s) and to have an observer present during the test and/or evaluation. The notification shall describe in detail:

- The proposed test methods and procedures,
- The monitored operating parameters,
- The time(s) and date(s) of the test(s), and
- The person(s) who will be conducting the test(s).

In the event the Performance Test cannot be conducted on the date specified in the notification requirement due to unforeseeable circumstances beyond the requester's control, the Administrator must be notified as soon as practicable and without delay prior to the scheduled Performance Test date. The rescheduled date, if available, should be provided to the Administrator at that time. [40 CFR §63.7(b) and §63.9(e)].

3.6.5 Task 4: Conduct Initial Performance (Stack) Testing

NOTE: This Task applies only to boilers subject to Emission Limits.

Performance Testing is summarized in this section. The specific procedures are located in §63.11212 and in §63.7(c), (d), (f), and (h).

Reminder: Boilers that use a CEMS for CO are exempt from the initial CO performance testing and the oxygen concentration operating limit requirement.

Stack testing is an important tool used to determine a facility's compliance with emission limits. A Stack Test not only measures the amount of a specific regulated pollutant or surrogates being emitted from the boiler, the test also demonstrates the capture or destruction efficiency of an air pollution control device. The specific methodologies used for compliance demonstrations are provided in Table 4 of Subpart JJJJJJ and detailed in 40 CFR 60, Appendix A.

For boilers, the stack testing procedure itself employs a "test and cap" technique. Facilities are required to perform an initial stack test while combusting fuel containing the highest expected concentration of mercury while operating under representative operating conditions for the boiler (the conditions are typically specified by the Administrator). A representative sample is extracted from the boiler at an optimally located sampling port (refer to Table 4 of Subpart JJJJJJ for the appropriate sampling port location). The sample is then analyzed using either a field analytical instrument or sending the sample to an EPA approved laboratory for analysis. Also, during the stack test, the facility collects operating data from the control device(s) to identify the

device(s) normal operating range and to establish operating parameters. Certain key indicators of system performance, such as flow rate or pressure drop, depending on the device being used, demonstrate that the device is operating properly for adequate control of emissions/pollutant. These indicators (frequently referred to as parameters) must be measured and monitored per the requirements in Subpart JJJJJJ. Afterward the initial performance test, continuous compliance is demonstrated by maintaining the fuel pollutant concentration(s) below the level that was measured and maintaining control device operating parameters within the limits observed during the initial test. General Requirements for Performance Testing, per 40 CFR §63.7, include:

- Providing testing facilities that are safe to conduct stack testing.
- Completing a test method performance audit during the Performance Test. The performance audits consist of blind audit samples, supplied by an accredited audit sample provider and analyzed during the Performance Test, in order to provide a measure of test data bias.
- If an affected boiler and non-affected unit(s) vent(s) to a common stack, the non-affected unit(s) must be shut down or vented to a different stack during the Performance Test, unless compliance can be demonstrated with the non-affected units venting to the stack during the performance demonstration.
- 40 CFR 63 Subpart JJJJJJ requires that Performance Tests be conducted at representative operating load conditions while combusting the type of fuel or mixture of fuels that has the highest content of Hg. For boilers with more than one emission limit, this requirement could result in the need to conduct more than one performance stack test.
- All CMS must be installed, operational, and the data verified prior to or in conjunction with conducting Performance Tests. (40 CFR §63.7)
- For boilers complying with the CO emission limit using performance testing, an oxygen analyzer or continuous oxygen trim system must be operated at or above the oxygen level established during the performance test.
- Three separate test runs for each Performance Test is required as specified in 40 CFR §63.7(e)(3). Each test run must comply with the minimum applicable sampling times or volumes specified based on fuel type and configuration (Table 1 to 40 CFR Subpart JJJJJJ).
- The F-Factor methodology and equations in sections 12.2 and 12.3 of EPA Method 19 at 40 CFR Part 60 Appendix A-7 must be used to convert the measured P) concentrations, the measured HCl (hydrogen chloride) concentrations, and the measured Hg concentrations that result from the Performance Test to lbc/MMBtu heat input emission rates.

- Operating limits are established based on Performance Testing. Following each Performance Test and until the next Performance Test, the operating limits for operating load conditions specified in Table 4 to 40 CFR 63 Subpart JJJJJJ must be complied with. Operating limits must be confirmed or reestablished during subsequent Performance Tests. [§63.11212(c)]

3.6.5.1 Waiver of Performance (Stack) Testing

There are situations when a facility conducting a performance (stack) test would be duplicative are unfeasible. All boilers subject to stack testing for initial compliance must be tested unless a waiver has been granted by the administrator pursuant to 40 CFR §§60.8(b)(4), 61.13(h)(1)(iii), or 63.7(h).

To summarize 40 CFR 61.13(h)(1)(iii): emission tests shall be conducted unless the Administrator - (iii) waives the requirement for emission testing because the owner or operator of a source has demonstrated by other means to the Administrator's satisfaction that the source is in compliance with the standard. Also, 40 CFR 63.7(h)(2) states: Individual performance tests may be waived upon written application to the Administrator if, in the Administrator's judgment, the source is meeting the relevant standard(s) on a continuous basis, or the source is being operated under an extension of compliance, or the owner or operator has requested an extension of compliance and the Administrator is still considering that request.

A waiver may be appropriate on a case-by-case basis in the following situations:

- A facility has identical boilers (same manufacturer, model number or other manufacturer's identifier, rated capacity, and specifications) and each unit is operated and maintained in a similar manner. The assumption is the performance test results for one tested unit are representative of all identical boilers located at the facility as long as the boilers are performing under the same conditions on an ongoing basis; therefore, the facility may request that the administrator waive the requirement to the other boilers in the group if the tested unit demonstrates compliance with the standards. The expected emissions from the boilers should be in compliance with applicable limits by a substantial margin. If the margin is not substantial, other factors may be considered if there is sufficient emissions data to determine that the variability of emissions for identical tested boilers is low enough for confidence that the untested unit(s) will also be in compliance.

- Technical or economic infeasibility or when the impracticality of the affected source's performing the required test is demonstrated.

- If the facility is operating under an extension of compliance pursuant to §63.6(i), or has requested such an extension and the request is under consideration by the delegated agency, the Administrator may require the request for a waiver and extension be submitted simultaneously.

- Force majeure - an event caused by circumstances beyond the control of the owner/operator, the testing company, or any contractor controlled by the affected source that prevents the owner/operator from complying with the regulatory requirement to conduct or complete performance tests within the specified time frame despite the affected source's best efforts to fulfill the obligation.

- If the facility has demonstrated by other means that the emissions unit is in compliance with the applicable standard and other requirements.

NOTE: If boilers do NOT have the ability to emit a pollutant(s) in excess of prescribed emission limit(s), waivers, on a case-by-case basis, may be issued for BOTH initial and ongoing compliance stack tests.

The burden of proof is on the facility to justify the need for a waiver. If a performance test waiver is granted for one or more boilers at a facility, but other boilers still require testing, a copy of the waiver and a list of the boilers whose test requirements have been waived must be included in the protocol and final performance test report.

Waivers can be granted by a delegated agency. The request for a waiver should include the following, at a minimum:

- Information justifying the request for a waiver such as technical or economic infeasibility, or the impracticality of the affected source performing the required test, or information demonstrating how the boilers are identical or similar (model number, location, processes, maintenance schedule and procedures, etc.).

Complete test results, sampling methodology, calculations, quality assurance methods, air pollution control devices and monitoring data used during test (test data should be obtained using approved EPA methods), if available or applicable.

3.6.6 Task 5: Conduct Performance (Fuel Analysis) Testing

Fuel Analysis (sampling and testing) is an important component in meeting Emission Limits. The general requirements of Fuel Analysis are provided in this section. A benefit of a single fuel boiler is that fuel analyses is not required when conducting an initial Performance Test; however, testing can be used for a single fueled source that decides (and qualifies) to comply via fuel analysis rather than through Performance Testing.

NOTE: A boiler that uses a supplemental fuel only for startup, unit shutdown, and transient flame stability purposes still qualify a boiler that burns a single type of fuel, and the supplemental fuel is not subject to the fuel analysis requirements under §63.11213 and Table 5 to 40 CFR 63 Subpart JJJJJJ.

A fuel analyses must be conducted for fuels and boilers that are subject to emission limits for Hg by using the following procedures (summarized from Table 5 to 40 CFR 63 Subpart JJJJJJ):

- At a minimum, obtain three composite fuel samples for each fuel type according to the procedures in Table 5 40 CFR 63 Subpart JJJJJJ. Each composite sample must consist of a minimum of three samples collected at approximately equal intervals during a test run period.

- Determine the concentration of Hg in the fuel in units of lbs/MMBtu of each composite sample for each fuel type according to the procedures in Table 5 to 40 CFR 63 Subpart JJJJJJ.

If compliance is demonstrated with the Hg emission limit through stack testing -

An initial fuel analysis must be conducted for each type of fuel burned in the boiler.

- If more than one fuel type is burned in the boiler, a fuel analysis must be conducted to determine the fuel type, or mixture, that the boiler could burn that would result in the maximum emission rate of Hg, using the procedures in Table 5 to 40 CFR 63 Subpart JJJJJJ and §63.11213.

- If a new type of fuel or fuel mixture is planned to be burned, a fuel analysis must be conducted before burning the new fuel or mixture in the boiler. Recalculate the Hg emission rate according to §63.11211(c) and Equation 1 of 40 CFR 63 Subpart JJJJJJ. The Hg emission rate for the new type of fuel or fuel mixture must be less than the emission limit. If the Hg concentration for the new fuel or mixture is higher than the Hg fuel input during the previous performance test, then conduct a new performance test within 60 days of burning the new fuel or mixture.
    - *Fuel type* means each category of fuels that share a common name or classification. Examples include, but are not limited to, bituminous coal, sub-bituminous coal, lignite, anthracite, biomass, distillate oil, residual oil. Individual fuel types received from different suppliers are not considered new fuel types. §63.11237

As an alternative to stack testing for Hg, compliance can be demonstrated using fuel analysis

Compliance may be demonstrated with the applicable Hg emission limit using fuel analysis if the emission rate calculated according to §63.11211(c) is less than the applicable emission limit. Otherwise, compliance must be demonstrated using stack testing. Compliance can be demonstrated using fuel analysis by:

- Calculating the emission rate using §63.11211(c) and Equation 1 of 40 CFR 63 Subpart JJJJJJ and showing it is less than the boiler's Hg emission limit.
    - If more than one fuel type is burned, determine the fuel type (or mixture) that would result in the maximum emission rate of Hg.
    - Determine the 90th percentile confidence level fuel mercury concentration of the composite samples analyzed for each fuel type using Equation 1 of 40 CFR 63 Subpart JJJJJJ:

$$P90 = mean + (SD\ x\ 1) \qquad (Equation\ 1)$$

      Where:

      P90 = 90th percentile confidence level Hg concentration, in lbs/MMBtu.

      mean = Arithmetic average of the fuel Hg concentration in the fuel samples analyzed according to §63.11213, in units of lbs/MMBtu.

      SD = Standard deviation of the Hg concentration in the fuel samples analyzed according to §63.11213, in units of lbs/MMBtu.

      t = t distribution critical value for 90th percentile (0.1) probability for the appropriate degrees of freedom (number of samples minus one) as obtained from a Distribution Critical Value Table.

      The emission rate calculated for the boiler using Equation 1 must be less than the applicable Hg emission limit.

- Complying with all applicable operating limits and monitoring requirements if the Hg constituents in the fuel or fuel mixture are measured to be less than or equal to half of the boiler's Hg emission limit.
    - **Existing boilers and new or reconstructed boilers that commenced construction or reconstruction on or before 14 September 2016**: Fuel analysis sampling begins on 14 September 2017 and is conducted every 12 months.
    - **New or reconstructed boilers that commenced construction or reconstruction after 14 September 2016**: Conduct fuel analysis sampling for mercury every 12 months.

- Conducting a quarterly fuel analysis for each type of fuel burned if the Hg constituents in the fuel or fuel mixture are greater than half of the boiler's Hg emission limit.

- Conducting a fuel analysis before burning a new type of fuel or mixture. Recalculate the Hg emission rate using §63.11211(c) and Equation 1 of 40 CFR 63 Subpart JJJJJJ based on supplier data or the fuel analysis. The Hg emission rate for the new type of fuel or fuel mixture must be less than the boiler's emission limit.

NOTE: In lieu of site-specific fuel sampling and analysis, the required fuel information can be obtained from the fuel supplier. If using fuel analysis from a fuel supplier instead of site-specific sampling and analysis, the fuel supplier must use the analytical methods required by Table 5 of 40 CFR 63 Subpart JJJJJJ.

3.6.6.1 Equivalent or Alternative Fuel analysis testing methods:

The requirements for fuel analysis testing for existing, new or reconstructed Affected Sources is included within Table 5 of 40 CFR 63 Subpart JJJJJJ. If necessary, an alternative method may be used if submitted to the EPA for review and approval. However, an "equivalent method" as opposed to an alternative method can be used for fuel analysis without prior approval. "Equivalent", as it applies to Table 5 of 40 CFR 63 Subpart JJJJJJ **only**, is defined in §63.11237 as:

- An equivalent sample collection procedure means a published Voluntary Consensus Standard or practice (VCS),

  OR

  EPA method that includes collection of a minimum of three composite fuel samples, with each composite consisting of a minimum of three increments collected at approximately equal intervals over the test period.

- An equivalent sample compositing procedure means a published VCS or EPA method to systematically mix and obtain a representative subsample (part) of the composite sample.

- An equivalent sample preparation procedure means a published VCS or EPA method that: Clearly states that the standard, practice, or method is appropriate for the pollutant and the fuel matrix; or is cited as an appropriate sample preparation standard, practice or method for the pollutant in the chosen VCS or EPA determinative or analytical method.

- An equivalent procedure for determining heat content means a published VCS or EPA method to obtain gross calorific (or higher heating) value.

- An equivalent procedure for determining fuel moisture content means a published VCS or EPA method to obtain moisture content. If the sample analysis plan calls for determining Hg using an aliquot of the dried sample, then the drying temperature must be modified to prevent vaporizing this metal. On the other hand, if metals analysis is done on an "as received" basis, a separate aliquot can be dried to determine moisture content and the Hg concentration mathematically adjusted to a dry basis.

- An equivalent Hg determinative or analytical procedure means a published VCS or EPA method that clearly states that the standard, practice, or method is appropriate for Hg and the fuel matrix and has a published detection limit equal or lower than the methods listed in Table 5 to 40 CFR 63 Subpart JJJJJJ for the same purpose.

3.6.7 Task 6: Establish Operating Limits

NOTE: Operation above the established maximum or below the established minimum operating limits shall constitute a deviation of established operating limits except during Performance Tests conducted to determine compliance with the Emission Limits or to establish new operating limits. A deviation is not always a violation.

Operating limits are established during the Performance Test (stack testing and/or fuel analysis) and are dependent on the pollutant and the method of compliance (air pollution control devices, fuel analysis, performance testing, etc.). A facility is required to comply with operating limits, as applicable, for: fabric filter control, electrostatic precipitator control, wet scrubber control, dry sorbent or activated carbon injection control, other add-on air pollution controls, fuel analysis, performance stack testing (boiler operating load), and oxygen analyzer system. Table 3 of 40 CFR 63 Subpart JJJJJJ contains the operating limits for various control devices and Table 6 of 40 CFR 63 Subpart JJJJJJ specifies the methods for establishing the operating limits.

NOTE: New control technologies, particularly for PM and Hg, continue to emerge; approval of alternative control equipment and/or methods must be obtained from the Administrator if requesting permission to use a control device or method not included within 40 CFR 63 Subpart JJJJJJ.

Reminder: New oil-fired boilers greater than or equal to 10 MMBtu/hr combusting oil that contains no more than 0.50 weight percent sulfur oil and does not use a post-combustion technology (except a wet scrubber) to reduce PM or SO2 emissions, are NOT subject to the PM emission limit provided the fuel type is monitored and recorded on a monthly basis.

The operating limits identified in 40 CFR 63 Subpart JJJJJJ (by pollutant) are:

Any pollutant for which compliance is demonstrated by a performance stack test -

- For boilers that demonstrate compliance with a performance stack test, maintain the operating load of each unit such that it does not exceed 110 percent of the average operating load recorded during the most recent performance stack test (Table 3 from 40 CFR 63 Subpart JJJJJJ).

- Establish a unit-specific limit for maximum operating load using data from the operating load monitors (fuel feed monitors or steam generation monitors). Collect operating load data (fuel feed rate or steam generation data) every 15 minutes during the entire period of the performance test. Determine the average operating load by computing the hourly averages using all of the 15-minute readings taken during each performance test. Determine the average of the three test run averages during the performance test and multiply this by 1.1 (110 percent) as the boiler's operating limit. (Table 6 from 40 CFR 63 Subpart JJJJJJ).

Any pollutant for which compliance is demonstrated by a Fuel Analysis –

- Maintain the fuel type or fuel mixture (annual average) such that the Hg emission rate calculated according to §63.11211(c) are less than the applicable emission limit for Hg

Compliance Demonstrated for Filterable PM using -

- *Fabric Filter (aka Baghouse) - An add-on air pollution control device used to capture PM by filtering gas streams through filter media. A fabric filter is a dry control system.*

- Maintain opacity to less than or equal to 10 percent opacity (daily block average);

OR

- Install and operate a bag leak detection system according to §63.11224 and operate the fabric filter such that the bag leak detection system alarm does not sound more than 5 percent of the operating time during each 6-month period.

    - Bag leak detection system means a group of instruments that are capable of monitoring PM loadings in the exhaust of a fabric filter (i.e., baghouse) in order to detect bag failures. A bag leak detection system includes, but is not limited to, an instrument that operates on electrodynamic, triboelectric, light scattering, light transmittance, or other principle to monitor relative PM loadings.

- If a fabric filter bag leak detection system is used to comply with the requirements of 40 CFR 63 Subpart JJJJJJ, install, calibrate, maintain, and continuously operate the bag leak detection system as specified in paragraphs (f)(1) through (8) of §63.11224.

  - A bag leak detection system must be installed and operated for each exhaust stack of the fabric filter.

  - Each bag leak detection system must be installed, operated, calibrated, and maintained in a manner consistent with the manufacturer's written specifications and recommendations and in accordance with EPA-454/R-98-015 (incorporated by reference, §63.14).

  - The bag leak detection system must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter or less.

  - The bag leak detection system sensor must provide output of relative or absolute PM loadings.

  - The bag leak detection system must be equipped with a device to continuously record the output signal from the sensor.

  - The bag leak detection system must be equipped with an audible or visual alarm system that will activate automatically when an increase in relative PM emissions over a preset level is detected. The alarm must be located where it is easily heard or seen by plant operating personnel.

  - For positive pressure fabric filter systems that do not duct all compartments or cells to a common stack, a bag leak detection system must be installed in each baghouse compartment or cell.

  - Where multiple bag leak detectors are required, the system's instrumentation and alarm may be shared among detectors.

Compliance with PM or Hg Emission Limit using either a Wet Scrubber or Electrostatic Precipitator -

- *Wet scrubber - An add-on air pollution control device that mixes an aqueous stream or slurry with the exhaust gases from a boiler to control emissions of PM.*

  - Maintain the 30-day rolling average pressure drop across the wet scrubber at or above the minimum scrubber pressure drop as defined in §63.11237 and the 30-day rolling

average liquid flow rate at or above the minimum scrubber liquid flow rate as defined in §63.11237 (Table 3 of 40 CFR 63 Subpart JJJJJJ).

- For a wet scrubber, the minimum scrubber liquid flow rate and minimum scrubber pressure drop must be established as defined in §63.11237, as the boiler's operating limits during the three-run performance stack test. Separate performance stack tests must be conducted for PM and Hg emissions. One set of minimum scrubber liquid flow rate and pressure drop values must be established for the operating limits. If multiple performance stack tests are conducted, set the minimum scrubber liquid flow rate and pressure drop operating limits at the highest minimum values established during the performance stack tests [§63.11211(b)].

  Establish site-specific minimum scrubber pressure drop and minimum scrubber liquid flow rate operating limits using data from the pressure drop and liquid flow rate monitors and the PM or Hg performance stack tests. The pressure drop and liquid flow rate data must be measured every 15 minutes during the entire period of the performance stack tests. Determine the average pressure drop and liquid flow rate for each individual test run in the three-run performance stack test by computing the average of all the 15-minute readings taken during each test run (Table 6 of 40 CFR 63 Subpart JJJJJJ).

- *Electrostatic Precipitator* –

  - Maintain opacity to less than or equal to 10 percent opacity (daily block average).

OR

  - Maintain the 30-day rolling average total secondary electric power of the electrostatic precipitator at or above the minimum total secondary electric power as defined in §63.11237 (Table 3 of 40 CFR 63 Subpart JJJJJJ).

- For an electrostatic precipitator operated with a wet scrubber, the minimum total secondary electric power (secondary voltage and secondary current) must be established as defined in §63.11237, as the boiler's operating limits during the three-run performance stack test. [§63.11211(b)].

- Establish a site-specific minimum total secondary electric power operating limit using data from the secondary electric power monitors and the PM or Hg performance stack tests. Collect secondary electric power data every 15 minutes during the entire period of the performance stack tests. Determine the average total secondary electric power for each individual test run in the three-run performance stack test by computing the average

of all the 15-minute readings taken during each test run (Table 6 of 40 CFR 63 Subpart JJJJJJ).

Compliance with Hg using Activated Carbon/Sorbent Injection (Dry Scrubber) -

- *Dry sorbent or activated carbon injection (usually a dry scrubber) - An add-on air pollution control system that injects dry alkaline sorbent (dry injection) or sprays an alkaline sorbent (spray dryer) to react with and neutralize acid gas in the exhaust stream forming a dry powder material. Sorbent injection systems used as control devices in fluidized bed boilers are included in this definition. A dry scrubber is a dry control system.*

  Note: Load Fraction means the actual heat input of a boiler divided by heat input during the performance test that established the minimum sorbent injection rate or minimum activated carbon injection rate, expressed as a fraction (e.g., for 50 percent load the load fraction is 0.5). For boilers that co-fire natural gas with a solid or liquid fuel, the load fraction is determined by the actual heat input of the solid or liquid fuel divided by heat input of the solid or liquid fuel fired during the performance test (e.g., if the performance test was conducted at 100 percent solid fuel firing, for 100 percent load firing 50 percent solid fuel and 50 percent natural gas, the load fraction is 0.5).

  - Maintain the 30-day rolling average sorbent or activated carbon injection rate at or above the minimum sorbent injection rate or minimum activated carbon injection rate as defined in §63.11237. When the boiler operates at lower loads, multiply the sorbent or activated carbon injection rate by the load fraction (Table 3 of 40 CFR 63 Subpart JJJJJJ).

  - For activated carbon injection, the minimum activated carbon injection rate, as defined in §63.11237, must be established as the operating limit during the three-run performance stack test. [§63.11211(b)]

  - Establish a site-specific minimum sorbent or activated carbon injection rate operating limit, using data from the sorbent or activated carbon injection rate monitors and the Hg performance stack tests. Collect sorbent or activated carbon injection rate data every 15-minutes during the entire period of the performance stack tests. Determine the average sorbent or activated carbon injection rate for each individual test run in the Three-run performance stack test by computing the average of all the 15-minute readings taken during each test run. When the unit operates at lower loads, multiply the sorbent or activated carbon injection rate by the load fraction (e.g., actual heat input divided by heat input during performance

stack test, for 50 percent load, multiply the injection rate operating limit by 0.5) to determine the required injection rate (Table 6 of 40 CFR 63 Subpart JJJJJJ).

- Minimum sorbent injection rate means:

  (1) The load fraction multiplied by the lowest hourly average sorbent injection rate for each sorbent measured according to Table 6 to 40 CFR 63 Subpart JJJJJJ during the most recent performance stack test demonstrating compliance with the applicable emission limits; or

  (2) For fluidized bed combustion, the lowest average ratio of sorbent to sulfur measured during the most recent performance test.

- Minimum activated carbon injection rate means load fraction multiplied by the lowest hourly average activated carbon injection rate measured according to Table 6 to 40 CFR 63 Subpart JJJJJJ during the most recent performance stack test demonstrating compliance with the applicable emission limit.

Compliance with CO using an Oxygen Analyzer System -

- *Oxygen Analyzer System - all equipment required and used to determine the oxygen content of a gas stream and monitor oxygen in the boiler flue gas, boiler, firebox, or other appropriate location.*

  - For boilers subject to a CO emission limit that demonstrate compliance with an oxygen analyzer system as specified in §63.11224(a), maintain the 30-day rolling average oxygen level at or above the minimum oxygen level as defined in §63.11237. This requirement does not apply to units that install an oxygen trim system since these units will set the trim system to the level specified in §63.11224(a)(7). (Table 3 of 40 CFR 63 Subpart JJJJJJ)

  - The Oxygen Analyzer System must be installed, calibrated, operated, and maintained according to the manufacturer's recommendations and according to §63.11224(a)(7) and (d). [§63.11224(a)]

  - The oxygen analyzer system must be operated at or above the minimum oxygen level that is established as the operating limit when firing the fuel or fuel mixture utilized during the most recent CO performance stack test. Operation of oxygen trim systems to meet these requirements shall not be done in a manner which compromises furnace safety.

- Establish a unit-specific limit for minimum oxygen level using data from the oxygen analyzer system specified in §63.11224(a). Collect oxygen data every 15 minutes during the entire period of the performance stack tests. Determine the average hourly oxygen concentration for each individual test run in the three-run performance stack test by computing the average of all the 15-minute readings taken during each test run. (Table 6 of 40 CFR 63 Subpart JJJJJJ)

Compliance with any pollutant using any other add-on air pollution control type -This option is for boilers that operate dry control systems (such as a dry scrubber).

- Boilers must maintain opacity to less than or equal to 10 percent opacity (daily block average).

3.6.8 Task 7: Conduct Performance Evaluation of Continuous Monitoring Systems

CMS include a variety of emissions monitoring equipment: CPMS, CEMS, and Oxygen Trim Systems.

All CMS must be installed, operational, and the data verified, as specified in 40 CFR 63.8 and 40 CFR 63 Subpart JJJJJJ, either prior to or in conjunction with conducting Performance Tests. CMS performance evaluations are to be conducted according to §63.11224 of 40 CFR 63 Subpart JJJJJJ, which states that a performance evaluation of each CEMS must be conducted according to the requirements in §63.8(e) and according to Performance Specifications 3 and 4, 4A, or 4B at 40 CFR Part 60, Appendix B. Additionally, the performance evaluation of each CMS must be completed in accordance with the site-specific monitoring plan.

The CMS shall be maintained and operated as follows [40 CFR 63.8(c)(1) through (4) and 40 CFR 63.8(g)(2)]:

- The CMS shall be maintained and operated in a manner consistent with safety and good air pollution control practices for minimizing emissions, in accordance with 40 CFR 63.6(e)(1).

- The necessary parts for routine repairs and maintenance of the CMS equipment shall be kept readily available.

- Installation of the CMS sampling probe or other interface at a measurement location relative to each affected process unit such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device) and according to the procedures documented in the applicable performance specification.

- Any CPMS shall be installed to accurately measure the process and/or the control device parameters.
- Verification of the operational status of each CMS shall include the completion of the manufacturer's written specifications or the recommendations for installation, operation, and calibration of the system.
- The read out, (the visual display or measured record of the CMS) or other indication of operation, from any CMS required for compliance with the emission standard, shall be readily accessible for operational control and visible for monitoring and recording by the operator of the equipment.
- Except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments, all CMS shall be maintained in continuous operation as follows:
    - All COMS shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.
    - All CEMS for measuring emissions other than opacity shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

3.6.8.1 Carbon Monoxide Monitoring Requirements

Reminder: Boilers that use a CEMS are exempt from the initial CO Performance Testing in Table 4 of 40 CFR 63 Subpart JJJJJJ and the oxygen concentration operating limit requirement specified in Table 3 of 40 CFR 63 Subpart JJJJJJ. (§63.11212)

CO Emission Monitoring -

If the boiler is subject to a CO emission limit in Table 1 of 40 CFR 63 Subpart JJJJJJ, either:

- Install, operate, and maintain a CEMS for CO and oxygen according to the procedures in paragraphs (a)(1) through (6) of this section.

  OR

- Install, calibrate, operate, and maintain an Oxygen Analyzer System according to the manufacturer's recommendations and paragraphs (a)(7) and (d) of §63.11224, as applicable, by the compliance date.

- Oxygen monitors and oxygen trim systems must be installed to monitor oxygen in the boiler flue gas, boiler firebox, or other appropriate intermediate location.

An Oxygen Analyzer System is comprised of all equipment required to determine the oxygen content of a gas stream and used to monitor oxygen in the boiler flue gas, boiler firebox, or other appropriate intermediate location. This definition includes Oxygen Trim Systems.

If electing to comply with CO CEMS [§63.11224(a)(1-7)]-

Each CO CEMS must be installed, operated, and maintained according to the applicable procedures under Performance Specification 4, 4A, or 4B at 40 CFR Part 60 Appendix B, and each oxygen CEMS must be installed, operated, and maintained according to Performance Specification 3 at 40 CFR Part 60 Appendix B.

- Where a certified CO CEMS is used, the CO level shall be monitored at the outlet of the boiler, after any add-on controls or flue gas recirculation system and before release to the atmosphere.

- Both the CO and oxygen CEMS must also be installed, operated, and maintained according to the site-specific monitoring plan developed according to paragraph (c) of §63.11224.

- Each CEMS must complete a minimum of one cycle of operation (sampling, analyzing, and data recording) every 15-minutes. The CEMS must have data values from a minimum of four successive cycles of operation representing each of the four 15-minute periods in an hour, or at least two 15-minute data values during an hour when CEMS calibration, quality assurance, or maintenance activities are being performed, to have a valid hour of data.

- The CEMS data must be reduced as specified in §63.8(g)(2):

    - The owner or operator of each COMS shall reduce all data to 6-minute averages calculated from 36 or more data points equally spaced over each 6-minute period. Data from CEMS for measurement other than opacity, unless otherwise specified in the relevant standard, shall be reduced to 1-hour averages computed from four or more data points equally spaced over each 1-hour period, except during periods when calibration, quality assurance, or maintenance activities pursuant to provisions of this part are being performed. During these periods, a valid hourly average shall consist of at least two data points with each representing a 15-minute period. Alternatively, an arithmetic or integrated 1-hour average of CEMS data may be used. Time periods for averaging are defined in § 63.2.

- Hourly averages must be calculated, corrected to 3 percent oxygen, from each hour of CO CEMS data in parts per million CO concentrations and determine the 10-day rolling average of all recorded readings, except as provided in §63.11221(c). Calculate a 10-day rolling average from all of the hourly averages collected for the 10-day operating period using Equation 2 of §63.11224:

$$10\ day\ average = \frac{\sum_{i=1}^{n} Hpvi}{n} \quad Eq.2$$

  Where:

  Hpvi = the hourly parameter value for hour i

  n = the number of valid hourly parameter values collected over 10 boiler operating days

- For purposes of collecting CO data, the CO CEMS must be operated as specified in §63.11221(b). For purposes of calculating data averages, use all the data collected during all periods in assessing compliance, except when certain data as specified in §63.11221(c) must be excluded. Periods when CO data are unavailable may constitute monitoring deviations as specified in §63.11221(d).

If electing to demonstrate compliance with an Oxygen Analyzer System -

- Boilers subject to a CO emission limit that demonstrate compliance with an Oxygen Analyzer System must maintain the 30-day rolling average oxygen level at or above the minimum oxygen level. This requirement DOES NOT apply to units that install an Oxygen Trim System since these units will set the trim system to the level specified in §63.11224(a)(7).

- The Oxygen Analyzer System must be operated at or above the minimum oxygen level that is established as the operating limit according to Table 6 to 40 CFR 63 Subpart JJJJJJ when firing the fuel or fuel mixture utilized during the most recent CO performance stack test.

  - Minimum oxygen level means the lowest hourly average oxygen level measured according to Table 6 to 40 CFR 63 Subpart JJJJJJ during the most recent performance stack test demonstrating compliance with the applicable CO emission limit.

- Establishing a unit-specific limit for minimum oxygen level per Table 6 of 40 CFR 63 Subpart JJJJJJ - Use data from the oxygen analyzer system specified in §63.11224(a) according to the following requirements:

  - Oxygen data must be collected every 15-minutes during the entire period of the performance stack tests.

- Determine the average hourly oxygen concentration for each individual test run in the Three-run performance stack test by computing the average of all the 15-minute readings taken during each test run.

Operation of Oxygen Trim Systems to meet these requirements shall NOT be done in a manner that compromises safety.

- Boilers with an operating limit that requires the use of a CMS must install, operate, and maintain each CPMS.
- Boilers with an opacity operating limit must install, operate, certify, and maintain the COMS.

3.6.9 Task 8: Submit Initial Notification of Compliance Status

NOTE: The EPA and many local and State agencies have forms available to simply the notification process. In most cases, the use of these forms is not required as long as the submitted information contains all of the required information per Subpart JJJJJJ.

The NOCS is due 60 days after the compliance test has been completed. [§63.11225(a)]

The NOCS must be submitted electronically using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx) and contain the following information[§63.11225(a)]:

- Company name and address.
- Statement by a responsible official, with the official's name, title, phone number, email address, and signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of 40 CFR Part 63 40 CFR 63 Subpart JJJJJJ.

Any notification, report, or certificate requiring the signature of a Responsible Official MUST be signed by the Installation/Center Commander as defined by 40 CFR 70.2 and AFI 32-7040, Air Quality Compliance and Resource Management

- For existing boilers include a signed statement that indicates the tune-up was conducted as required: “This facility complies with the requirements in §63.11214 to conduct an initial tune-up of the boiler”.
- If the boiler is existing with a heat input capacity of 10 MMBtu/hr or greater, submit a signed certification that an Energy Assessment of the boiler and its energy use systems was completed according to Table 2 of 40 CFR 63 Subpart JJJJJJ and is an accurate

depiction of the facility: “This facility has had an Energy Assessment performed according to §63.11214(c)”.

- If the boiler is subject to the startup and shutdown requirements, a signed statement must be included in the NOCS report that indicates that startups and shutdowns are conducted according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available.

- If the boiler was subject to any Performance Tests, CMS performance evaluations, opacity or visible emission observations, submit the required data.

- For boilers that install bag leak detection systems: “This facility complies with the requirements in §63.11224(f).”

- For boilers that do not qualify for a statutory exemption as provided in section 129(g)(1) of the CAA: “No secondary materials that are solid waste were combusted in any affected unit.”

- If using data from a previously conducted emission test to serve as documentation of conformance with the emission standards and operating limits of this subpart, include the date of the test and a summary of the results, not a complete test report, relative to 40 CFR 63 Subpart JJJJJJ.

4 CONTINUOUS COMPLIANCE

NOTE: Boilers that have not operated since the previous compliance demonstration, and more than 3 years have passed since the previous compliance demonstration, a subsequent compliance demonstration must be completed no later than 180 days after the re-start of the affected boiler [§63.11220(d)].

After the initial compliance requirements are completed, continued compliance with the work practice standards in Table 2 of 40 CFR 63 must be demonstrated by performing periodic tune-ups as required. For boilers subject to an emission limit, periodic tune-ups and compliance with the startup and shutdown procedures are also required. Additionally, continued compliance must be demonstrated with each applicable emission limit and operating limit. Boilers using an air pollution control device to comply with the emission limits, must maintain each operating limit applicable to the device. Compliance with all applicable emission limits must be demonstrated using performance stack testing, fuel analysis, or a CMS, including a CEMS, a COMS, or a CPMS, where applicable. All facilities are required to follow the General Duty Clause:

General Duty Clause –

Facilities subject to NESHAPs are also subject to the General Duty Clause. Essentially, the boiler must be operated and maintained (including associated air pollution control devices and monitoring equipment) in a manner consistent with safety and good air pollution control practices for minimizing emissions at all times. The General Duty Clause states that at all times, the boiler must be operated and maintained in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the boiler [§63.11205(a)].

4.1.1 Task 1: Conduct Periodic Tune-Ups

The tune-up must be conducted while burning the type of fuel (or fuels for boilers that routinely burn two fuels at the same time) that provided the majority of the heat input for the 12 months before the tune-up.

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 [§63.11223(b)(7)].

Table 4-1. Periodic Tune-Up Schedule

PERIODIC TUNE-UP SCHEDULE	
If the boiler or process requires a tune-up...	Conduct a tune t-up and inspection....
Every 2 Years	No later than 25 months after the previous tune-up and inspection.
Every 5 Years	No later than 61 months after the previous tune-up and inspection.
§63.11210(f)	

4.1.2 Task 2: Follow Startup and Shutdown Procedures

NOTE: Applies to the following boilers with heat input capacity of 10 MMBtu/hr or greater - existing or new coal-fired, new biomass-fired, or new oil-fired boilers.

The Emission Limits in Table 1 of 40 CFR 63 Subpart JJJJJJ apply to all times the affected boiler is operating, except during periods of startup and shutdown as defined in §63.11237, during which compliance with the work practice standards (startup and shutdown provisions) in Table 2 of 40 CFR 63 Subpart JJJJJJ will apply [§63.11201(d)].

The boiler's startup and shutdown periods must be minimized following the manufacturer's recommended procedures, if available. If manufacturer's recommended procedures are not available, the recommended procedures must be followed for a unit of similar design for which manufacturer's recommended procedures are available. A signed statement in the NOCS is required that indicates startups and shutdowns were followed according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available [§63.11214(d), §63.11223(g)].

4.1.3 Task 3: Conduct Periodic Performance Testing (Stack Testing)

NOTE: Applies to Boilers subject to emission limits and demonstrating continuous compliance through Performance (stack) Testing**.**

Reminder: Prepare test and monitoring plans at least 60 days beforehand. Submit notification of testing to the Administrator at least 60 days prior to testing/CMS evaluation. Submit test and monitoring plans to the Administrator if requested.

Frequency of Performance Testing – All applicable performance (stack) tests must be conducted on a triennial basis. Triennial performance tests must be conducted no more than 37 months after

the previous performance test [§63.11220(a)]. The following are situations in which, after the initial performance (stack) test, further testing is either not required or is required on a less frequent basis:

- New Boilers in the Oil Subcategory - Performance tests are not required for a boiler designed to burn light liquid fuels that burns only ultra-low sulfur liquid fuel. The fuel must be monitored, and monthly records maintained to demonstrate that only ultra-low sulfur liquid fuel is burned in the boiler.

- PM - If the oil-fired boiler's initial performance test results show that the emissions are less than or equal to half of the limit, continue to comply with all applicable operating limits and monitoring requirements and perform further performance testing as follows:

    - **New or reconstructed boilers that commenced construction or reconstruction on or before 14 September 2016**: Conduct further performance tests for PM before 14 September 2021 and conduct subsequent performance tests for PM every fifth year (must be conducted no more than 61 months after the previous performance test).

        - If a new type of fuel other than ultra-low-sulfur liquid fuel or gaseous fuels is burned, a performance test must be conducted within 60 days of burning the new fuel type.

4.1.4 Task 4: Conduct Periodic Fuel Analysis

NOTE: This Task applies to boilers subject to a Hg emission limit.

If compliance with the Hg emission limit is demonstrated by fuel analysis rather than performance testing, a fuel analysis must be conducted for each type of fuel burned in accordance with §63.11213 and Table 5 to 40 CFR 63 Subpart JJJJJJ. The emission rate calculated according to §63.11211(c) must be less than the applicable emission limit (determine the 90^{th} percentile confidence level fuel Hg concentration of the composite samples analyzed for each fuel type). Otherwise, compliance must be demonstrated compliance using stack testing.

Frequency of Fuel Analysis - If compliance with the Hg emission limit is demonstrated based on fuel analysis rather than performance testing, a fuel analysis must be conducted for each type of fuel burned. When demonstrating initial compliance, conducting further fuel analysis samples is not required if the Hg constituents in the fuel or fuel mixture are equal to or less than half of the Hg emission limit. However, compliance with applicable operating limits and monitoring requirements is still required. If the fuel analysis indicates that Hg emissions are more than half of the Hg emission limit fuel analyses is required quarterly. [§63.11220(c)(1)-(2)]

4.1.5 Task 5: Demonstrate Continuous Compliance with Limits

NOTE: This Task applies to boilers subject to emission and/or operating limits

Continuous compliance must be demonstrated with the Emission Limits and Operating Limits by continuously monitoring operating parameters according to the methods in Table 7 of 40 CFR 63 Subpart JJJJJJ. Operate the applicable monitoring system(s) and collect data at all times while the boiler is operating. Use all the data collected in assessing the operation of the control device and associated control system. Failure to collect required data is a deviation of the monitoring requirements. Data cannot be used to demonstrate compliance during:

- Startup and shutdown.
- Monitoring system malfunctions or out-of-control periods.
- Required monitoring system quality assurance or quality control activities, including calibration checks and required zero pan adjustments.
- Repairs associated with monitoring system malfunctions or out-of-control periods.

4.1.5.1 Monitoring Requirements

Reminder: A site-specific monitoring plan is required for facilities with CEMS/COMS/CPMS requirements per §63.11223(b)(1-4). Monitor and collect data according to the site-specific monitoring plan.

- For boilers subject to CO emission limits, install, operate, and maintain a continuous emission monitoring system (CEMS) for CO and oxygen or install, calibrate, operate, and maintain an oxygen analyzer system. Detailed information regarding CO monitoring is available in Section 3.6.8, Task 7: *Conduct Performance Evaluation of Continuous Monitoring Systems* in this Guide. Boilers using a CEMS are exempt from the CO performance test.

- For boilers using a control device to comply with the emission limits, maintain each operating limit applicable to the boiler. Monitor continuously or collect data at all required intervals during the time that the affected source is in operation except for during monitor malfunctions, associated repairs, and required quality assurance or control activities (i.e., calibration checks, zero and span adjustments).
    - Do not include data recorded during monitoring malfunctions, associated repairs, or required quality assurance or control activities in data averages and calculations used to report emission or operating levels. All data collected during all other periods must be used in assessing the operation of the control device and associated control syste

Table 4-2, *Summary of Operating Limits for Continuous Compliance,* summarizes continuous compliance requirements applicable to operating limits by pollutant and the boiler's air pollution control device or compliance method:

Table 4-2. Summary of Operating Limits for Continuous Compliance

Continuous Compliance Methods Summarized from Table 3, 6, and 7 of 40 CFR 63, Subpart JJJJJJ			
Pollutant or Work Practice Standard	**Air Pollution Control Device used for Compliance**	**Monitoring or Equipment Requirement**	**Meet these operating limits except during periods of startup and shutdown**
If Boiler Compliance is Demonstrated by Performance (stack) Testing:			
Boilers that demonstrate compliance with a performance stack test are required to maintain the operating load of each unit such that it does not exceed 110 percent of the average operating load recorded during the most recent performance stack test.			
PM, Hg	Fabric Filter	Opacity (COMS) **OR** Bag Leak Detection System	≤ 10% Opacity (daily block average) **OR** Operate fabric filter such that the bag leak detection system alarm does not sound more than 5% of the operating time during each 6- month period.
	Electrostatic Precipitator	Opacity (COMS) **OR** Total Secondary Power	≤ 10% Opacity (daily block average) **OR** Maintain the 30-day rolling average secondary power input at or above the lowest 1-hr average secondary power input measured during the most recent performance test demonstrating compliance with PM emission limitations.
	Any other add-on control type that operate dry control systems	Opacity	≤ 10% Opacity (daily block average)
	Wet scrubber	Pressure drop and liquid flow rate	Maintain the 30-day rolling average pressure drop across the wet scrubber at or above the minimum scrubber pressure drop as defined in §63.11237 and the 30-day rolling average liquid flow rate at or above the minimum scrubber liquid flow rate as defined in §63.11237.

Continuous Compliance Methods Summarized from Table 3, 6, and 7 of 40 CFR 63, Subpart JJJJJJ			
Pollutant or Work Practice Standard	**Air Pollution Control Device used for Compliance**	**Monitoring or Equipment Requirement**	**Meet these operating limits except during periods of startup and shutdown**
Hg	Dry Scrubber or Carbon Injection	Sorbent Injection Rate **OR** Carbon Injection Rate	Maintain the 30-day rolling average sorbent injection rate **OR** The activated carbon injection rate at or above the minimum sorbent injection rate or minimum activated carbon injection rate as defined in §63.11237. When the boiler operates at lower loads, multiply the sorbent or activated carbon injection rate by the load fraction.
CO	NA	Oxygen CEMS or oxygen analyzer system (If not using CO and Oxygen CEMS)	Maintain the 30-day rolling Oxygen level at or above the lowest 1-hr average Oxygen level measured during the most recent CO performance stack test.
	NA	If using CO CEMS and Oxygen CEMS (Not required to perform initial CO performance testing and not subject to oxygen operating limit)	The CEMS must be installed, operated, evaluated, and maintained according to Performance Specifications 3 and 4, 4A, or 4B
PM, HG, CO	Control Device Not Covered by Rule	Apply to EPA for approval of alternative monitoring §63.8(f).	Alternative Monitoring Parameters **OR** Alternative Operating Limits

Continuous Compliance Methods Summarized from Table 3, 6, and 7 of 40 CFR 63, Subpart JJJJJJ			
Pollutant or Work Practice Standard	**Air Pollution Control Device used for Compliance**	**Monitoring or Equipment Requirement**	**Meet these operating limits except during periods of startup and shutdown**
If Boiler Compliance is Demonstrated by Fuel Analysis:			
Hg	Fuel Analysis	Mercury content of fuel type or fuel mixture (annual average)	Maintain such that mercury emission rate is less than the applicable emission limit for mercury. Fuel analysis and rate calculation required prior to burning any new fuel type. Stack test required within 60 days of burning new fuel if fuel analysis and calculation result in emissions higher than applicable limit.
PM	None (except a wet scrubber)	Fuel sulfur content	New or reconstructed oil-fired boilers - Combust only oil that contains no more than 0.50 weight percent sulfur or a mixture of 0.50 weight percent sulfur oil with other fuels not subject to a PM emission limit under Subpart JJJJJJ and do not use a post-combustion technology (except a wet scrubber) to reduce PM or sulfur dioxide emissions.

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5 NOTIFICATIONS AND REPORTS

Any notification, report, or certificate requiring the signature of a Responsible Official MUST be signed by the Installation/Center Commander as defined by 40 CFR 70.2 and AFI 32-7040, Air Quality Compliance and Resource Management.

NOTE: As stated earlier in this Guide, an Initial Notification of Applicability is required and should have already submitted. The Initial Notification of Applicability is due within 120 days after the boiler becomes subject to 40 CFR 63 Subpart JJJJJJ [63.11225(a)(2)].

The Initial Notification of Applicability must contain the following information:

- Name and address of the owner or operator.
- The address (i.e., physical location) of the boiler.
- An identification of the relevant standard, or other requirement, that is the basis of the notification (i.e., 40 CFR part 63 subpart JJJJJJ) and the source's compliance date.
- Anticipated compliance with the standard.
- A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of hazardous air pollutants emitted.
- A statement of whether the affected source is a Major Source or an Area Source

Notification of Compliance Status

The Notification of Compliance Status (NOCS) certifies that the facility is in compliance with all the requirements of the rule The NOCS must include the information and certification(s) of compliance as required in paragraphs (a)(4)(i) through (v) of §63.11225, as applicable, and signed by a responsible official [§63.11225(a)(4)]. The information in the NOCS includes, but is not limited to the following statements, depending on the compliance requirements of the boiler:

- "This facility complies with the requirements in §63.11214 to conduct an initial tune-up of the boiler."
- "This facility has had an Energy Assessment performed according to §63.11214(c)."
- For units that do not qualify for a statutory exemption as provided in §129(g)(1) of the CAA: "No secondary materials that are solid waste were combusted in any affected unit."

Compliance Certification Report

The facility must prepare, by March 1 of each year, and submit to the delegated authority upon request, an Annual Compliance Certification Report for the previous calendar year containing the information specified in paragraphs (b)(1) through (4) of §63.11225.

NOTE: For a boiler that is ONLY required to conduct a tune-up every two-years (biennial) or five-years (and the boiler is not subject to emission limits or operating limits), the facility is required to prepare a compliance report every two or five years (as applicable to the boiler). The reports are to be prepared by March 1 of the following calendar year during which a tune-up is completed [§63.11225(b)].

The Compliance Certification Report requires, at a minimum, the information and statements as listed below [§63.11225(b)].

- Company name and address.
- Statement by a responsible official, with the official's name, title, phone number, email address, and signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of 40 CFR Part 63, Subpart JJJJJJ. The Statement must include the following, if applicable to the boiler:
    i. "This facility complies with the requirements in §63.11223 to conduct a biennial or 5-year tune-up, as applicable, of each boiler."
    ii. For units that do not qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air Act: "No secondary materials that are solid waste were combusted in any affected unit."
    iii. "This facility complies with the requirement in §§63.11214(d) and 63.11223(g) to minimize the boiler's time spent during startup and shutdown and to conduct startups and shutdowns according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available."
- If the boiler experienced any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken.

Notification of Solid Waste Combustion

If the facility intends to commence or recommence combustion of solid waste, the facility must provide 30-days prior notice of the date upon which the facility will commence or recommence combustion of solid waste. The notification must identify [§63.11225(f)]:

- The name of the owner or operator of the affected source, the location of the source, the boiler(s) that will commence burning solid waste, and the date of the notice.
- The currently applicable subcategory under 40 CFR Part 63, Subpart JJJJJJ.
- The date on which the facility became subject to the currently applicable emission limits.
- The date upon which the facility will commence combusting solid waste.

Notification of Subcategory Change

If the facility has switched fuels or made a physical change to the boiler and the fuel switch or change resulted in the applicability of a different subcategory within 40 CFR 63 Subpart JJJJJJ, in the boiler becoming subject to 40 CFR 63 Subpart JJJJJJ, or in the boiler switching out of 40 CFR 63 Subpart JJJJJJ due to a change to changing fuel combusted to 100 percent natural gas, or the facility has taken a permit limit that resulted in the facility being subject to 40 CFR 63 Subpart JJJJJJ, the facility must provide notice of the date upon which the facility switched fuels, made the physical change, or took a permit limit within 30 days of the change. The notification must identify [§63.11225(g)]:

- The name of the owner or operator of the affected source, the location of the source, the boiler(s) that have switched fuels, were physically changed, or took a permit limit, and the date of the notice.
- The date upon which the fuel switch, physical change, or permit limit occurred.

How to Submit Notifications and Reports

EPA is no longer accepting paper submittals of the NOCS or other reports. The agency now requires the reports to be submitted electronically to the Compliance and Emissions Data Reporting Interface (CEDRI) through EPA's Central Data Exchange (CDX) at www.epa.gov/cdx. Submit the Notification of Compliance Status, Performance Tests, and CEMS evaluations electronically through CEDRI, Relative Accuracy Test Audit (RATA) data from each CEMS performance evaluation test is also submitted to CDX using CEDRI within 60 days after the test.

- If a Title V permit has been issued for the facility, submit a copy of notifications and/or reports to the appropriate permitting authority.
- If the State has NOT been delegated the authority to implement and enforce recordkeeping and reporting requirements, the owner or operator of an affected source in such State subject to such requirements shall submit reports to the appropriate Regional Office of the EPA (to the attention of the Director of the Division indicated in the list of the EPA Regional Offices in §63.13). [§63.10(a)(4)(i)]
- If the State has been delegated the authority to implement and enforce recordkeeping and reporting requirements, the owner or operator of an affected source in such State subject to such requirements shall submit reports to the delegated State authority (which may be the same as the permitting authority). In addition, if the delegated (permitting) authority is the State, the owner or operator shall send a copy of each report submitted to the State to the appropriate Regional Office of the EPA. The Regional Office may waive this requirement for any reports at its discretion. [§63.10(a)(4)(ii)]

5.1 Waiver of Recordkeeping or Reporting Requirements [§63.10(f)]

Recordkeeping or reporting requirements may be waived upon written application to the Administrator if, in the Administrator's judgment, the boiler is achieving the standard(s), or operating under an extension of compliance, or the facility has requested an extension of compliance and the Administrator is still considering that request. The facility remains subject to the requirements until a waiver of a recordkeeping or reporting requirement has been granted by the Administrator. The application shall include whatever information the facility considers useful to convince the Administrator that a waiver of recordkeeping or reporting is warranted, including any required compliance progress report, compliance status report, or CMS performance report, whichever is applicable.

A waiver of any recordkeeping or reporting requirement granted may be conditioned on other recordkeeping or reporting requirements deemed necessary by the Administrator. Approval of any waiver granted under this section will not abrogate the Administrator's authority or in any way prohibit the Administrator from later canceling the waiver. The cancellation will be made only after notice is given to the owner or operator of the boiler.

6 RECORDKEEPING

Recordkeeping is not only required under Subpart JJJJJJ as proof of compliance with the Rule, it is also the best method to provide a continuous record of the boiler's operation, maintenance, and testing. A boiler's operating conditions can change slowly over time and recordkeeping is a reliable method for detecting an impending boiler or air pollution control device failure that may otherwise go unnoticed.

In summary, keep records of:

- Every notification or report, including any and all supporting documentation.
- For operating units that combust non-hazardous secondary material, any and all records documenting that the material is listed as a non-waste.
- Records of all monitoring data and calculated averages for applicable operating limits, (opacity, pressure drop, pH, operating load, etc.), to demonstrate continuous compliance with each emission limit and operating limit.
- Records of monthly fuel use by each boiler, including the type(s) of fuel and the amount(s) used.
- Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control and monitoring equipment.
- Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore the malfunctioning boiler, air pollution control, or monitoring equipment to its normal or usual manner of operation. Include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken.

6.1 Method and Duration of Recordkeeping

The facility's ability to implement good record management and retention practices is key for compliance with Subpart JJJJJJ as well as other regulations. Not only does effective recordkeeping help with verifying compliance with rules and regulations, the facility may need to respond quickly to Administrator and agency inspections or information requests. Effective recordkeeping will greatly facilitate that response. The method for storing records and the record retention includes the following:

- Records must be in a form suitable and readily available for expeditious review and inspection. The records must be kept on site or be accessible from on site (for example, through a computer network).
    - Files may be maintained on microfilm, on computer, computer disks, magnetic tape disks, or on microfiche.

- Keep each record for 5 years after the date of each recorded action (occurrence, measurement, maintenance, corrective action, report, or record).
    - Keep each record on site for at least 2 years after the date of each recorded action.
    - For the remaining 3 of the 5 years, the records may be kept off site.

6.2 Maintenance and Retention of Records

NOTE: - §63.11225(c)(2)(iv) requires that each boiler subject to an emission limit keep records of monthly fuel use by each boiler, including the type(s) of fuel and amount(s) used. §63.11225(b)(6)(iii) requires that the type and amount of fuel used over the 12 months prior to boiler tune-up be included in the report prepared following each boiler tune-up, **but only if the unit was physically and legally capable of using more than one type of fuel during that period.**

The records specified in §63.11225 paragraphs (c)(1) through (7) must be maintained:

- As required in §63.10(b)(2)(xiv), keep a copy of each notification and report submitted to comply with this subpart and all documentation supporting any Initial Notification or NOCS submitted.
- Keep records to document conformance with the work practices, emission reduction measures, and management practices required by §63.11214 and §63.11223 as specified in paragraphs (c)(2)(i) through (vi) of §63.11225.
- Records must identify each boiler, the date of tune-up, the procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned.
- For operating units that combust non-hazardous secondary materials that have been determined not to be solid waste pursuant to §241.3(b)(1), keep a record that documents how the secondary material meets each of the legitimacy criteria under §241.3(d)(1). If the boiler combusts a fuel that has been processed from a discarded non-hazardous secondary material pursuant to §241.3(b)(4), keep records as to how the operations that produced the fuel satisfies the definition of processing in §241.2 and each of the legitimacy criteria in §241.3(d)(1). If the fuel received a non-waste

determination pursuant to the petition process submitted under §241.3(c), keep a record that documents how the fuel satisfies the requirements of the Petition process. For operating units that combust non-hazardous secondary materials as fuel per §241.4, keep records documenting that the material is a listed non-waste under §241.4(a).

- For each boiler required to conduct an Energy Assessment, keep a copy of the report.
- For each boiler subject to an emission limit in Table 1 of 40 CFR 63, keep records of monthly fuel use by each boiler, including the type(s) of fuel and amount(s) used.
- For each boiler that meets the definition of seasonal boiler, keep records of days of operation per year.
- For each boiler that meets the definition of limited-use boiler, keep a copy of the federally enforceable permit that limits the annual capacity factor to less than or equal to 10 percent and records of fuel use for the days the boiler is operating.
- For sources that demonstrate compliance through fuel analysis, retain a copy of all calculations and supporting documentation that were done to demonstrate compliance with the mercury emission limits. Supporting documentation should include results of any fuel analyses. The facility may use the results from one fuel analysis for multiple boilers provided they are all burning the same fuel type.
- Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control and monitoring equipment.
- Records of actions taken during periods of malfunction to minimize emissions in accordance with the General Duty to minimize emissions in §63.11205(a), including corrective actions to restore the malfunctioning boiler, air pollution control, or monitoring equipment to its normal or usual manner of operation.
- Keep the records of all inspection and monitoring data required by §§63.11221 and 63.11222, and the information identified in paragraphs (c)(6)(i) through (vi) of this section for each required inspection or monitoring.
    - The date, place, and time of the monitoring event.
    - Person conducting the monitoring.
    - Technique or method used.
    - Operating conditions during the activity.
    - Results, including the date, time, and duration of the period from the time the monitoring indicated a problem to the time that monitoring indicated proper operation.
    - Maintenance or corrective action taken (if applicable).

- If a bag leak detection system is used, keep the records specified in paragraphs (c)(7)(i) through (iii) of §63.11225.
    - Records of the bag leak detection system output.
    - Records of bag leak detection system adjustments, including the date and time of the adjustment, the initial bag leak detection system settings, and the final bag leak detection system settings.

7 NEW SOURCE PERFORMANCE STANDARDS

The purpose of this chapter is to provide a very general overview of the New Source Performance Standards (NSPS) as the standards pertain to boilers. The intent is to alert USAF personnel responsible for boilers that some boilers may be subject to Subpart JJJJJJ and/or NSPS.

The EPA promulgated NSPS to ensure new sources of air pollution pollute less than the older units they replace. Unlike Subpart JJJJJJ that regulates HAPs, NSPS focuses more on criteria pollutants such as Particulate Matter (PM), Nitrogen Oxides (NO_X), and Sulfur Oxides (SO_X). NSPS requirements for Industrial-Commercial-Institutional Boilers (steam generating units), capable of combusting over 10 MMBtu/hr of fuel, are found under 40 CFR Part 60 Subparts Db and Dc:

- *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* (Subpart Dc) - Affects Industrial-Commercial-Institutional steam generating units (boilers) that commenced construction, modification, or reconstruction after 9 June 1989, with a maximum design heat input capacity greater than or equal to 10 MMBtu/hr but less than or equal to 100 MMBtu/hr. These boilers may burn natural gas, gasoline, fuel oil, wood, coal, or alternative fuels.

- *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units* (Subpart Db) - Affects Industrial-Commercial-Institutional steam generating units with a maximum design heat input capacity greater than 100 MMBtu/hr (that are not utility boilers) that commenced construction, modification, or reconstruction after 18 September 1978.

Each NSPS has emission limits (may require performance testing), notification, recordkeeping, and reporting requirements. Some of the Subpart JJJJJJ and NSPS requirements may overlap. If the boiler is subject to subpart Dc or Db, it is automatically subject to the NSPS General Provisions found in Subpart A of 40 CFR §60. The General Provisions contain some definitions and describe the performance testing, recordkeeping, reporting, and monitoring provisions that apply to every source subject to NSPS.

Natural gas and dual-fuel (gas and oil) boilers are predominately used at USAF facilities. Natural gas-fired boilers emit significantly lower levels of PM, NOx, and SOx than boilers fired with other fuels. Although the use of distillate or ULSD fuel oil results in somewhat higher emissions than natural gas, those fuels are significantly cleaner than other grades of oil or solid fuels. For this reason, gas-fired boilers are not subject to Subpart JJJJJJ and most boilers fired on only natural gas and/or fuel oil meet the requirements of Subpart Dc by using ULSD (oil-fired boiler) and maintaining a detailed log of fuel usage.

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APPENDIX A: APPLICABILITY QUESTIONNAIRE

APPLICABILITY QUESTIONNAIRE FOR:

National Emission Standards for Hazardous Air Pollutants (NESHAP):
Industrial, Commercial, and Institutional Boilers at Area Sources
40 CFR 63, Subpart JJJJJJ (Subpart JJJJJJ)

This questionnaire is designed to assist with identifying whether a boiler is subject to Subpart JJJJJJ. An industrial, commercial, or institutional boiler that is located at, or is part of, an Area Source of Hazardous Air Pollutants (HAPs) is subject to Subpart JJJJJJ. Answer the questions in the order presented.

1) Is the unit a boiler?

- **Boiler** means an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam and/or hot water. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled.
  - Solid Waste Incineration Unit (device combusting solid waste) is NOT a boiler.
  - Waste heat boilers, pool heaters, process heaters, and autoclaves are NOT Boilers.

NOTE: Be careful to differentiate a boiler from a process heater (process heaters are NOT subject to Subpart JJJJJJ):

- **Process Heater** is an enclosed device using controlled flame, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material (e.g., glycol or a mixture of glycol and water) for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not come into direct contact with process materials. Process heaters include units that heat water/water mixtures for pool heating, sidewalk heating, cooling tower water heating, power washing, or oil heating.

***Is the unit a boiler as defined above*?** **YES** **NO**

(If NO, stop here. The unit is not a boiler and not subject to Subpart 6J).

2) Is the boiler located at an Area Source of HAPs?

- ***Major source*** means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential-to-

emit considering controls, in the aggregate, 10 tons per year or more of any federally regulated HAP or 25 tons per year or more of any combination of HAPs.

- ***Area source*** means any stationary source of hazardous air pollutants that is not a major source.

Is the boiler located at an Area Source of HAPs? **YES** **NO**

(If NO, the unit is not located at an Area Source of HAPs and is not subject to Subpart JJJJJJ. **Stop here, the boiler is likely subject to 40 CFR 63, Subpart DDDDD**.)

3) Is the boiler residential?

- **Residential boilers as Defined in this Subpart JJJJJJ** – Means a boiler used to provide heat and/or hot water and/or as part of a residential combined heat and power system. This definition includes boilers located at an institutional facility (e.g., university campus, military base, church grounds) or commercial/industrial facility (e.g., farm) used primarily to provide heat and/or hot water for:
  - A dwelling containing four or fewer families, or
  - A single unit residence dwelling that has since been converted or subdivided into condominiums or apartments. [§63.11237 and §63.11195(i)]

Is the unit a residential boiler as defined above? **YES** **NO**

(If YES, stop here. The unit is not subject to Subpart JJJJJJ).

4) Is the boiler Gas-fired?

Gas-fired boilers, as defined by the rule, are not subject to Subpart JJJJJJ. The boiler is considered as gas-fired if either Scenario One or Scenario Two applies.

Place a check (✓) in the box if the Scenario is applicable to the boiler.

☐ **Gas-Fired Boiler Scenario One –** The boiler is capable of burning ONLY gaseous fuels or burns ONLY gaseous fuels (natural gas, process gas, landfill gas, coal derived gas, refinery gas, hydrogen, biogas, or liquefied petroleum gas). No solid or liquid fuels are/would be burned.

OR

☐ **Gas-Fired Boiler Scenario Two –** The boiler burns primarily gaseous fuels (natural gas, process gas, landfill gas, coal derived gas, refinery gas, hydrogen, biogas, or liquefied petroleum gas) and has the capability to burn liquid fuels; however, liquid fuels are/would be burned only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuels not to exceed 48 hours per calendar year. No solid fuels are burned.

Was either Gas-Fired Boiler Scenario One or Scenario Two checked? **YES** **NO**

(If YES, stop here. The boiler is Gas-Fired and is not subject to Subpart JJJJJJ. Document that the boiler meets one of the Gas-Fired Boiler Scenarios described above and keep supporting records to validate that the boiler continues to meet the definition of Gas-Fired boiler).

5) Is the boiler otherwise excluded from Subpart JJJJJJ?

The following boilers are not subject to Subpart JJJJJJ:

- Hot water heater
- Boiler subject to other NESHAP standards
- Boiler that is used as control devices for another NESHAP standard
- Research and Development boiler
- Boilers subject to section 129 of the Clean Air Act
- Hazardous Waste Boiler

Is the boiler listed as an excluded boiler? **YES** **NO**

(If YES, stop here. the boiler is not subject to Subpart JJJJJJ).

If NO, the boiler is subject to Subpart JJJJJJ, compliance requirements are dependent on factors such the date of construction or reconstruction, fuel type, and boiler size. Subpart JJJJJJ includes the following requirements for certain boilers:

- Work Practices such as tune-ups.
- Compliance with emission limits for particulate matter, mercury, and carbon monoxide (stack testing and/or fuel analysis).
- Monitoring, recordkeeping, notification, and reporting requirements.

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APPENDIX B: ACRONYMS, ABREVIATIONS, AND BREVITY CODES

AFCEC	Air Force Civil Engineer Center
BACT	Best Available Control Technology
BCE	Base Civil Engineer
Btu	British Thermal Unit
CAA	Clean Air Act
CAAA	Clean Air Act Amendments (of 1990)
CDX	EPA's Central Data Exchange
CE	Civil Engineering
CEDRI	Compliance and Emissions Data Reporting Interface
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
CMS	Continuous Monitoring System
CPMS	Continuous Parameter Monitoring System
CO	Carbon Monoxide
COMS	Continuous Opacity Monitoring System
EPA	United States Environmental Protection Agency
EPAct	Energy Policy Act
ERC	Emission Reduction Credit
ESP	Electrostatic Precipitator
FF	Fabric Filter
FR	Federal Register
GACT	Generally Available Control Technologies
HAP	Hazardous Air Pollutant
HCl	Hydrochloric Acid
HHV	High Heat Value
hr	Hour(s)
lb	Pound(s)
MACT	Maximum Achievable Control Technology
MMBtu	Million British Thermal Units (M = One Thousand, MM = One Million)
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NOx	Nitrogen Oxides
Pb	Lead
PM	Particulate Matter
ppm	Parts per Million
psi	Pounds per Square Inch
PTE	Potential-To-Emit
RATA	Relative Accuracy Test Audit
SO_2	Sulfur Dioxide
USAF/AF	United States Air Force
yr	Year