

## How to Comply with Federal Air Regulations for Combustion Sources at Utilities

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## What types of Combustion Equipment are at your facility?

- **Boilers?**
  - You may be subject to:
    - boiler combustion adjustments
    - Submitting fuel supplier certifications
    - Stack testing/emission requirements
- **Engines?**
  - You may be subject to:
    - EPA notifications
    - Stack testing/emission requirements
    - Records of Maintenance

## Federal Rules that may be applicable to your facility:



- Subpart Dc: New Source Performance Standards (NSPS) for Small Industrial-Commercial Steam Generating Units
- Subpart JJJJJJ: National Emission Standard for Hazardous Air Pollutants (NESHAP) for Area Sources: Industrial Commercial and Institutional Boilers
- Subpart ZZZZ: National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines
- Subpart JJJJ: New Source Performance Standards (NSPS) for Stationary Spark Ignition Internal Combustion Engines

## NEW SOURCE PERFORMANCE STANDARDS (NSPS) FOR SMALL INDUSTRIAL-COMMERCIAL STEAM GENERATING UNITS – SUBPART DC

## NSPS for Small Industrial-Commercial Steam Generating Units – Subpart Dc

- **Applicability**
  - Boilers that commenced construction, modification or reconstruction after June 9, 1989 and are
  - 10 – 100 MMBtu/hr heat input (approximately 72 gal/hr)
  - combust coal, wood or fuel oil

## NSPS for Small Industrial-Commercial Steam Generating Units – Subpart Dc

- **Standard for Sulfur Dioxide while burning fuel oil**
  - 0.50 lb/MMBtu emission limit or
  - fuel shall not contain more than 0.5 weight percent sulfur
- **Standard for Particulate Matter while burning fuel oil**
  - None for boilers less than 30 MMBtu/hr
  - For boilers greater than 30 MMBtu/hr
    - No emissions greater than 20 percent opacity (6 minute average) except for one 6 minute period per hour (no more than 27 percent)
    - 0.03 lb/MMBtu emission limit

## NSPS for Small Industrial-Commercial Steam Generating Units – Subpart Dc

- **How do you comply with sulfur standard:**
  - For No. 2 Fuel fired boilers and No. 4,5,6 fuel fired boilers 10-30 MMBtu/hr
    - ✦ Ensure the sulfur content of your fuel with certification from your fuel supplier with every delivery
  - For No. 4, 5, 6 fuel fired boilers 30-100 MMBtu/hr
    - ✦ Conduct an initial performance test by sampling and analyzing the oil in the tank to be fired by the unit(s) for 0.5 weight percent sulfur or less
    - ✦ Sample the oil after each new shipment of oil is received

## NSPS for Small Industrial-Commercial Steam Generating Units – Subpart Dc

- **How do you comply with particulate matter standard**
  - Boilers 10-100 MMBtu/hr firing No. 2 oil and boilers less than 30 MMBtu/hr firing No. 4, 5 or 6 oil that combust oil that contains no more than 0.50 weight percent sulfur demonstrated by fuel certification are exempt from PM standard
  - For boilers firing No. 4, 5 or 6 fuel oil greater than 30 MMBtu/hr
    - ✦ Operate a COMS (Continuous Opacity Monitor) to monitor opacity and
    - ✦ Conduct a stack test for PM (must also include CO and O<sub>2</sub>) within 180 days of startup

## NSPS for Small Industrial-Commercial Steam Generating Units – Subpart Dc

- **What are my recordkeeping/submittal requirements:**
  - Submit an initial notification to EPA if your facility is subject to the rule
  - If CEMS or COMS are used, submit performance test results and any excess emissions reports every 6 months to EPA
  - If fuel supplier certifications are used or fuel samples analyzed, send copies of documentation every 6 months to EPA



## NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS) FOR AREA SOURCE INDUSTRIAL, COMMERCIAL & INSTITUTIONAL BOILERS SUBPART JJJJJJ

## Subpart JJJJJJ: NESHAP for Area Source Industrial, Commercial & Institutional Boilers

- **Applicability**
  - All boilers regardless of size that burn coal, biomass or fuel oil at Area Sources
    - ✦ Major Source = Facility emits 10 tons/yr or more of a HAP or 25 tons/yr of combination of HAPs
    - ✦ Area Source = All others
  - Natural gas boilers are exempt (must not burn fuel oil or for 48 hours or less to be considered a natural gas boiler)



## Subpart JJJJJJ: NESHAP for Area Source Industrial, Commercial & Institutional Boilers

### What is Required?

- Submit an Initial Notification to EPA if you have boilers subject to the rule (was due September 2011)
- Conduct a tune up by March 21, 2012 and every two years thereafter
- For boilers greater than 10 MMBTU/hr, conduct a one time energy assessment by March 21, 2014
- For new boilers (installed after 6/4/2010) greater than 10 MMBtu/hr, comply with Particulate limit of 0.03 lb/MMBtu and conduct stack test initially and every 3 years for Particulate
- Complete a Notice of Compliance Status for submittal to EPA

## Subpart JJJJJ: NESHAP for Area Source Industrial, Commercial & Institutional Boilers

### • How to conduct a tune up

- Inspect the burner and clean or replace
- Inspect and adjust the flame pattern
- Inspect/calibrate the air-to-fuel ratio
- Optimize and measure CO and O<sub>2</sub> emissions before and after tune up
- Determine monthly fuel use for 12 month preceding tune up
- Record all the above on EPA (or personally created) forms
  - Submit the results to EPA of the first tune up
  - Complete the form, but maintain onsite for biennial tune ups thereafter



## How do I conduct a one time energy assessment under Subpart JJJJJ?

- Visually inspect boiler system (cracks, corrosion, etc.)
- Evaluate the operating characteristics of the facility, operating and maintenance procedures and unusual operating constraints
- Create an inventory of major systems consuming energy from the boilers
- Review engineering plans, maintenance logs and fuel usage
- List major energy conservation measures and energy savings potential for those energy conservation measures
- Create a comprehensive report detailing ways to improve efficiency and the associated costs and benefits

## What is the duration of the Energy Assessment?

- For facilities with a combined boiler heat input of less than 300 Billion BTU/yr usage and the energy use system accounts for at least 50% of the energy output then the length of the energy assessment **should not exceed 1 day**
- For facilities with a combined boiler heat input of 300-1,000 Billion BTU/yr usage and the energy use system accounts for at least 33% of the energy output then the length of the energy assessment **should not exceed 3 days**
- No limit for systems greater than the above
- \*Note an energy assessment completed on or after January 1, 2008 can be used to meet or be amended to meet these requirements

## NEW SOURCE PERFORMANCE STANDARDS (NSPS) FOR STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES SUBPART JJJJ

## Subpart JJJJ: NSPS for Stationary Spark Ignition Internal Combustion Engines

### • Applicability:

- Manufacturers, owners and operators of stationary engines
- Owners and operators that commence construction (date engine is ordered) after June 12, 2006 where the engine was manufactured
  - On or after July 1, 2007 for engines greater than or equal to 500 HP (if lean burn then 500 – 1350 HP)
  - On or after July 1, 2008 for engines less than 500 HP
  - On or after January 1, 2009 for emergency engines greater than 25 HP (19 KW)
- Owners and operators of stationary engines that are modified or reconstructed after June 12, 2006

## Subpart JJJJ: NSPS for Stationary Spark Ignition Internal Combustion Engines

### • How do I comply?

- Purchase an engine that complies with the emission standards
  - Manufacturers must certify their engines in accordance with the standards in the Subpart
  - However, manufacturers will usually not certify an engine using an alternate fuel (digester/landfill gas).
- Operate your certified engine in accordance with manufacturers written instructions and keep records of maintenance
- For emergency engines do not exceed 100 hours of operation for maintenance and testing unless written approval is received from EPA

### Subpart JJJJ: NSPS for Stationary Spark Ignition Internal Combustion Engines

- If you are NOT operating and maintaining a certified engine
  - Keep a maintenance plan, records of maintenance and operate in a manner that minimizes air pollution
  - For engines 100-500 HP, conduct an initial performance test of emissions within 1 year of startup
  - For engines greater than 500 HP, you must conduct an initial performance test and repeat every 8,760 hours or 3 years for compliance with the emissions standards

### Subpart JJJJ: NSPS for Stationary Spark Ignition Internal Combustion Engines

- Reporting and Recordkeeping Requirements
  - Keep records of:
    - ✦ Manufacturer certification
    - ✦ Maintenance
    - ✦ Performance tests
    - ✦ Emergency engines must keep records of hours of operation (Have a non resettable hour meter)
  - Send EPA notification of applicability if you own a non certified engine greater than 500 HP
    - ✦ Send EPA copy of performance tests within 60 days of testing



### NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS) FOR STATIONARY RECIPROCATING (SPARK IGNITION AND COMPRESSION IGNITION) INTERNAL COMBUSTION ENGINES SUBPART ZZZZ

### Subpart ZZZZ: NESHAPS for Stationary Reciprocating (Spark Ignition and Compression Ignition) Internal Combustion engines

- Applicability:
  - Does not apply to emergency engines
  - Mostly applies to engines at MAJOR sources of HAP emissions, but also:
    - Existing Compression Ignition stationary RICE and Existing Spark Ignition stationary RICE at area sources :
      - ✦ Existing = You commenced construction or reconstruction **BEFORE** June 12, 2006
      - ✦ New engines are subject to the requirements of Subpart JJJJ for Spark Ignition engines or Subpart IIII for Compression Ignition engines in lieu of this Subpart

### Subpart ZZZZ: NESHAPS for Stationary Reciprocating Internal Combustion engines

- How do I comply if I owned and still operate a non-emergency CI engine before June 12, 2006?:
  - For engines less than 300 HP
    - ✦ change oil, change filter and inspect air cleaner every 1,000 hours of operation or annually whichever comes first
    - ✦ Inspect all hoses and belts every 500 hours of operation or annually and replace as needed
  - For CI engines greater than 300 HP
    - ✦ Limit concentration of CO in the exhaust to 49 ppmvd for engines 300-500 HP and 23 ppmvd for engines greater than 500 HP or reduce CO emissions by 70% or more

### Subpart ZZZZ: NESHAPS for Stationary Reciprocating Internal Combustion engines

- How do I comply if I owned and still operate a non-emergency SI engine before June 12, 2006?:
  - For SI lean burn and rich burn engines less than 500 HP
    - ✦ change oil, change filter and inspect spark plugs every 1,440 hours of operation or annually whichever comes first
    - ✦ Inspect all hoses and belts every 1,440 hours of operation or annually and replace as needed
  - For SI engines greater than 500 HP
    - ✦ Lean burn =Limit concentration of formaldehyde in the exhaust to 2.7 ppmvd or reduce formaldehyde emissions by 76% or more
    - ✦ Rich burn =Limit concentration of CO in the exhaust to 47 ppmvd or reduce CO emissions by 93%

### Subpart ZZZZ: NESHAPS for Stationary Reciprocating Internal Combustion engines

- How do I comply if I owned and still operate a non-emergency SI engine before June 12, 2006?:
  - For SI lean or rich burn engines greater than 500 HP that operate less than 24 hours/yr
    - change oil, change filter and inspect hoses and belts every 500 hours of operation or annually and replace as needed
    - Inspect spark plugs every 1,000 hours of operation or annually and replace as needed



### Subpart ZZZZ: NESHAPS for Stationary Reciprocating Internal Combustion engines

- How do I comply if I am subject to an emission standard and own a CI engine greater than 300 HP?:
  - Conduct an initial performance test within 180 days after the compliance date and establish each operating limitation
  - Use a past performance test if conducted within the past 2 years
  - Install an oxidation catalyst to meet standard and conduct semiannual performance test to demonstrate the CO percent reduction is met
  - Conduct semi annual CO performance tests to demonstrate that the emissions are being met

### Subpart ZZZZ: NESHAPS for Stationary Reciprocating Internal Combustion engines

- How do I comply if I am subject to an emission standard and own a SI engine or CI engine?:
  - For CI engines less than 300 HP and SI engines that operate less than 24 hours/yr
    - Comply by following proper maintenance plan
  - For SI lean burn and rich burn greater than 500 HP
    - Install an oxidation catalyst to meet standard if needed and conduct performance tests every 8,760 hours or 3 years whichever comes first

### Subpart ZZZZ: NESHAPS for Stationary Reciprocating Internal Combustion engines

- What are my reporting requirements:
  - If you are required to conduct an initial performance test you must submit a Notification of Intent at least 60 days prior to conducting the test
  - You must submit a copy of the initial performance test
  - For CI engines greater than 300 BHP and SI engines greater than 500 HP, submit semi-annual reports containing any deviations to standards or malfunctions during the reporting period

### Subpart ZZZZ: NESHAPS for Stationary Reciprocating Internal Combustion engines

- By what date am I required to comply:
  - For existing CI engines located at an area source no later than May 3, 2013
  - For existing SI engines located at an area source no later than October 19, 2013
  - For new engines, you must comply by complying with Subpart JJJJ (Spark Ignition engines) or Subpart IIII (Compression Ignition engines) upon startup

### Being Proactive = Avoiding Fines



## Questions??????

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