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RICE NESHAP ZZZZ

(>500 hp Non-Emergency CI Engines)

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Altorfer Meeting

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# Discussion Topics

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# Background

- Initial RICE NESHAP - effective August 16, 2004
  - Affected existing and new stationary RICE engines >500 hp at major sources of hazardous air pollutants (HAP).
- RICE NESHAP Amendment – effective May 3, 2010
  - Affected stationary CI engines  $\leq 500$  hp at major sources; all existing stationary CI at area sources; and existing stationary non-emergency CI engines at major sources.

We will focus on new and existing non-emergency stationary CI engines >500 hp at area and major sources

# Important Terms

- Major Source – potential to emit (PTE)  $\geq 10$  tpy of a single HAP or  $\geq 25$  tpy of any combination of HAP.
- Area Source – a source of HAP emissions that is not major.
- HAP – any air pollutant listed in or pursuant to section 112(b) of the Clean Air Act (187 total). The main target HAP emissions for RICE are formaldehyde, acetaldehyde, and polycyclic aromatic hydrocarbons.
- Oxidation Catalyst – add-on catalytic control device for carbon monoxide (CO) and volatile organic compounds (VOC) by oxidation.
- Residential/Commercial/Institutional Emergency RICE – emergency stationary RICE used in residential establishments such as homes or residences; commercial establishments such as office buildings, hotels, or stores; or institutional establishments such as medical centers, research centers, and institutions of higher education.
- Limited Use RICE – Any stationary RICE that operates  $< 100$  hrs/yr.
- Reconstruction – The fixed capital cost of the new components exceeds 50% of fixed capital cost to construct a comparable new source; and it is technologically and economically feasible for the reconstructed source to meet the relevant standards.

# Important Terms

- Emergency Stationary RICE – engine operation limited to emergency and required testing and maintenance.

Can operate up to 100 hrs/yr for maintenance & readiness testing – **no time limit for use during emergency situations.**

Can operate up to 50 hrs/yr for non-emergency purposes – can't peak shave or generate income. Must count hrs towards 100-hr ceiling

Can operate up to 15 hrs/yr as part of a demand response program if regional transmission organization or equivalent balancing authority determines there are emergency conditions that could lead to an electrical backout. Must count towards 100-hr ceiling.

# >500 hp CI Applicability

- Affected source is any existing, new or reconstructed stationary RICE located at a major or area source of HAP emissions.
  - CI RICE that don't have to meet the requirements of ZZZZ or Subpart A
    - Existing emergency CI RICE at major source
    - Existing limited use CI RICE at major source
    - Existing residential, commercial or institutional emergency CI RICE at area source

| >500 hp CI   | Existing   | New   |
|--------------|--|---|
| Major Source | Commenced construction or reconstruction before 12/19/2002 | Commenced construction or reconstruction after 12/19/2002 |
| Area Source  | Commenced construction or reconstruction before 6/12/2006  | Commenced construction or reconstruction after 6/12/2006  |

# >500 hp CI Compliance Deadlines

| Emission & Operating Limitations |                                  |   |
|----------------------------------|----------------------------------|---|
| >500 hp CI                       | Existing                         | New/Reconstructed   |
| Major Source                     | Non-emergency CI RICE – 5/3/2013 | Start up before 8/16/2004 – comply by 8/16/2004<br>Start up after 8/16/2004 – comply upon startup |
| Area Source                      | CI RICE – 5/3/2013               | Start up before 1/18/2008 – comply by 1/18/2008<br>Start up after 1/18/2008 – comply upon startup |

- Area sources that become major sources
  - Any stationary RICE for which construction or reconstruction is commenced after the date your area source becomes major for HAP must comply upon startup.
  - Any stationary RICE for which construction or reconstruction is commenced before the date your area source becomes major for HAP must comply within 3 years after becoming major.

# >500 hp CI Emission/Operating Limits

## New or Reconstructed non-emergency CI >500 hp at Major Source

|                                    |  |   |
|------------------------------------|--|---|
| Emission Limit<br>(ZZZZ Table 2a)  | Reduce CO emissions by 70% or more; <b>or</b>  | Minimize the engine's time spent at idle and minimize startup time to amount needed for appropriate and safe loading of the engine, not to exceed 30 minutes. <sup>1</sup>  |
|                                    | Limit concentration of formaldehyde in the exhaust $\leq 580$ ppbv at 15% O <sub>2</sub> |   |
| Operating Limit<br>(ZZZZ Table 2b) | Oxidation Catalyst   | a. Maintain catalyst so that the $\Delta p$ across the catalyst does not change by more than 2 inches of water at 100% load 10% from the $\Delta p$ across the catalyst that was measured during the initial performance test; <b>and</b> |
|                                    |  | b. Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is $\geq 450$ °F and $\leq 1350$ °F. <sup>2</sup>  |
|                                    | No Catalyst  | Comply with any operating limitations approved by the Administrator.  |

Beginning 10/1/2010 CI RICE subject to NSPS IIII with a displacement of <30 liters per cylinder that uses diesel fuel, must use diesel that meets the requirements in [40 CFR 80.510\(b\)](#) for nonroad diesel fuel. Sulfur = 15 ppm (NR); min. cetane index of 40, or max aromatic content of 35%v (i.e. ultra low sulfur diesel). Can petition Administrator for an extension

<sup>1</sup>Sources can petition the Administrator pursuant to the requirements of [40 CFR 63.6\(g\)](#) for alternative work practices.

<sup>2</sup>Sources can petition the Administrator pursuant to the requirements of [40 CFR 63.8\(g\)](#) for a different temperature range.



# >500 hp CI Emission/Operating Limits

## Existing non-emergency CI >500 hp at Major Source

|                                    |  |   |
|------------------------------------|--|---|
| Emission Limit<br>(ZZZZ Table 2c)  | Reduce CO emissions by 70% or more; <b>or</b>                                  | Minimize the engine's time spent at idle and minimize startup time to amount needed for appropriate and safe loading of the engine, not to exceed 30 minutes. <sup>1</sup>  |
|                                    | Limit concentration of CO in the exhaust $\leq 23$ ppmvd at 15% O <sub>2</sub> |   |
| Operating Limit<br>(ZZZZ Table 2b) | Oxidation Catalyst   | a. Maintain catalyst so that the $\Delta p$ across the catalyst does not change by more than 2 inches of water at 100% load 10% from the $\Delta p$ across the catalyst that was measured during the initial performance test; <b>and</b> |
|                                    |  | b. Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is $\geq 450$ °F and $\leq 1350$ °F. <sup>2</sup>  |
|                                    | No Catalyst  | Comply with any operating limitations approved by the Administrator.  |

Existing non-emergency CI RICE >300 hp with a displacement of <30 liters per cylinder that uses diesel fuel, must use diesel that meets the requirements in [40 CFR 80.510\(b\)](#) for nonroad diesel fuel. Sulfur = 15 ppm (NR); min. cetane index of 40, or max aromatic content of 35%v (i.e. ultra low sulfur diesel).

<sup>1</sup>Sources can petition the Administrator pursuant to the requirements of [40 CFR 63.6\(g\)](#) for alternative work practices.

<sup>2</sup>Sources can petition the Administrator pursuant to the requirements of [40 CFR 63.8\(g\)](#) for a different temperature range.

# >500 hp CI Emission/Operating Limits

## Existing non-emergency CI >500 hp at Area Source

|                                    |  |   |
|------------------------------------|--|---|
| Emission Limit<br>(ZZZZ Table 2d)  | Reduce CO emissions by 70% or more; <b>or</b>                                  | Minimize the engine's time spent at idle and minimize startup time to amount needed for appropriate and safe loading of the engine, not to exceed 30 minutes. <sup>1</sup>  |
|                                    | Limit concentration of CO in the exhaust $\leq 23$ ppmvd at 15% O <sub>2</sub> |   |
| Operating Limit<br>(ZZZZ Table 2b) | Oxidation Catalyst   | a. Maintain catalyst so that the $\Delta p$ across the catalyst does not change by more than 2 inches of water at 100% load 10% from the $\Delta p$ across the catalyst that was measured during the initial performance test; <b>and</b> |
|                                    |  | b. Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is $\geq 450$ °F and $\leq 1350$ °F. <sup>2</sup>  |
|                                    | No Catalyst  | Comply with any operating limitations approved by the Administrator.  |

Existing non-emergency CI RICE >300 hp with a displacement of <30 liters per cylinder that uses diesel fuel, must use diesel that meets the requirements in [40 CFR 80.510\(b\)](#) for nonroad diesel fuel. Sulfur = 15 ppm (NR); min. cetane index of 40, or max aromatic content of 35%. This requirement also applies to all new CI engines at area sources subject to NSPS III – comply by 10/1/2010.

<sup>1</sup>Sources can petition the IDNR pursuant to the requirements of 40 CFR Subpart E for alternative work practices.

<sup>2</sup>Sources can petition the IDNR pursuant to the requirements of 40 CFR Subpart E for a different temperature range.

## >500 hp CI Emission/Operating Limits

### Existing non-emergency $\geq 300$ hp CI

- If not equipped with a closed crankcase ventilation system must:
  - Install a closed crankcase ventilation system to prevent crankcase emissions from being emitted to atmosphere, or;
  - Install an open crankcase filtration system to remove oil mist, particles, and metals from engine exhaust.
  - Follow manufacturer's specified maintenance requirements for these ventilation systems.

# >500 hp non-emergency CI Performance/Compliance Demonstrations

## Non-emergency CI >500 hp at Major Source

|   | Compliance Standard  | Initial performance (IP)/initial compliance demonstration (CD)   | Subsequent Performance Tests  |
|---|--|--|---|
| Construction or Reconstruction between 12/19/2002 – 6/15/2004   | Limit the concentration of formaldehyde in the stationary RICE exhaust | Initial compliance with proposed or promulgated emissions limits by 2/10/2005, or no later than 180 days after startup.                        | Conduct subsequent performance tests semiannually. <sup>1</sup>                         |
| Construction or Reconstruction between 12/19/2002 – 6/15/2004   | Reduce CO emissions and not using a CEMS                               | Initial compliance with proposed or promulgated emissions limits by 2/10/2005, or no later than 180 days after startup.                        | Conduct subsequent performance tests semiannually. <sup>1</sup>                         |
| *If you chose to comply with the proposed emission limits for initial CD, you must conduct a second performance test to demonstrate compliance with the promulgated limits by 12/13/2007. |  |  |   |
| Existing  | Limit or reduce CO or formaldehyde emissions                           | No later than 180 days after 5/3/2013 (initial test can be conducted 2 years prior to compliance date, provided that it is an acceptable test) | Conduct subsequent performance tests every 8,760 hrs or 3 years, whichever comes first. |

<sup>1</sup>Can reduce testing frequency to annual after two consecutive tests that demonstrate compliance. However, you must resume semiannual testing if subsequent annual tests indicate non-compliance with CO or formaldehyde limits, or you deviate from any operating limits.

# >500 hp CI Performance/Compliance Demonstrations

## Non-emergency CI >500 hp at Area Source

|                        | Compliance Standard   | Initial performance (IP)/initial compliance demonstration (CD)   | Subsequent Performance Tests  |
|------------------------|---|--|---|
| New or Reconstructed   | New CI engines at area sources of HAP must comply with NSPS requirements in 40 CFR 60, Subpart IIII |  |   |
| Existing               | Limit or reduce CO or formaldehyde emissions  | No later than 180 days after 5/3/2013 (initial test can be conducted 2 years prior to compliance date, provided that it is an acceptable test) | Conduct subsequent performance tests every 8,760 hrs or 3 years, whichever comes first. |
| Existing (limited use) | Limit or reduce CO or formaldehyde emissions  | Within 180 days of 5/3/2013  | Conduct subsequent performance tests every 8,760 hrs or 5 years, whichever comes first. |

# >500 hp CI Performance Testing

- Each performance test must be conducted according to the requirements in Table 4 (approved test methods) of this subpart.
- Must conduct 3 separate test runs for each performance test required as specified in 63.7(e)(3).
- Engine load must be representative, 100% load (±10%).
- If you do not use an oxidation catalyst to comply with emission limits, you must petition the Administrator for operating limits to be established during the initial performance test, or justify why these limits are not necessary as per 63.6620(g) & (h). You cannot test until the petition has been approved.
- Can use a previous performance test for the initial demonstration if:
  - Use same methods specified in this subpart
  - Test is not older than 2 years
  - Test must be reviewed and accepted by Administrator
  - No process or equipment changes, or owner can demonstrate that the changes would not impact results.

# >500 hp CI Continuous Monitoring

| >500 hp CI                               | Compliance Standard   | Compliance Requirement  |
|--|---|---|
| Major Source<br>(new or reconstructed)   | Reduce/limit CO and/or formaldehyde using oxidation catalyst and CPMS | <ul style="list-style-type: none"> <li>■ Conduct semiannual test</li> <li>■ Collect catalyst inlet data</li> <li>■ Reduce data to 4-hr rolling average</li> <li>■ Maintain the 4-hr rolling average operating limits</li> <li>■ Measure <math>\Delta p</math> across catalyst 1x/month and demonstrate compliance with operating limit</li> </ul> |
|  | Reduce/limit CO and/or formaldehyde w/o catalyst and using CPMS       | <ul style="list-style-type: none"> <li>■ Conduct semiannual test</li> <li>■ Collect approved operating parameter (if any) data</li> <li>■ Reduce data to 4-hr rolling average</li> <li>■ Maintain the 4-hr rolling average operating limits</li> </ul>  |
|  | Reduce CO emissions using CEMS  | <ul style="list-style-type: none"> <li>■ Collect 1-hr averages</li> <li>■ Demonstrate % reduction over 4-hr average period</li> <li>■ Conduct annual RATA</li> </ul>  |
| Major Source & Area Source<br>(existing) | Reduce/limit CO or formaldehyde                                       | <ul style="list-style-type: none"> <li>■ Conduct performance test every 8,760 hrs or 3 yrs, whichever comes first.</li> <li>■ Demonstrate compliance with limits</li> <li>■ Testing frequency every 8,760 hrs or 5yrs for limited use CI engines (testing not required for existing limited use CI engines at major sources).</li> </ul>          |

\* For new or reconstructed RICE, deviations from the emission or operating limits that occur during the first 200 hrs of operation from engine startup (i.e. initial burn in period) are not violations.

# >500 hp CI Reporting

## ■ **Initial Notifications**

- ❑ Startup at major source before 8/16/2004 – no later than 12/13/2004
- ❑ Startup at major source after 8/16/2004 – no later than 120 days after you become subject
- ❑ New or existing at area source – no later than 120 days after you become subject

## ■ **Performance Testing**

- ❑ Submit notice at least 60 days prior to test date

## ■ **Compliance Status**

- ❑ For initial compliance demonstration w/o performance test – within 30 days following completion of demonstration
- ❑ For initial compliance demonstration with performance test – within 60 days following completion of test



# >500 hp CI Reporting

## ■ **Compliance Report**

- Semiannual - 7/31 (reporting period 1/1 – 6/30) & 1/31 (reporting period 7/1 – 12/31)
  - Deviations from emission or operating limits
  - Malfunctions
  - Out of control CEMS or CPMS
  - If no deviations experienced – submit a statement to that effect
  - Frequency changes to annual for limited use – 1/31
  - Include information as per 63.6650(c) – (e)
- Annual – 1/31 for prior reporting period
  - Deviations from operating limits in a federally enforceable permit
  - Any problems or errors suspected with the meters

# >500 hp CI Recordkeeping

## ■ Records

- Each notification and report submitted for compliance purposes.
- Occurrence and duration of each malfunction of operation, air pollution control and monitoring equipment.
- Action taken during malfunctions to minimize emissions, or restore equipment to its normal manner of operation.
- Performance tests and performance evaluations, including RATA information for CEMS and CPMS.
- All required maintenance on air pollution control and monitoring equipment.
- Continuous compliance data (4-hr averages, monthly  $\Delta p$ , etc.)
- Records must be in a form suitable and readily available for expeditious review and retained for 5 yrs from date generation.
  - Most recent 2 years of data must be retained on-site
  - Can be in hard copy or electronic format

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# Q&A

## Questions?



***Please refer to the full rule text of 40 CFR Part 63, Subpart ZZZZ to determine all applicable equipment requirements, management practices, monitoring requirements, recordkeeping requirements and reporting requirements necessary to be in compliance with this rule.***

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# Contacts

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Additional Information

NESHAP ZZZZ

<http://www.epa.gov/ttn/atw/rice/ricepg.html>

NSPS IIII

<http://www.epa.gov/ttn/atw/nsps/cinsps/cinspspg.html>