EPA’s Air Quality Regulations for Stationary Engines

EPA/ICAC Roundtable
September 20, 2012
Overview of EPA’s emission standards for stationary engines:

- NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE)
- NSPS for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE)
- NSPS for Stationary Spark Ignition (SI) ICE

Proposed Amendments

Q&A
What are the Differences?

► RICE NESHAP
  ► Applies to existing, new, and reconstructed stationary engines (both CI and SI)
  ► Applies to engine owners/operators
  ► Focus is air toxics (HAP)
  ► Established under CAA section 112

► CI/SI ICE NSPS
  ► Applies to new, modified, and reconstructed stationary CI/SI engines
  ► Applies to engine manufacturers and owners/operators
  ► Focus is criteria pollutants
  ► Established under CAA section 111
Stationary vs. Mobile

Stationary means not used in a motor vehicle and not a nonroad engine

- Nonroad engines are:
  - Self-propelled (tractors, bulldozers)
  - Propelled while performing their function (lawnmowers)
  - Portable or transportable (has wheels, skids, carrying handles, dolly, trailer, or platform)
- Portable nonroad becomes stationary if it stays in one location for more than 12 months (note different time criteria for seasonal source)
40 CFR part 63 subpart ZZZZ

Regulates HAP emissions from stationary RICE at both major and area sources of HAP

- **All sizes** of engines are covered

Only RICE not subject:
existing emergency engines located at residential, institutional, or commercial area sources
RICE NESHAP Timeline

**Major Sources**

- **Existing**
  - ≤ 500 HP: 2010 rules
  - > 500 HP: 2004 rule

- **New**
  - ≤ 500 HP: 2008 rule
  - > 500 HP: 2004 rule

**Area Sources**

- **Existing**
  - ≤ 500 HP: 2010 rules
  - > 500 HP: 2010 rules

- **New**
  - ≤ 500 HP: 2008 rule
  - > 500 HP: 2008 rule

*(non-emergency CI)*
### Existing vs. New

<table>
<thead>
<tr>
<th></th>
<th>&gt;500 HP at major source</th>
<th>≤500 HP at major source or all HP at area source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing</strong></td>
<td>construction commenced before December 19, 2002</td>
<td>construction commenced before June 12, 2006</td>
</tr>
<tr>
<td><strong>New</strong></td>
<td>construction commenced on or after December 19, 2002</td>
<td>construction commenced on or after June 12, 2006</td>
</tr>
<tr>
<td><strong>Reconstructed</strong></td>
<td>reconstruction commenced after December 19, 2002</td>
<td>reconstruction commenced after June 12, 2006</td>
</tr>
</tbody>
</table>

- **Determining construction date:** owner/operator has entered into a contractual obligation to undertake and complete, within a reasonable amount of time, a continuous program for the on-site installation of the engine
  - Does not include moving an engine to a new location
RICE NESHAP Compliance

- Requirements vary depending on:
  - Engine size
  - Date construction commenced
  - Application (non-emergency, emergency, black start, limited use)
  - Location (major/area source, remote Alaska)
Stationary CI Engine NSPS

► 40 CFR part 60 subpart IIII

► Applies to:

► Manufacturers of 2007 model year or later stationary CI engines <30 liters/cylinder displacement
  • Model years differ for fire pump engines

► Owners/operators of stationary CI engines
  • constructed (ordered) after July 11, 2005 and manufactured after April 1, 2006 (July 1, 2006 for fire pump engines)
  • modified/reconstructed after July 11, 2005
Emission Standards

- Phased in over several years and have Tiers with increasing levels of stringency
- Output-based, units of g/KW-hr (g/HP-hr)
- Pollutants: NOx, PM, CO, NMHC
- Ultra low sulfur diesel fuel
- Modeled after EPA’s standards for nonroad and marine engines

Example Emission Standards (g/kW-hr) for 500 HP engine

- Tier 1 (1996-2000)
- Tier 2 (2001-2005)
- Tier 3 (2006-2010)
- Tier 4 interim (2011-2013)
- Tier 4 final (2014+)

- PM
- NMHC+NOx
- CO
CI Engine NSPS - Compliance

- Engine manufacturers must certify 2007 model year and later engines with a displacement <30 liters/cylinder
  - Certification = EPA Certificate of Conformity

- Owner/operator complies by:
  - Purchasing certified engine
  - Install, configure, operate and maintain per manufacturer’s instructions
  - Owner/operator performance testing not required
Stationary SI Engine NSPS

- 40 CFR part 60 subpart JJJJ

- Applies to:
  - Manufacturers of stationary SI engines:
    - ≤25 HP and manufactured on/after July 1, 2008
    - >25 HP, gasoline or rich burn LPG, manufactured on/after July 1, 2008 (on/after January 1, 2009 if emergency engines)
    - Voluntarily certified engines manufactured on or after dates in table below
  - Owners/operators of stationary SI engines
    - Constructed (ordered) after June 12, 2006 and manufactured after:

<table>
<thead>
<tr>
<th>Date</th>
<th>Engine Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1, 2007</td>
<td>&gt;500 HP (except lean burn 500≤HP&lt;1,350)</td>
</tr>
<tr>
<td>January 1, 2008</td>
<td>lean burn 500≤HP&lt;1,350</td>
</tr>
<tr>
<td>July 1, 2008</td>
<td>&lt;500 HP</td>
</tr>
<tr>
<td>January 1, 2009</td>
<td>emergency engines</td>
</tr>
</tbody>
</table>

- Modified or reconstructed after June 12, 2006
Emission Standards

- Phased in over several years and have Tiers with increasing levels of stringency

- Output-based, units of g/KW-hr (g/HP-hr)

- ppmvd@15% O$_2$ standards for some engines

- Pollutants: NOx, CO, VOC

- Sulfur limit on gasoline

- Some standards modeled after EPA’s standards for nonroad SI engines
SI Engine NSPS - Compliance

► Engine manufacturers must certify engines ≤25 HP, gasoline engines, and rich burn LPG engines

► Engine manufacturers can elect to certify other engines

► Owner/operator complies by either:
  ► If certified engine, install, configure, operate and maintain engine per manufacturer’s instructions or manufacturer-approved procedures
  ► If uncertified, conduct performance test (requirements vary depending on engine size)
Certificate Issued To: Generac Power Systems, Inc.  
(U.S. Manufacturer or Importer) 
Certificate Number: CGNXB06.82NN-012 
Effective Date: 10/26/2011 
Expiration Date: 12/31/2012 
Issue Date: 10/26/2011 
Revision Date: N/A 

Byron J. Buiker, Acting Division Director 
Compliance Division 

Manufacturer: Generac Power Systems, Inc. 
Engine Family: CGNXB06.82NN 
Certificate Number: CGNXB06.82NN-012 
Certification Type: Stationary (Part 60) 
Fuel: Natural Gas (CNG/LNG) 
Emission Standards: 
NMHC + NOx (g/kW-hr): 13.4 
CO (g/kW-hr): 519 
HC + NOx (g/kW-hr): 13.4 
Emergency Use Only: Y 

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in these provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year. 

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate. 

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 60. 

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.
Proposed RICE NESHAP Reconsideration


► Notice of public hearing/extension of comment period published June 21, 2012 (77 FR 37361)

► Public comment period ended August 9, 2012

► Final rule signature expected December 14, 2012
Issues Addressed in Proposed Amendments

- Emergency engine operation for demand response and peak shaving
- Requirements for existing 4-stroke SI RICE at area sources of HAP
- Total hydrocarbon (THC) compliance option for 4-stroke rich burn SI RICE
- Tier 1/Tier 2 certified CI RICE scheduled for replacement
- Tier 3 certified CI RICE
- CI RICE at area sources of HAP in remote areas of Alaska
For More Information

TTN websites
- RICE NESHAP: http://www.epa.gov/ttn/atw/rice/ricepg.html
- CI NSPS: http://www.epa.gov/ttn/atw/nsps/cinsps/cinspspg.html
- SI NSPS: http://www.epa.gov/ttn/atw/nsps/sinsps/sinspspg.html

EPA Regional Office websites
- http://www.epa.gov/region1/rice

Electronic CFR
- http://www.gpoaccess.gov/ecfr

Melanie King (EPA HQ contact)
- king.melanie@epa.gov or 919-541-2469

EPA Regional Office Contacts
It's QUESTION TIME!!