4Z RICE GACT

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Land Use and Environmental Services Agency
Air Quality Division
What is 4Z?

- Federal rule for stationary engines
- Major and area sources
- New and existing engines
- Non-emergency and emergency engines
- Focus is on HAP emissions
- Uses combination of control and management practices to achieve emission reductions
Why???

• Deadlines
  – Compliance dates have passed
• Wide ranging applicability
  – Insignificant sources
• Complex rule
• Modified in January 2013
• Compliance assistance
<table>
<thead>
<tr>
<th>Acronyms &amp; Terms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RICE</td>
<td>Reciprocating Internal Combustion Engine</td>
</tr>
<tr>
<td>GACT</td>
<td>Generally Available Control Technology (Federal rule for area sources)</td>
</tr>
<tr>
<td>Area Source</td>
<td>Potential to emit &lt;25 tons total HAP or &lt;10 tons individual HAP annually.</td>
</tr>
<tr>
<td>4Z</td>
<td>Subpart of the Federal Rules where this regulation is found (40 CFR 63 Subpart ZZZZ)</td>
</tr>
<tr>
<td>CI</td>
<td>Compression Ignition – diesel fueled</td>
</tr>
<tr>
<td>SI</td>
<td>Spark Ignition – Gasoline, natural gas, other gas</td>
</tr>
<tr>
<td>ULSD</td>
<td>Ultra low sulfur diesel (15ppm)</td>
</tr>
<tr>
<td>LB/RB</td>
<td>Lean burn (fuel lean), rich burn (fuel rich)</td>
</tr>
<tr>
<td>2S/4S</td>
<td>2 stroke power cycle completed in one revolution of the crankshaft; 4 stroke power cycle in two revolutions</td>
</tr>
</tbody>
</table>
Is My Engine Subject?

- Compression and spark ignition
- All sizes
- Existing-construction started before 06/12/06
- New RICE to comply with NSPS 4I/4J
Applicability/Exemption

• Stationary RICE only
  – No motor vehicles or non-road engines
  – No portable engines
  – Portable can become stationary

• Existing emergency RICE at residential, commercial, or institutional area sources not used or obligated to be available more than 15 hours per year for emergency demand response.
## Emission Standards:
### Existing RICE at Area Sources

<table>
<thead>
<tr>
<th>HP</th>
<th>Engine Subcategory</th>
<th>Emergency or black start</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 300</td>
<td>CI</td>
<td>Management Practices</td>
</tr>
<tr>
<td></td>
<td>SI 2SLB</td>
<td>SI 4SLB/4SRB</td>
</tr>
<tr>
<td>300 – 500</td>
<td>49 ppm CO or 70% CO reduction</td>
<td>Management Practices</td>
</tr>
<tr>
<td>&gt; 500</td>
<td>23 ppm CO or 70% CO reduction</td>
<td>If engine used &gt;24 hrs/year:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4SLB: Install oxidation catalyst</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4SRB: Install non-selective catalytic reduction (NSCR)</td>
</tr>
</tbody>
</table>

See Table 2D of 40 CFR 63 Subpart 4Z for full details of compliance requirements.
Management Practices
Existing RICE at Area Sources

**CI RICE**
- Change oil* and filter
- Inspect air cleaner
- Inspect hoses and belts and replace as necessary

**SI RICE**
- Change oil* and filter
- Inspect spark plugs and replace as necessary
- Inspect hoses and belts and replace as necessary

Records must be maintained

Schedule is determined by the type of engine (at least annually)

*Oil analysis is an option (63.6625(i) or (j) with very specific requirements*
Management Practices: Oil Analysis Program Option

- Conducted on same frequency

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Condemning Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total base number (Cl)</td>
<td>&lt;30% of new oil</td>
</tr>
<tr>
<td>Total acid number (Si)</td>
<td>increases &gt;3 mg KOH/gram from new oil</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Changes &gt;20% from new oil</td>
</tr>
<tr>
<td>Percent water content</td>
<td>&gt;0.5% by volume</td>
</tr>
</tbody>
</table>

- If any limit is exceeded, oil must be changed
- Records must be maintained
Emission Standards
New RICE at Area Sources

Comply with 4Z by complying with the Stationary Engine New Source Performance Standards (NSPS)

- CI – 40 CFR 60 Subpart IIII
- SI – 40 CFR 60 Subpart JJJJ
## Compliance Requirements
### Existing RICE at Area Sources

<table>
<thead>
<tr>
<th>Engine Subcategory</th>
<th>Compliance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-emergency</strong></td>
<td></td>
</tr>
</tbody>
</table>
| CI RICE > 300 hp   | • Initial performance testing  
|                    | • Notifications            
|                    | • Semiannual reports       
|                    | • ULSD and crankcase emissions controls |
|                    | • > 500 hp: 3 year testing required |
|                    | • > 500 hp: Monitoring and operating limits |
| **Non-emergency**  |                         |
| SI 4SLB / 4SRB > 500 hp >24 hrs/yr, not remote | • Initial and annual compliance demonstrations  
|                    | • Notifications            
|                    | • Semiannual reports       
|                    | • Monitoring or operating limits |
| **Emergency** or black start engines |                         |
| Non-emergency CI ≤ 300 hp | • Management practices  
| Non-emergency SI 2SLB | • Operate/maintain engine per instructions |
| Non-emergency SI 4SLB and 4SRB ≤ 500 hp | • Emergency engines: hour meter and monitoring |
| Non-emergency SI LFG/DG | • Emergency engines used for emergency demand response or local reliability: reporting and ULSD |
| Non-emergency SI 4SLB or 4SRB > 500 hp < 24 hrs/yr or remote |
Emergency Engines

• No limits on operating hours in emergency situations

• 100 hrs/yr operation allowed for:
  – Maintenance checks and readiness testing
  – Emergency Demand Response:
    • Energy Emergency Alert Level 2 per NERC Standard*
    • Deviation of voltage or frequency of 5% below standard *

*Annual report to EPA if >100 hp emergency engine operated or contractually obligated to operate in this manner for more than 15 hours per year.

ULSD beginning January 1, 2015
Emergency Engines, cont.

- 50 hrs/yr (of 100) allowed for non-emergency operation*: Cannot be used for peak shaving, non-emergency demand response, or to generate income or supply power as part of a financial arrangement unless all of the following are met...
  - Engine dispatched by local system operator
  - Intended to mitigate local limitations and local supply interruption
  - Dispatch follows specific protocols and guidelines
  - Power provided to facility or to support local distribution system
  - The dispatch and the specific guideline or standard being followed must be identified and recorded

*Annual report to EPA if >100 hp emergency engine operated in this manner at any time during the year.
ULSD beginning January 1, 2015
Important Dates

• Compliance date for CI/SL RICE
  – May 3, 2013 / October 19, 2013

• Initial Performance Test
  – 180 days after compliance date
    • October 30, 2013 / April 17, 2014

• Notification of Compliance Status due 60 days after compliance demonstration

• First semiannual report due January 31, 2014

• First annual emergency demand response report due March 31, 2016 (for 2015)
  – (http://www.epa.gov/cdx)
Resources

• MCAQ representative

• EPA’s RICE NESHAP TTN website: http://www.epa.gov/ttn/atw/icengines/
  – Webinars and presentations
  – Implementation tools
  – Technical information
  – Compliance information
  – Regulatory navigation tools
Thank You!

Questions?