



# Connecticut Department of Energy and Environmental Protection



# National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE Rule)



**40 CFR 63 Subpart ZZZZ**  
**Major Source New Spark Ignition Limited Use Engine >500**  
**Horsepower (operates <100 hrs/yr)**



Connecticut Department of Energy and Environmental Protection

# Notification Requirements

- Initial Notification only

- 120 days after effective date or construction/reconstruction

- Notification should include:

- Address (physical location) of the affected source
    - Relevant standard, or other requirement, that is the basis of the notification and the source’s compliance date
    - 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
    - Whether the source is a major or area source and
    - Statement that the engine has no additional requirements and explain the basis of the exclusion (i.e., that it operates as a limited use engine if it has a site rating of >500 HP at a major source)

*Example<sup>a</sup>*

**Initial Notification of Applicability<sup>b</sup>**  
National Emission Standards for Hazardous Air Pollutants:  
Stationary Reciprocating Internal Combustion Engines  
40 CFR part 63, subpart ZZZZ

Yes, I am subject to 40 CFR part 63, subpart ZZZZ National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

NAICS code(s): \_\_\_\_\_

Compliance Date:  Existing (before 6/12/2006) source: Oct 19, 2013  
 New/reconstructed (on or after 6/12/2006) source: Upon initial startup

**Note: The Oct 19, 2013 compliance date for existing sources applies to the following engine types:**

- Existing stationary spark ignition (SI) RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions
- Existing stationary SI RICE located at an area source of HAP emissions

Company name: \_\_\_\_\_

Facility name (if different): \_\_\_\_\_

Facility (physical location) address: \_\_\_\_\_  
\_\_\_\_\_

My facility is a (please choose one):  Major source  Area source

Owner name/title: \_\_\_\_\_

Owner/company address: \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

<sup>a</sup>This is an example of the type of information that must be submitted to fulfill the Initial Notification of Applicability Status requirement of 40 CFR part 63, subpart ZZZZ. You may submit the information in another form or format, or you may use this form.  
<sup>b</sup>Initial Notification is due 120 days after the effective date (10/19/2010) of the rule or 120 days after you become subject to the rule.

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# Where do I send notifications?



## EPA REGION 1:

US Environmental Protection Agency

5 Post Office Square, Suite 100, Mail code: OES04-2

Boston, MA 02109-3912

Attention: Air Clerk



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# By when must I comply with the rule?

Upon startup



Photo credit: EPA



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# Spark Ignition New Source Performance Standards (SI NSPS)

You must meet the following SI NSPS requirements:

- **Emission and Operating Limits, Testing Requirements:**

- See Table
- Must meet these standards for the life of the engine

- **Fuel Requirements:**

- Gasoline engines must use gas that meets the sulfur limit: cap of 80 ppm/gal



# Spark Ignition New Source Performance Standards (SI NSPS)

## You must meet the following SI NSPS requirements:

### •Compliance Requirements:

#### •If you have a *certified* engine:

- Install, configure, operate and maintain engine according to manufacturer's instructions

#### •If you do not operate/maintain according to manufacturer's instructions-

- Keep maintenance plan and maintenance records, operate consistent with good air pollution control practices
- Initial performance test and subsequent testing every 8,760 hours or 3 years, whichever is first

#### •If you have a *non-certified* engine:

- Maintenance plan
- Initial test and subsequent testing every 8,760 hours or 3 years, whichever is first

### •Recordkeeping/Reporting:

- Documentation of certification (EPA Certificate of Conformity)
- Records of engine maintenance
- Initial notification for non-certified engines
- Notification of Intent to Conduct Performance Testing 30 days prior to test
- Results of performance testing within 60 days of test



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# Engine Certification

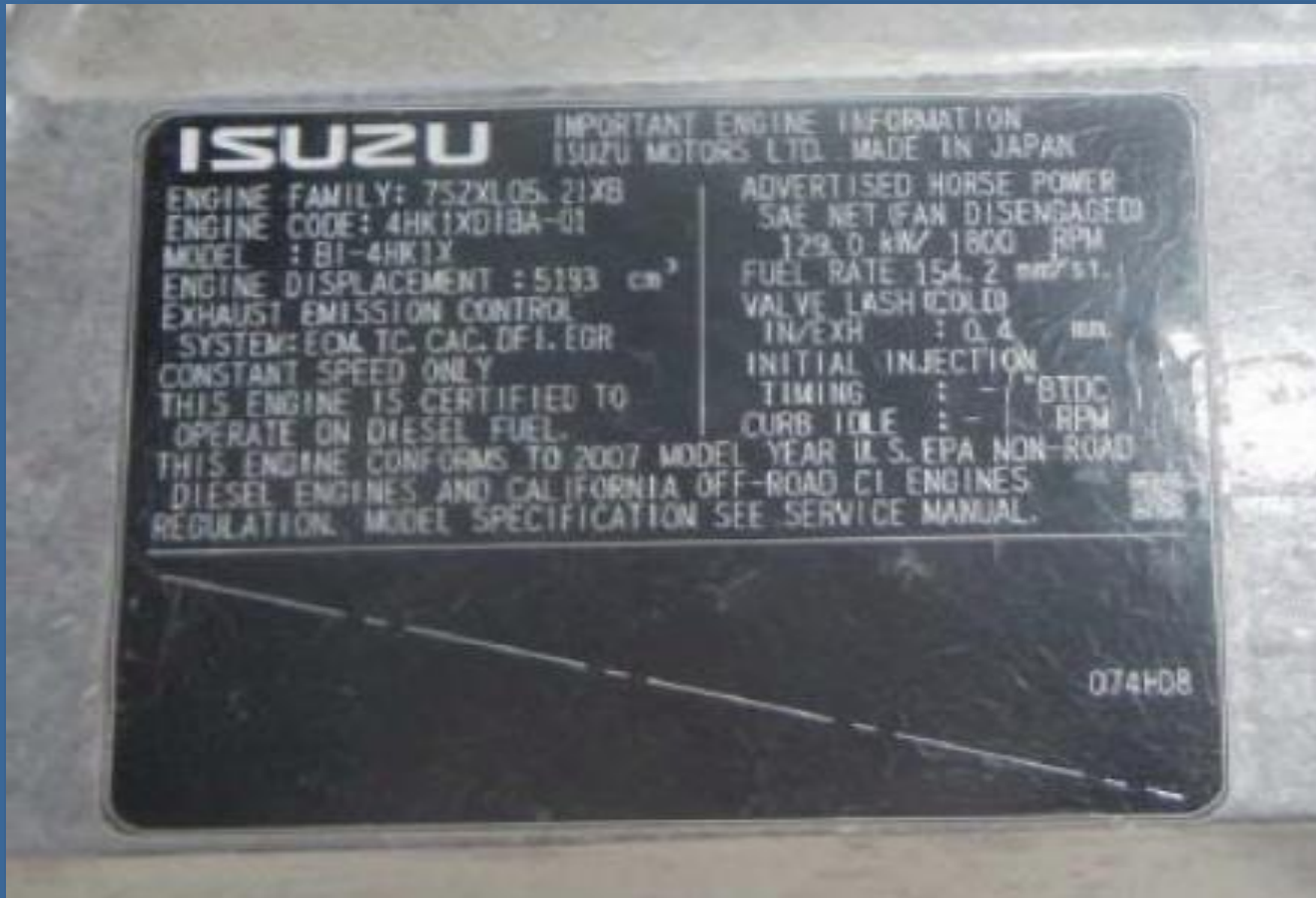

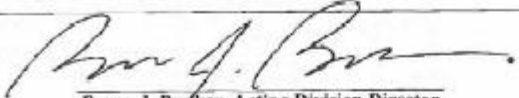


Photo credit: EPA





# EPA Certificate of Conformity

	<p align="center"><b>UNITED STATES ENVIRONMENTAL PROTECTION AGENCY</b>  <b>2012 MODEL YEAR</b>  <b>CERTIFICATE OF CONFORMITY</b>  <b>WITH THE CLEAN AIR ACT OF 1990</b></p>	<p align="center"><b>OFFICE OF TRANSPORTATION  AND AIR QUALITY</b>  <b>ANN ARBOR, MICHIGAN 48105</b></p>	
<p><b>Certificate Issued To:</b> Generac Power Systems, Inc.  (U.S. Manufacturer or Importer)  <b>Certificate Number:</b> CGNXB06.82NN-012</p>	<p><b>Effective Date:</b>  <u>10/26/2011</u>  <b>Expiration Date:</b>  <u>12/31/2012</u></p>	 Byron J. Burkner, Acting Division Director Compliance Division	<p><b>Issue Date:</b>  <u>10/26/2011</u>  <b>Revision Date:</b>  N/A</p>
<p><b>Manufacturer:</b> Generac Power Systems, Inc.  <b>Engine Family:</b> CGNXB06.82NN  <b>Certificate Number:</b> CGNXB06.82NN-012  <b>Certification Type:</b> Stationary (Part 60)  <b>Fuel:</b> Natural Gas (CNG/LNG)  <b>Emission Standards:</b> NMHC + NOx (g/kW-hr) : 13.4  CO (g/kW-hr) : 519  HC + NOx (g/kW-hr) : 13.4  <b>Emergency Use Only:</b> Y</p>			
<p>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 those 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.</p> <p>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.</p> <p>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 <i>ab initio</i> for other reasons specified in 40 CFR Part 60.</p> <p>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.</p>			

Engine Category	Date Constructed/Reconstructed/Manufactured	Size/Engine Type/Fuel	Emission Standards	Importing/Installing Requirements <sup>3</sup>	Compliance Requirements				Notification, Reports, and Records Requirements	General Provisions (40 CFR part 60)
					Engines being operated and maintained in a certified manner <sup>1</sup>		Engines being operated and maintained in a non-certified manner <sup>2</sup>			
					General Compliance	Performance Testing	General Compliance	Performance Testing		
Lean burn HP<1,350	Commenced construction after 6/12/2006 and manufactured on or after 1/1/2008	HP<1,350	60.4233(e)	60.4236(b)	60.4243(a)(1) If using AFRC: 60.4243(g) 40 CFR part 1068, subparts A-D.		60.4243(a)(2)(iii) If using AFRC: 60.4243(g)	60.4243(a)(2)(iii) 60.4244		
Lean burn HP ≥1,350	Commenced construction after 6/12/2006 and manufactured on or after 7/1/2007	Gasoline	60.4231(b) 60.4233(b)	60.4236(b), (d)	If using AFRC: 60.4243(g) <b>Manufactured before 7/1/2008:</b> 60.4243(h) <b>Manufactured after 7/1/2008:</b> 60.4243(a)(1) 40 CFR part 1068, subparts A-D.	None	If using AFRC: 60.4243(g) <b>Manufactured before 7/1/2008:</b> 60.4243(h) <b>Manufactured after 7/1/2008:</b> 60.4243(a)(2)(iii)	<b>Manufactured before 7/1/2008:</b> None <b>Manufactured after 7/1/2008:</b> 60.4243(a)(2)(iii) 60.4244	60.4245(a),(d) <b>Non-certified:</b> 60.4245(c)	60.4246 Table 3
		All except gasoline	60.4233(e)	60.4236(b)	If using AFRC: 60.4243(g) <b>If purchasing certified:</b> 60.4243(b)(1) 60.4243(a)(1) <b>If purchasing non-certified:</b> 60.4243(b)(2)	<b>Non-Certified:</b> 60.4243(b)(2)(ii), 60.4244 <b>Certified:</b> None	60.4243(a)(2)(iii) If using AFRC: 60.4243(g)	60.4243(a)(2)(iii) 60.4244		
Lean burn Modified/ Reconstructed	Modified or reconstructed after 6/12/2006	Natural gas and lean burn LPG	60.4233(f)(4)	None	If using AFRC: 60.4243(g) 60.4243(i)				60.4245(a),(d)	
		Gasoline	60.4233(f)(2)							
		Landfill/digester gas	60.4233(f)(5)							

1. If you operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, you are operating in a certified manner.
2. If you do not operate and maintain the certified engine and control device according to the manufacturer's instructions, your engine will be considered a non-certified engine.
3. The requirements of this section do not apply to engines that have been modified or reconstructed, and they do not apply to engines that were removed from one existing location and reinstalled at a new location.



# Test Methods

Conduct performance tests according to the following procedures:

- Each test must be conducted within 10% of 100% peak (or the highest achievable) load and according to the requirements in §60.8 and under the specific conditions that are specified by Table 2 to the rule.
- You may not conduct tests during periods of startup, shutdown, or malfunction.
- To determine compliance with the NO<sub>x</sub> mass per unit output emission limitation, convert the concentration of NO<sub>x</sub> in the engine exhaust using the following equation:

$$ER = (C_d \times 1.912 \times 10^{-3} \times Q \times T)/HP\text{-hr}$$

Where:

ER = Emission rate of NO<sub>x</sub> in g/HP-hr.

C<sub>d</sub>= Measured NO<sub>x</sub> concentration in parts per million by volume (ppmv).

1.912×10<sup>-3</sup> = Conversion constant for ppm NO<sub>x</sub> to grams per standard cubic meter at 20°C.

Q = Stack gas volumetric flow rate, in standard cubic meter per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, horsepower-hour (HP-hr).

- To determine compliance with the CO mass per unit output emission limitation, convert the concentration of CO in the engine exhaust using the following equation:

$$ER = (C_d \times 1.164 \times 10^{-3} \times Q \times T)/HP\text{-hr}$$

Where:

ER = Emission rate of CO in g/HP-hr.

C<sub>d</sub>= Measured CO concentration in ppmv.

1.164×10<sup>-3</sup> = Conversion constant for ppm CO to grams per standard cubic meter at 20°C.



# Test Methods

- When calculating emissions of VOC, emissions of formaldehyde should not be included. To determine compliance with the VOC mass per unit output emission limitation, convert the concentration of VOC in the engine exhaust using:

$$ER = (C_d \times 1.833 \times 10^{-3} \times Q \times T)/HP\text{-hr}$$

Where:

ER = Emission rate of VOC in g/HP-hr

C<sub>d</sub> = VOC concentration measured as propane in ppmv

$1.833 \times 10^{-3}$  = Conversion constant for ppm VOC measured as propane, to grams per standard cubic meter at 20°C.



# Test Methods

•If you choose to measure VOC emissions using either Method 18 of 40 CFR part 60, appendix A, or Method 320 of 40 CFR part 63, appendix A, then you have the option of correcting the measured VOC emissions to account for the potential differences in measured values between these methods and Method 25A. The results from Method 18 and Method 320 can be corrected for response factor differences using the following equations. The corrected VOC concentration can then be placed on a propane basis using the last equation in this section.

$$RF_i = C_{Mi}/C_{Ai}$$

Where:

RF<sub>i</sub>= Response factor of compound i when measured with EPA Method 25A.

C<sub>Mi</sub>= Measured concentration of compound i in ppmv as carbon.

C<sub>Ai</sub>= True concentration of compound i in ppmv as carbon.

$$C_{i_{corr}} = RF_i \times C_{i_{meas}}$$

Where:

C<sub>i<sub>corr</sub></sub>= Concentration of compound i corrected to the value that would have been measured by EPA Method 25A, ppmv as carbon.

C<sub>i<sub>meas</sub></sub>= Concentration of compound i measured by EPA Method 320, ppmv as carbon.

$$C_{P_{eq}} = 0.6098 \times C_{i_{corr}}$$

Where:

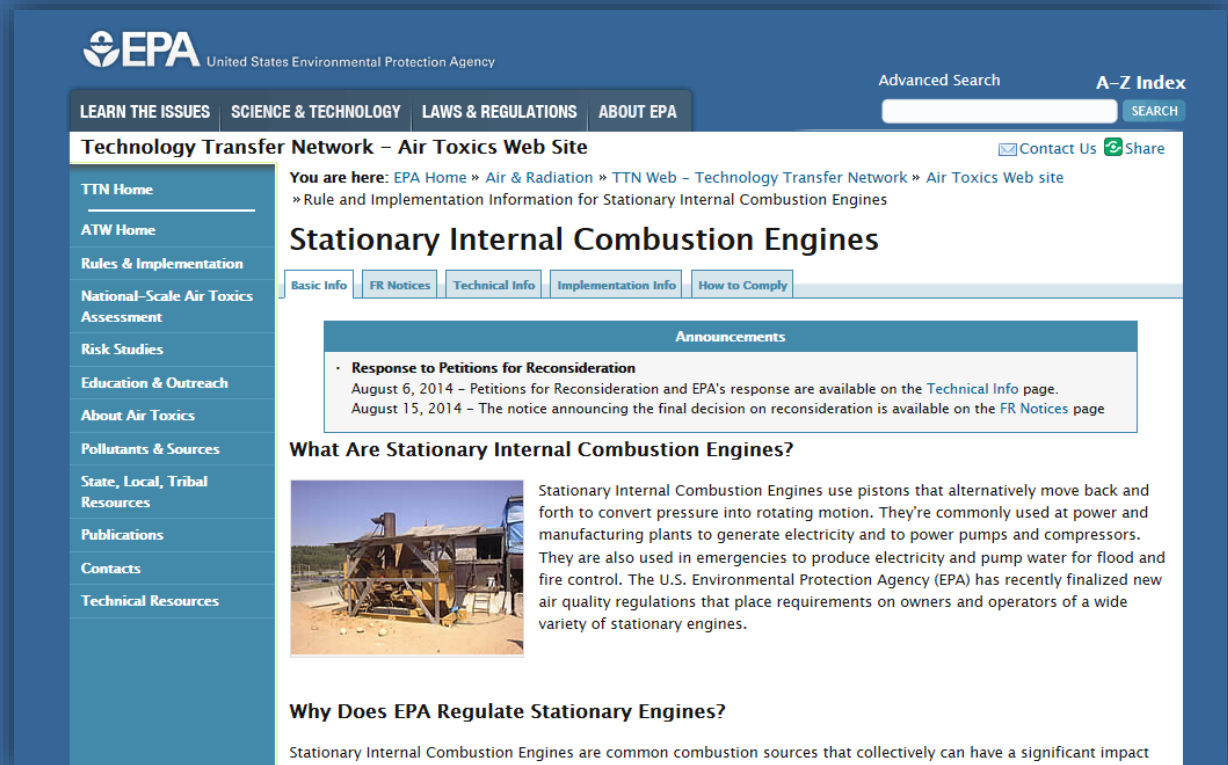
C<sub>P<sub>eq</sub></sub>= Concentration of compound i in mg of propane equivalent per DSCM.



# Visit the EPA RICE Compliance Page

[www.epa.gov/ttn/atw/icengines](http://www.epa.gov/ttn/atw/icengines)

- ▶ Fact sheets
- ▶ Regulations
- ▶ Example notifications
- ▶ Announcements
- ▶ Q & A documents
- ▶ Testing advice
- ▶ Recorded webinars
- ▶ ...and more!



The screenshot shows the EPA website's Technology Transfer Network (TTN) page for Air Toxics Web Site. The page is titled "Stationary Internal Combustion Engines" and includes a navigation menu with options like "Basic Info", "FR Notices", "Technical Info", "Implementation Info", and "How to Comply". A sidebar on the left lists various resources such as "TTN Home", "ATW Home", "Rules & Implementation", "National-Scale Air Toxics Assessment", "Risk Studies", "Education & Outreach", "About Air Toxics", "Pollutants & Sources", "State, Local, Tribal Resources", "Publications", "Contacts", and "Technical Resources". The main content area features an "Announcements" section with a link to "Response to Petitions for Reconsideration" and a section titled "What Are Stationary Internal Combustion Engines?" which includes a photograph of a large industrial engine and a brief description of its function.



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# Take Aways

## Engine Type:

- A new or reconstructed spark ignition limited use engine at a major source having a site rating greater than 500 horsepower

## Reporting:

- Initial Notification only
  - 120 days after effective date or construction/reconstruction

## Compliance Date:

- Upon startup

## NSPS:

- Comply with all applicable SI NSPS requirements

