Stationary RICE

EPA's Clean Air Act Enforcement Alert and A Case Study

Today's Discussion

- Brief Overview of the Stationary RICE Regulations
- EPA's August 2022 Enforcement Alert
- Case Study: Citizens Energy Group's Approach to Compliance

RICE Rules

- NESHAP: 40 CFR 63, Subpart ZZZZ
  - Applies to stationary engines at area and major sources of HAP
  - Compliance obligations depend on load type and engine size
  - Navigator tool on EPA's website:

https://regnav.app.cloud.gov/rice/rice%20-%20Storyline%20output/story_html5.html

- NSPS: 40 CFR 60, Subpart IIII
  - Applies to compression ignition engines
  - Constructed (ordered) after July 11, 2005, and manufactured after April 1, 2006 (July 1, 2006 for fire pump engines), or
  - Modified or reconstructed after July 11, 2005.
- NSPS: 40 CFR 60, Subpart JJJJ
  - Applies to spark ignition engines
  - Constructed (ordered) after 6/12/2006 and the engine is
    - >500 HP manufactured on/after 7/1/2007 (except lean burn 500≤HP<1,350)
    - lean burn 500≤HP<1,350 manufactured on/after 1/1/2008
    - <500 HP manufactured on/after 7/1/2008
    - emergency >25 HP manufactured on/after 1/1/2009
    - modified/reconstructed after 6/12/2006.

https://www.epa.gov/stationary-engines/compliance-requirements-stationary-engines#Determining%20RICE%20NSPS%20Compliance

Rice is Good for Your Health

United States Environmental Protection Agency

Office of Enforcement and Compliance Assurance

Enforcement Alert

Publication no. EPA 310-F-22-001 August 2022

Stationary Engines Cause Excess Emissions in Communities Across the Country

Purpose

This Enforcement Alert informs owners and operators of stationary engines that EPA has
violations of the applicable Clean Air Act requirements. The Agency has
substantial penalties for facilities that have failed to com
generating electricity, providing primar
They are also used to
oil or natural gas and

Public Health Concer

Noncomplying stationa potentially emit excess air
pollutants from stationary engines include

electricity demand, further
the formation of ground-level ozone. Many of these demand response engines are located in communities already overburdened by pollution, adding to air quality concerns.

Green Mountain Power Corporation – Vergennes, VT (2021)

Green Mountain Power is an electric utility that operates two diesel engines, both 2,737 horsepower. EPA found these engines to be in violation of Subpart ZZZZ as they lacked the proper monitoring equipment and Green Mountain Power had not submitted the required reports and plans. Green Mountain Power addressed these issues in accordance with EPA's settlement.

Highpoint Resources Corporation – Denver, CO (2019)

Highpoint operates the Pelican Lake Compressor Station in the Uinta Basin of Utah, which uses a 760-horsepower engine. EPA and representatives of the Ute Indian Tribe inspected the compressor station and found this engine to be in violation of Subpart JJJJ. During testing, the engine exceeded emission limits for oxides of nitrogen and carbon monoxide. As a result of EPA's action, Highpoint subsequently replaced the catalyst, conducted tuning and retested the engine to demonstrate compliance with the emission limits.

https://www.epa.gov/system/files/documents/2022-09/engineenforcement0822.pdf

Get to Know *Your* RICE

- Engine Design
  - Compression ignition (CI)
  - Spark ignition (SI)
    - Two stroke or Four stroke
    - Rich burn or Lean burn
- Engine capacity (brake-horsepower)
- Year of Construction (Assess whether *New* or *Existing* under regs)
- Operating Mode*
  - Emergency
  - Non-emergency

When You Say "Emergency"….

- IC Engines may be operated to provide electrical power or mechanical work during an emergency situation:
  - Produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility
  - Interruptions of the normal power source if the facility runs on its own power production
  - Stationary RICE used to pump water in the case of fire or flood, etc.
- **Not** for standby power under contract ("financial arrangements") with local utility or other entity
- Rules do not limit operating time during an emergency, but once power is restored, engine must be out of service
  - *See EPA Letter to Roche Diagnostics*

The RICE NESHAP – You Can't Make This Stuff Up….

- RICE subcategorized by
  - Engine type (CI/SI)
    - SI engines further subcategorized
  - Engine size in HP
  - Source type (Area vs. Major)
  - Intended Usage (Emergency or Non-emergency)

Compliance Requirements by Engine Subcategory

Engine Subcategory	Compliance Requirements

Existing non-emergency:
• CI ≥100 HP at major source
• CI >300 HP at area source
• SI 100-500 HP at major source
	• Initial emission performance test
	  ◦ Subsequent performance testing every 8,760 hours of operation or 3 years for engines >500 HP (5 years if limited use)
	  ◦ Operating limitations - catalyst pressure drop and inlet temperature for engines >500 HP
	  ◦ Notifications
	  ◦ Semiannual compliance reports (annual if limited use)
	Existing non-emergency CI >300 HP:
	• Ultra low sulfur diesel (ULSD)
	• Crankcase emission control requirements

• Existing non-emergency SI 4SLB/4SRB >500 HP at area source used >24 hours/year and not in remote area	• Initial and annual catalyst activity checks • High temperature engine shutdown or continuously monitor catalyst inlet temperature • Notifications • Semiannual compliance reports

The RICE NESHAP

Compliance Requirements by Engine Subcategory

Engine Subcategory	Compliance Requirements
Existing emergency/black start: • <100 HP at major source • ≤500 HP at major source • All at area source Existing non-emergency: • <100 HP at major source • CI ≤300 HP at area source • SI ≤500 HP at area source • SI 2SLB >500 HP at area source • SI LFG/DG >500 HP at area source • SI 4SLB/4SRB >500 HP at area source used ≤24 hours/year or in remote area	• Operate/maintain engine & control device per manufacturer's instructions or owner-developed maintenance plan • May use oil analysis program instead of prescribed oil change frequency • Emergency engines must have hour meter and record hours of operation • Keep records of maintenance • Notifications not required • Reporting and ULSD for emergency engines used for local reliability

	Compliance Requirements
ce	• Initial emission performance test ◦ Subsequent performance testing every 8,760 hours of operation or 3 years for engines >500 HP (5 years if limited use) ◦ Operating limitations - catalyst pressure drop and inlet temperature for engines >500 HP ◦ Notifications ◦ Semiannual compliance reports (annual if limited use) Existing non-emergency CI >300 HP: • Ultra low sulfur diesel (ULSD) • Crankcase emission control requirements
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The RICE NESHAP

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Existing non-emergency: • SI 4SRB >500 HP at major source New non-emergency: • SI 2SLB >500 HP at major source • SI 4SLB >250 HP at major source • SI 4SRB >500 HP at major source • CI >500 HP at major source	• Initial emission performance test ◦ Subsequent performance testing semiannually (can reduce frequency to annual) (subsequent performance testing required for 4SRB engine complying with formaldehyde % reduction standard if engine is ≥5000 HP) ◦ Operating limitations - catalyst pressure drop and inlet temperature ◦ Notifications ◦ Semiannual compliance reports

The RICE NESHAP

Engine Subcategory	Compliance Requirements
• New emergency/limited use >500 HP at major source	• Initial notification
• New non-emergency LFG/DG >500 HP at major source	• Initial notification • Monitor/record fuel usage daily • Annual report of fuel usage

Engine Subcategory	Compliance Requirements
Existing non-emergency:	
• SI 4SLB/4SRB >500 HP at area source used ≤24 hours/year or in remote area	• CI >500 HP at major source

Case Study: Citizens Energy Group

- History: Acquired drinking water and wastewater utilities in August 2011
- EPA Applicability Determination Request: *Storm mode*
- Environmental Audit and IDEM Self Disclosure
- Path to Compliance: Permits and Testing
- Ongoing RICE NESHAP and NSPS Compliance

Case Study: Citizens Energy Group

- Fleet currently consists of 95 RICE & ICE Engines
- Used for Generators, Pumps & Compressors to increase resilience
  - 85 Emergency
  - 10 Non-emergency
    - 7 equipped with catalysts
    - 3 do not require catalysts (due to size)
- Fleet to grow by another 25 Emergency ICE by 2024 to provide resilience
- All require to have non-resettable hour meters
- All CI require Ultralow sulfur diesel fuel & monthly delivery records

Case Study: Citizens Energy Group

- Installed Catalysts in 2013
  - Performance tests conducted every 3 years
  - Inspect catalyst to ensure near-peak performance & minimal blinding
- Installed CPMS
  - Collect, monitor, and record inlet temperatures and inlet and outlet pressure differentials of the catalyst

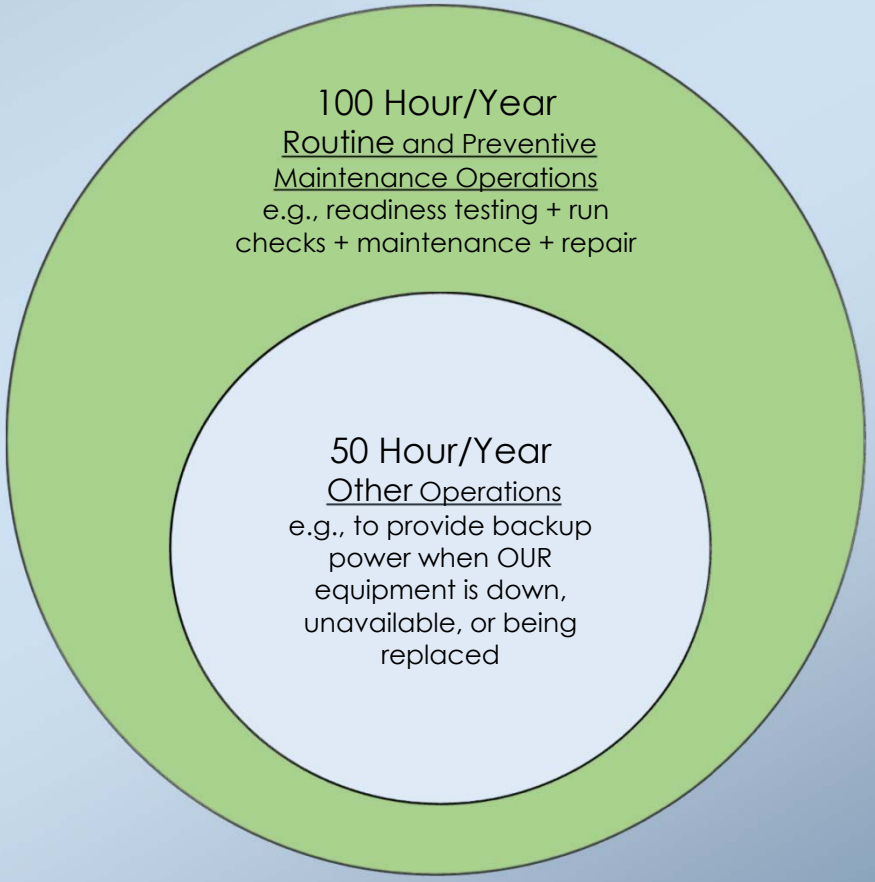
Case Study: Citizens Energy Group

Emergency Operations

- Use when utility power is lost
- No annual hourly limit for emergency operations

Non-emergency Operations

- May use for up to 100 hours/yr for readiness, maintenance, testing
- May use for up to 50 hours/yr for reasons other than for readiness, maintenance, testing
- 50 hours/yr subtracted from 100 hours/yr



Case Study: Citizens Energy Group

'Emergency operations' has a different meaning to the Operations staff – which is VERY different from the Rule

- Operations Staff: Historically, ANY loss of power, even if due to company's equipment, is an EMERGENCY to Operations
- Rule: Loss of power due to electric utility's equipment is the ONLY emergency

Case Study: Citizens Energy Group

- Environmental staff shadowed Operations field techs to understand their work setting challenges
- Provide tools to guide & help Operations staff to better understand & follow compliance obligations
  - Fact Sheets - converts requirements into their language
    - ✓ Explained requirements in weekly conversations decreased misunderstandings
  - Log books replaced tech's books
  - Created stickers for log books - guides field techs during data collections

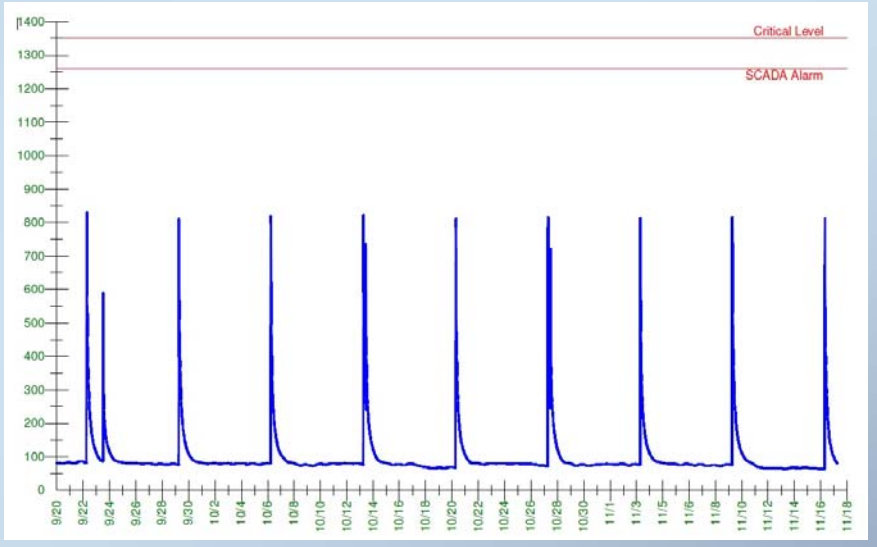
Item Inspected	Condition Satisfactory? (Circle Yes or No)		If Condition Not Satisfactory, Indicate Date & Operating Hours When Corrected
Belts for Diesel & Nat Gas Engines	Yes	No	
Hoses for Diesel & Nat Gas Engines	Yes	No	
Air Filters for Diesel OR Spark plugs for Nat Gas	Yes	No	
Engine Operating Hours at End of Service:			
Service Completed / Observed by:		Service Date:	

Case Study: Citizens Energy Group

Going from this…

Date	Time	Eng Runtime (hours)	Pre-DOC Temp (F)	Pre-DOC Pressure (iwc)	Post-DOC Pressure (iwc)	Initial DP Setpoint (iwc)	4-hr.Rolling Avg Temp (F)	Diff.Pressure (iwc)
########	7:33:20	1210	689	27.8	25.7	2.7	900.7	2.1
########	7:34:19	1210	755.2	29.7	27.4	2.7	900.7	2.3
########	7:35:19	1210	795	30.8	28.5	2.7	900.7	2.3
########	7:36:20	1210	822	31.4	29	2.7	900.7	2.4
########	7:37:19	1210	840.7	32.2	29.4	2.7	900.7	2.8
########	7:38:19	1210	854.4	32.5	29.9	2.7	900.7	2.6
########	7:39:20	1210	866.1	32.6	29.9	2.7	900.7	2.7
########	7:40:19	1210	873.8	32.8	30.1	2.7	900.7	2.7
########	7:41:20	1210	882.8	32.8	30.3	2.7	900.7	2.5

To this…



Case Study: Citizens Energy Group

Again, going from this…

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########	7:37:19	1210	840.7	32.2	29.4	2.7	900.7	2.8
########	7:38:19	1210	854.4	32.5	29.9	2.7	900.7	2.6
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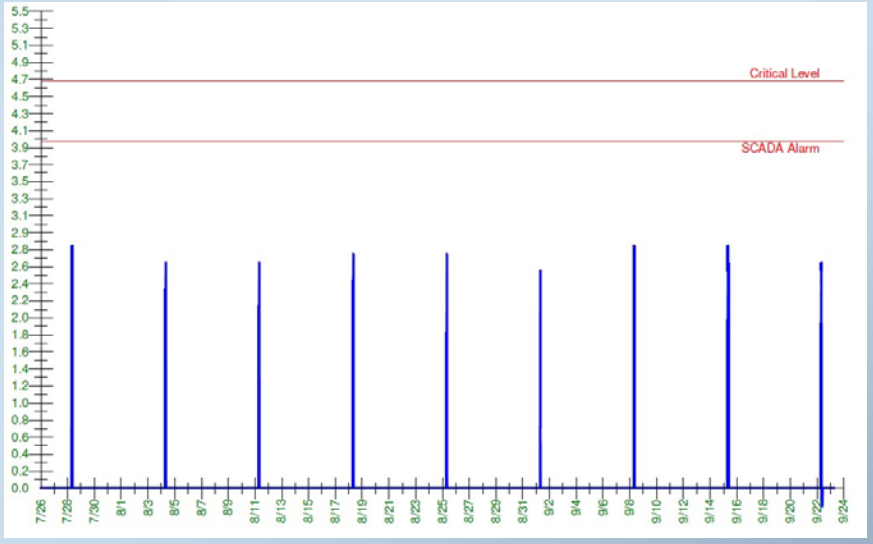
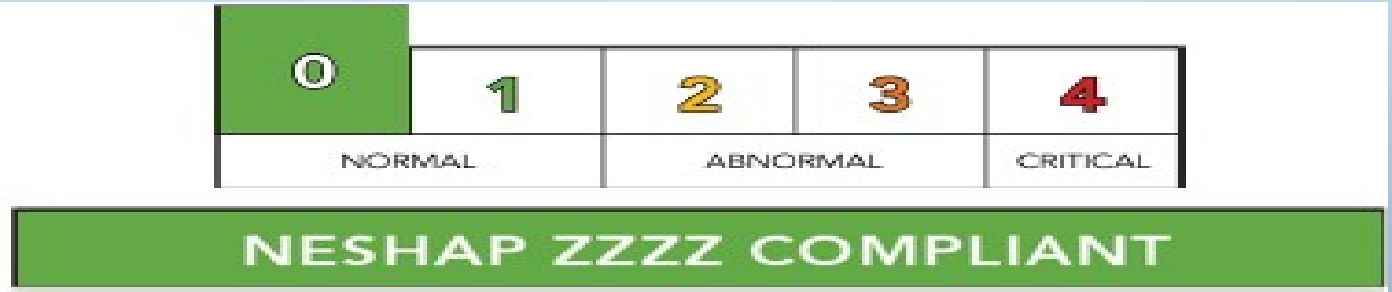


Case Study: Citizens Energy Group

- Oil & Filter Changes
  - Initially changes were based on Operations schedules
  - Moved to annual changes
  - Moved to changes to 3rd quarter from 4th quarter – helped ensure confirmation could be performed
  - Oil Sampling Pilot Program started in 2021



Case Study: Citizens Energy Group

Oil Sampling Pilot Program

- Allowed by rules
- Affects 42 engines
- Changed to annual oil sampling and analysis
- Oil changes now driven by analysis results, not yearly
- $20/sample @ 42 engines = $840 per sampling round; and then 3-4 partial sampling rounds per year
- Oil is required to be changed within 2 business days after receipt of the non-compliance report. (Or, do not operate until after oil/filter change.)
- 2022 results: 40 engines did not require oil/filter change = exceeded $30,000 in savings for time & materials

Case Study: Citizens Energy Group

Unexpected benefits

- Operations moved 5 Non-emergency pumps to Emergency only
  - Had always been viewed as non-emergency use – 'Storm Mode'
  - Fewer stack tests = more savings
  - Lower-level air permits = lower permit fees, sometimes less reporting
- The remaining 5 Non-emergency pumps are required to have catalysts, CPMS, data collection, and triannual testing

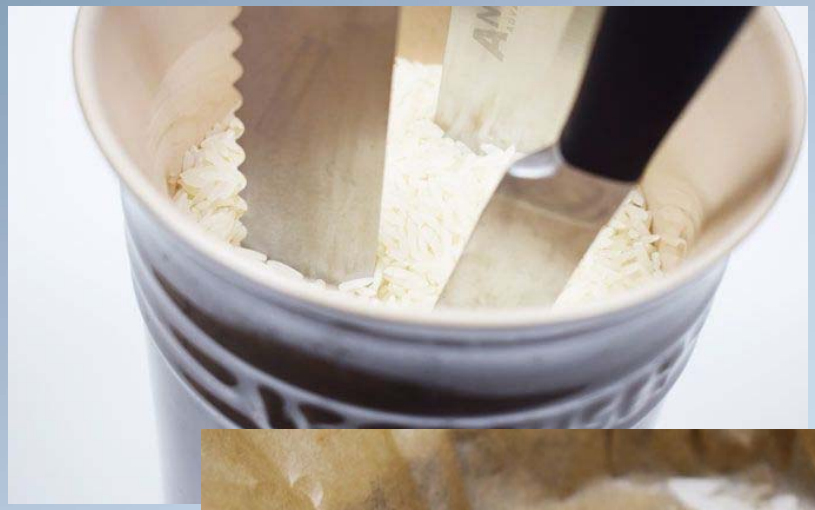
For More Information

- General Information on EPA's Stationary Engine Rules

https://www.epa.gov/stationary-engines/guidance-and-tools-implementing-stationary-engine-requirements

- EPA's Applicability Determination Index

https://cfpub.epa.gov/adi/index.cfm?CFID=37544345&CFTOKEN=b655b8acb5085861-B21AB61A-CBC4-60B9-564F1F18032DC8E1&fuseaction=home.dsp_main




EXPERT HOME TIPS


EXPERT HOME TIPS

Thank You!

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