Yale University RICE MACT Compliance – Lessons Learned

Jim Romanski Presented to

SIPRAC March 2017

Reciprocating Internal Combustion Engine Maximum Achievable Compliance Technology

RICE Rules Brief Background Actually Three Rules for RICE

- RICE MACT- 40 CFR part 63 subpart ZZZZ
  - Regulates Old and New Sources
  - Initially Applicable to Major Sources of HAPs
  - Area Source Rule pulls in All RICE sources.
- RICE NSPS - 40 CFR part 60 subpart IIII and JJJJ
  - Regulates “New” Sources (moving an engine does not make it a new source).
  - Applicable to Individual Units
  - Based on Installation Date

TWO 40 CFR Subparts but…

- RICE MACT and NSPS written to work together.
  - Compatible vs Combatable
  - Covers a vast number of sources some that have never been regulated before.
  - Covers all RICE so there are many different categories.
  - No De Minimis size threshold for engine size.

RICE Rules Sources Covered

- **R**eciprocating **I**nternal **C**ombustion **E**ngines
- Covers all types of stationary source engines
  - Electric Generators
  - Emergency Generators
  - Fire Pumps
  - Remote Location Power
  - Water Pumps
  - Diesel Chillers
  - Etc.

Engine Types Regulated

- **CI**: Compression Ignition (diesel)
- **SI**: Spark Ignition (gas including natural gas, landfill gas, gasoline, propane, etc.)
- **2SLB**: 2-stroke lean burn
- **4SLB**: 4-stroke lean burn
- **4SRB**: 4-stroke rich burn
- **4S**: 4-stroke
- **LFG/DG**: landfill gas/digester gas
- **ULSD**: Ultra Low Sulfur Diesel

Notes:

- 2-stroke: power cycle completed in 1 revolution of crankshaft
- 4-stroke: power cycle completed in 2 revolutions of crankshaft
- Lean burn: higher air/fuel ratio (fuel-lean)
- Rich burn: lower air/fuel ratio (fuel-rich)

Engine Categories Regulated

Based on:

- Size Cutoffs
- Existing Source
- New Source (Based on Installation Date)
- Located at a Major Source
- Located at a Minor Source

Engine Categories

RICE Rule Online Training
Printable Module Slides and Audio Scripts

Existing Engine at an Area Source | New Engine at an Area Source
Existing Engine at a Major Source | New Engine at a Major Source

Existing Engine at an Area Source		
Engine Type	**Printable Materials**	
Introduction	Module Slides	Audio Script
Area source existing emergency compression ignition engine >500 horsepower	Module Slides	Audio Script
Area source existing emergency compression ignition engine <= 500 horsepower	Module Slides	Audio Script
Area source existing emergency engine >500 horsepower, classified as residential, commercial, or institutional	Module Slides	Audio Script
Area source existing emergency engine <=500 horsepower, classified as residential, commercial, or institutional	Module Slides	Audio Script
Area source existing emergency spark ignition engine >500 horsepower	Module Slides	Audio Script
Area source existing emergency spark ignition engine <=500 horsepower	Module Slides	Audio Script
Area source existing non-emergency compression ignition engine 300< horsepower <=500	Module Slides	Audio Script
Area source existing non-emergency compression ignition engine >500 horsepower	Module Slides	Audio Script
Area source existing non-emergency compression ignition engine <=300 horsepower	Module Slides	Audio Script
Area source existing non-emergency landfill/digester gas-fired engine >500 horsepower	Module Slides	Audio Script
Area source existing non-emergency spark ignition 2-stroke lean burn engine >500 horsepower	Module Slides	Audio Script
Area source existing non-emergency spark ignition 2-stroke lean burn engine <=500 horsepower	Module Slides	Audio Script
Area source existing non-emergency spark ignition 4-stroke lean burn engine >500 horsepower that operates more than 24 hours/year	Module Slides	Audio Script
Area source existing non-emergency spark ignition 4-stroke lean burn engine >500 horsepower that operates 24 hours or less per year	Module Slides	Audio Script
Area source existing non-emergency spark ignition 4-stroke lean burn engine <=500 horsepower	Module Slides	Audio Script
Area source existing non-emergency spark ignition 4-stroke rich burn engine >500 horsepower that operates more than 24 hours/year	Module Slides	Audio Script

Area source existing non-emergency spark ignition 4-stroke rich burn engine >500 horsepower that operates 24 hours or less per year	Module Slides	Audio Script
Area source existing non-emergency spark ignition 4-stroke rich burn engine <=500 horsepower	Module Slides	Audio Script
Area source existing non-emergency landfill/digester gas-fired engine <=500 horsepower	Module Slides	Audio Script

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New Engine at an Area Source		
Engine Type	**Printable Materials**	
Introduction	Module Slides	Audio Script
Area source new emergency engine >500 horsepower	Module Slides	Audio Script
Area source new emergency engine <=500 horsepower	Module Slides	Audio Script
Area source new non-emergency compression ignition engine >500 horsepower	Module Slides	Audio Script
Area source new non-emergency compression ignition engine <=500 horsepower	Module Slides	Audio Script
Area source new non-emergency landfill/digester gas-fired engine >500 horsepower	Module Slides	Audio Script
Area source new non-emergency landfill/digester gas-fired engine <=500 horsepower	Module Slides	Audio Script
Area source new non-emergency spark ignition 2-stroke lean burn engine <=500 horsepower	Module Slides	Audio Script
Area source new non-emergency spark ignition 4-stroke lean burn engine <=500 horsepower	Module Slides	Audio Script
Area source new non-emergency spark ignition 4-stroke rich burn engine <=500 horsepower	Module Slides	Audio Script
Area source new spark ignition 2-stroke lean burn engine >500 horsepower	Module Slides	Audio Script
Area source new spark ignition 4-stroke lean burn engine >500 horsepower	Module Slides	Audio Script
Area source new spark ignition 4-stroke rich burn engine >500 horsepower	Module Slides	Audio Script

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Existing Engine at a Major Source		
Engine Type	**Printable Materials**	
Introduction	Module Slides	Audio Script
Major source existing emergency compression ignition engine <=500 horsepower	Module Slides	Audio Script
Major source existing emergency spark ignition engine <=500 horsepower	Module Slides	Audio Script
Major source existing non-emergency compression ignition engine >500 horsepower	Module Slides	Audio Script
Major source existing non-emergency compression ignition engine 100<= horsepower <=500	Module Slides	Audio Script
Major source existing non-emergency compression ignition engine <100 horsepower	Module Slides	Audio Script
Major source existing non-emergency spark ignition 2-stroke lean burn engine 100<= horsepower <=500	Module Slides	Audio Script

Engine Categories cont.

Major source existing non-emergency spark ignition 2-stroke lean burn engine <100 horsepower	Module Slides	Audio Script
Major source existing non-emergency spark ignition 4-stroke lean burn engine 100<= horsepower <=500	Module Slides	Audio Script
Major source existing non-emergency spark ignition 4-stroke lean burn engine <100 horsepower	Module Slides	Audio Script
Major source existing non-emergency spark ignition 4-stroke rich burn engine >500 horsepower	Module Slides	Audio Script
Major source existing non-emergency spark ignition 4-stroke rich burn engine 100<= horsepower <=500	Module Slides	Audio Script
Major source existing non-emergency spark ignition 4-stroke rich burn engine <100 horsepower	Module Slides	Audio Script
Major source existing non-emergency landfill/digester gas-fired engine 100<= horsepower <=500	Module Slides	Audio Script
Major source existing non-emergency landfill/digester gas-fired engine <100 horsepower	Module Slides	Audio Script

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New Engine at a Major Source		
Engine Type	**Printable Materials**	
Introduction	Module Slides	Audio Script
Major source new emergency engine >500 horsepower	Module Slides	Audio Script
Major source new emergency engine <=500 horsepower (Except 4-stroke lean burn engine =>250 horsepower)	Module Slides	Audio Script
Major source new emergency spark ignition 4-stroke lean burn engine 250<= horsepower <=500	Module Slides	Audio Script
Major source new landfill/digester gas-fired engine >500 horsepower	Module Slides	Audio Script
Major source new landfill/digester gas-fired engine <=500 horsepower	Module Slides	Audio Script
Major source new limited use engine >500 horsepower	Module Slides	Audio Script
Major source new compression ignition limited use engine >500 horsepower	Module Slides	Audio Script
Major source new spark ignition limited use engine >500 horsepower	Module Slides	Audio Script
Major source new non-emergency compression ignition engine >500 horsepower	Module Slides	Audio Script
Major source new non-emergency compression ignition engine <=500 horsepower	Module Slides	Audio Script
Major source new non-emergency spark ignition 2-stroke lean burn engine >500 horsepower	Module Slides	Audio Script
Major source new non-emergency spark ignition 2-stroke lean burn engine <=500 horsepower	Module Slides	Audio Script
Major source new non-emergency spark ignition 4-stroke lean burn engine 250<= horsepower <=500, manufactured on or after 1/1/2008	Module Slides	Audio Script
Major source new non-emergency spark ignition 4-stroke lean burn engine 250<= horsepower <=500, manufactured between 6/12/2006 and 12/31/2007	Module Slides	Audio Script
Major source new non-emergency spark ignition 4-stroke lean burn engine <250 horsepower	Module Slides	Audio Script
Major source new non-emergency spark ignition 4-stroke rich burn engine >500 horsepower	Module Slides	Audio Script

Major source new non-emergency spark ignition 4-stroke rich burn engine <=500 horsepower	Module Slides	Audio Script
Major source new non-emergency spark ignition 4-stroke lean burn engine >500 horsepower	Module Slides	Audio Script

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RICE NESHAP Online Training Modules

Content Last Updated on April 8, 2015

Printable Version

79 Elm Street, Hartford, CT 06106-5127 / Phone: 860-424-3000

RICE MACT

- Continued Rule Making and Lawsuits made RICE MACT a moving target.
- “Final” Rule(s) are complicated.
  - Possibly hastened Tom Scelfo‘s retirement?
- Still waiting for EPA to “fix” the Demand Response situation.

RICE MACT Demand Response Issue

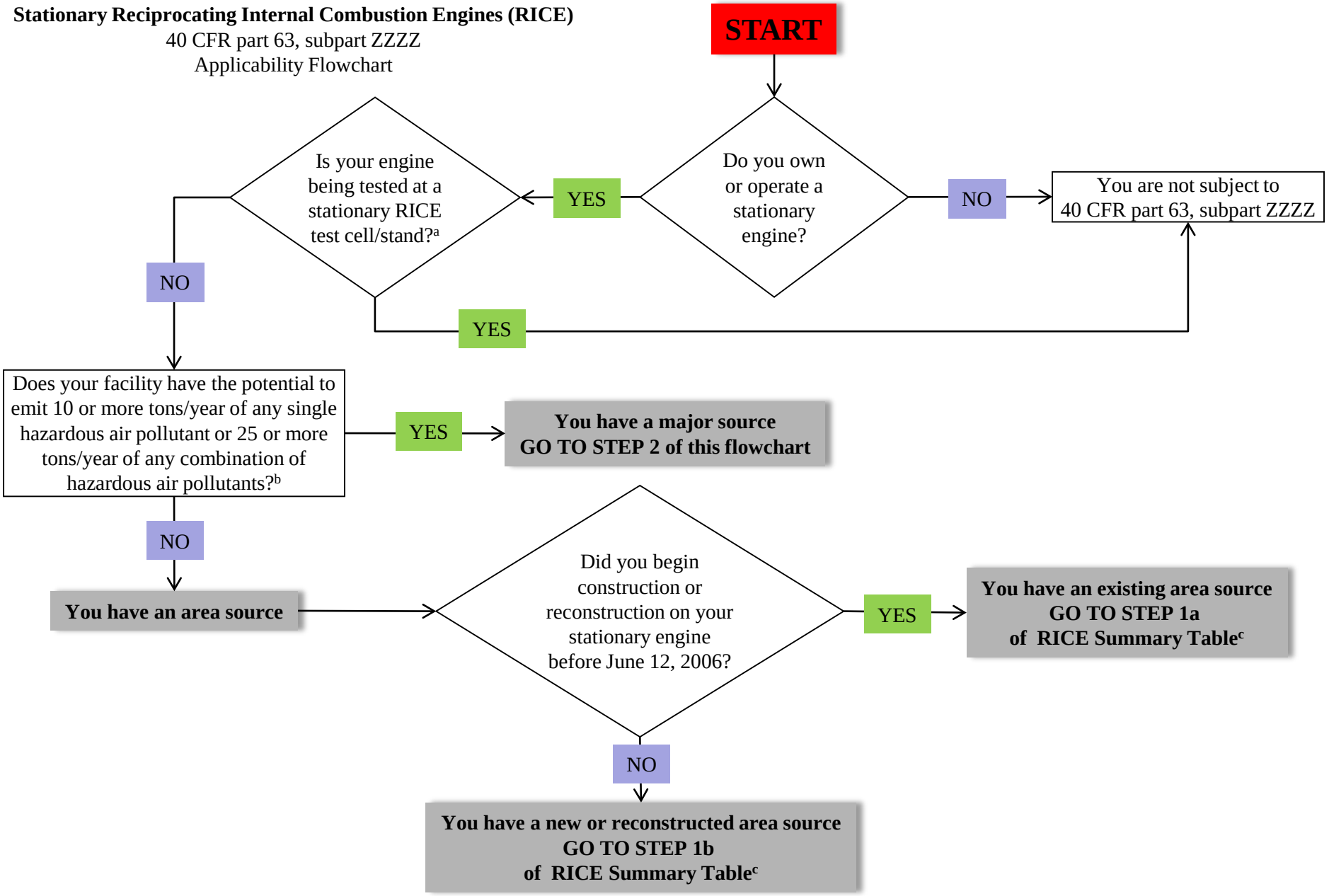
- Emergency Engines Originally Allowed to Operate for Demand Response and Continue to be considered “Emergency Engines”
  - Started out allowing for 50 hours of Demand Response
  - Was reduced to 15 hours of Demand Response
    - Delaware objected to any Demand Response hours
  - Courts through out parts of rule allowing “Emergency Engines” to run for Demand Response.
    - Many sources did not sign up for Demand Response Programs last year.
  - EPA has promised to change the rule in reply to the court ruling to allow for some Demand Response.
    - Sources still waiting for EPA to do rule making. Not likely to happen for this years high electric demand season.

Rule Complexity?

Area Source SI RICE Requirements – Final Revision contd.

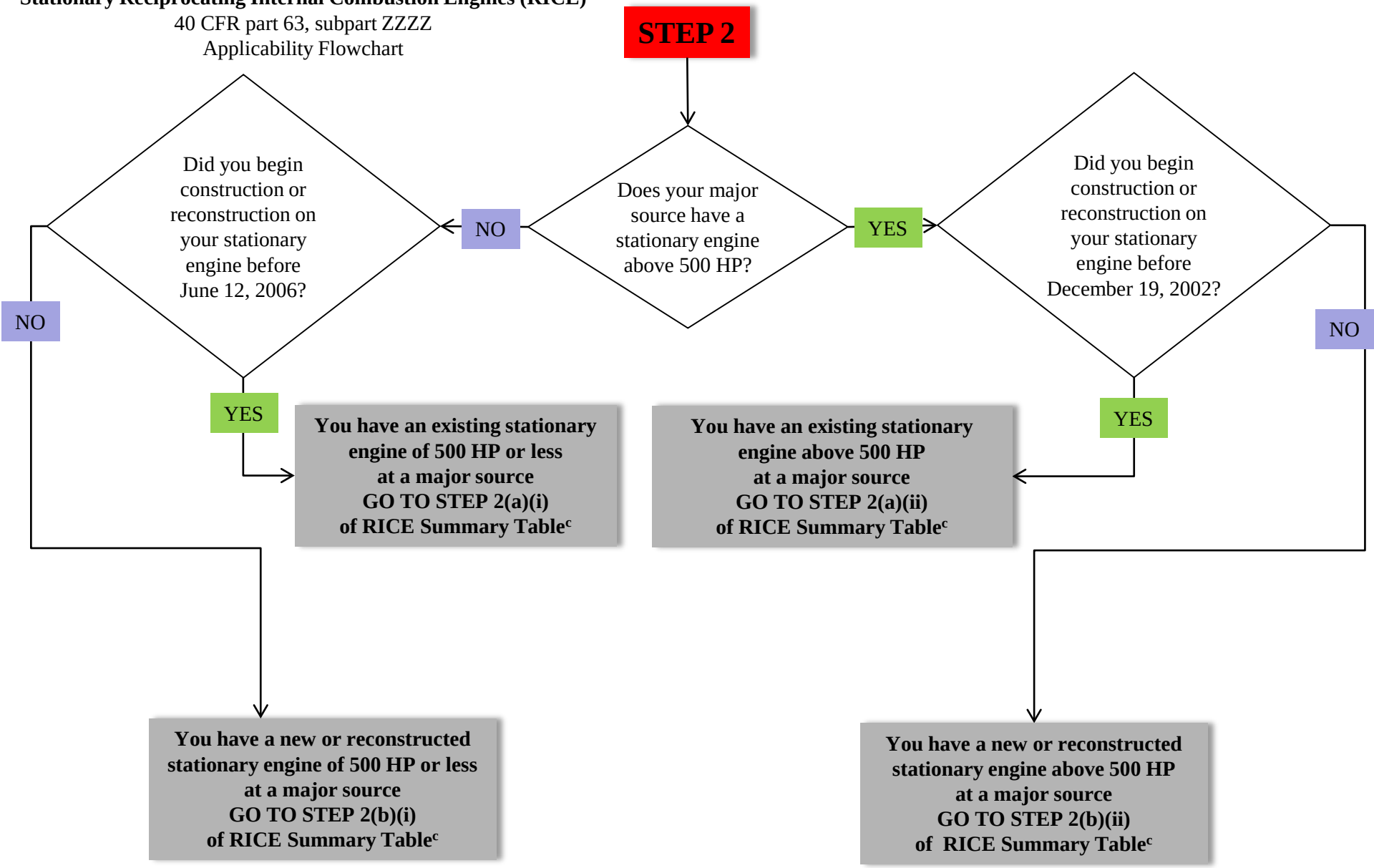
- Remote stationary RICE defined as:
  - Located in an offshore area; or
  - Located on a pipeline segment with 10 or fewer buildings intended for human occupancy and no buildings with 4 or more stories within 220 yards on either side of a continuous 1-mile length of pipeline (DOT Class 1 area), and the pipeline segment is not within 100 yards of a building or small well-defined outside area (playground, etc.), or
  - Not located on a pipeline and having 5 or fewer buildings intended for human occupancy and no buildings with 4 or more stories within a 0.25 mile radius around the engine

Stationary Reciprocating Internal Combustion Engines (RICE)
40 CFR part 63, subpart ZZZZ
Applicability Flowchart



[a]An engine test cell/stand is any apparatus used for testing uninstalled stationary or uninstalled mobile (motive) engines.
[b]For assistance in determining the potential to emit, please refer to http://www.epa.gov/ttn/chief/ap42/index.html or contact your EPA regional office or state permitting staff.

Stationary Reciprocating Internal Combustion Engines (RICE)
40 CFR part 63, subpart ZZZZ
Applicability Flowchart



[c]The RICE Summary Table of Requirements provides additional information on 40 CFR part 63, subpart ZZZZ requirements and is available at http://www.epa.gov/ttn/atw/rice/ricepg.html.

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Reciprocating Internal Combu...

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Reciprocating Internal Combustion Engines (RICE)

What Are Reciprocating Internal Combustion Engines or RICE?

RICE use pistons that alternatively move back and forth to convert pressure into rotating motion. They're commonly used at power and manufacturing plants to generate electricity and to power pumps and compressors. RICE are also used in emergencies to produce electricity and pump water for flood and fire control. The U.S. Environmental Protection Agency (EPA) has recently finalized new air quality regulations that place requirements on owners and operators of a wide variety of stationary RICE.

Jump to Section

- RICE Rule Applicability
- Determining RICE Rule Compliance Requirements
- Emission Standards
- Determining RICE New Source Performance Standards Compliance Requirements

Upcoming Training Events

No Events Scheduled.

Tools To Help You Comply

EPA Finalizes Revisions to Clean Air Standards for

Why Does EPA Regulate RICE?

RICE are common combustion sources that collectively can have a significant impact on air quality and public health. The

EPA Support Tools

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https://www.epa.gov/stationary-engines

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Controlling Air Pollution from Stationary Engines

Basic Information

- What are stationary engines?
- Why does EPA regulate stationary engines?
- How does EPA regulate stationary engines?
- Which type of stationary engines does EPA regulate?

Regulatory Actions

- Which regulations apply to stationary engines ?
  - NESHAP for Reciprocating Internal Combustion Engines
  - NSPS for Compression Ignition Internal Combustion Engines
  - NSPS for Spark Ignition Internal Combustion Engines

Announcements

Guidance on Vacatur of RICE NESHAP and NSPS Provisions for Emergency Engines

- The D.C. Circuit Court issued a decision vacating provisions in the RICE NESHAP and NSPS indicating that emergency engines may operate for emergency demand response and deviations in voltage or frequency.
- Read about the May 4, 2016 mandate and other technical documents.

Compliance Requirements

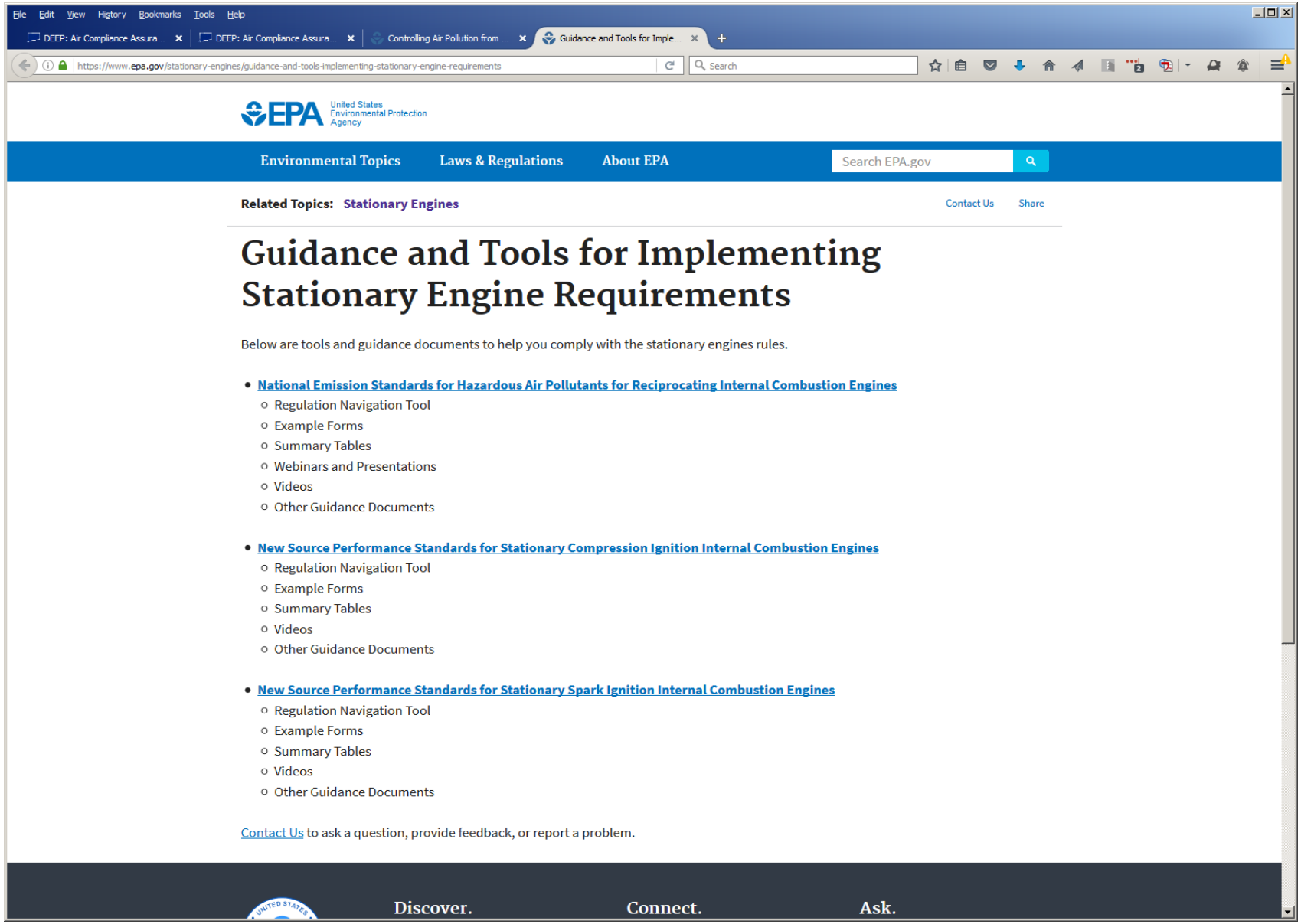
- What requirements apply to stationary engines?

Tools to Help You Comply

- What guidance and tools exist for implementing stationary engine rules?

Contact Us to ask a question, provide feedback, or report a problem.

EPA Support Tools



CT DEEP Support Tools

CT DEEP Support Tools

Area Source Boiler Rule and RICE NESHAP Online Training Modules

May 14, 2015

Kaitlin Stern

Connecticut Department of Energy and Environmental Protection

CT DEEP Support Tools

Yale Strategy for Compliance

- Inventory
- Categorization
- Regulatory analysis
- Install Monitoring Equipment if Necessary

Initial List of Engines

- Listed in Title V or Title V applications
  - ~12 at Med School Campus
  - ~7 at Central Science campus
- Listed in GPLPE at West Campus
  - ~6 Engines
- Some with NSR Permits the rest Regulated under 3b

The List Grows

- Several Engines at Non-Contiguous Properties in New Haven added to the list
- Started to find out about properties outside of New Haven
- The List Grew from ~ 25 Engines to 54 Engines spread out all over the place.

After Finalizing the Inventory

- Obtain technical information about engines
- Find out their installation dates
- Classify them by type
- Do a regulatory analysis
- Find out who manages them
  - Initially was just the Powerplants and a few Mechanics
- Obtain current records if any (for engines that didn’t previously require records).

"EXEMPT" Existing Institutional Emergency Engine Located at an Area Source of HAP

Eligibility:	**40 CFR § 63.6585(f)(3)** - "*Existing instituional emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per year for the purposes specified in 40 CFR 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in 40 CFR 63.6640(f)(4)(ii).*"
	40 CFR § 63.6640(f)(2)(ii) - *"...operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see § 63.14), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3."*
	40 CFR § 63.6640(f)(2)(iii) - *"... operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below*
	40 CFR § 63.6640(f)(4)(ii) - *"... operated for up to 50 hours per calendar year in non-emergency situations. "*
	NOTE - to be considered an emergency engine, operation for maintenance checks and readiness testing cannot exceed 100 hours per calendar year and the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. **[See 40 CFR § 63.6640(f)(2)(i)]**

Area	Yale Emis Unit #	Title V EU#	Location	Make	Model #	Fuel:	kW	Est. hp	Install Date	Demand Response?
Existing Emergency Compression Ignition Engines <= 500 hp										
~~GS300~~	~~MSG009~~		~~1 Main Street~~	~~Detroit Diesel~~	~~)063TK35 Spec A 3~~	~~Diesel~~	~~150~~	~~201~~	~~5/30/2003~~	~~No~~
GS300	MSG019		2 Main Street	Detroit Diesel	350DSE	Diesel	355	476	6/1/2004	No
MS	MSG013		3 Main Street	Mitsubishi	6D2 4-T	Diesel	150	201	4/24/2001	No
NC	NCG006		4 Main Street	Whisperwatt	DF-2400V	Diesel	225	302	7/1/1996	No
NC	NCG011		5 Main Street	Kohler	800/50AOZJ81	Diesel	55	81	1/1/2000	No
SC	SCG001	C-11	6 Main Street	Onan	NTA855A-G2	Diesel	300	402	6/1/2002	No
SC	SCG006		7 Main Street	Onan	250.ODVG-17R/285	Diesel	250	335	1/1/1985	No
~~SC~~	~~SCG007~~		8 Main Street	~~Cummins~~	~~NT-855-GS2~~	~~Diesel~~	~~230~~	~~308~~	~~1/1/1986~~	~~No~~
SC	SCG008	C-200	9 Main Street	Cummins	LTA-10G1	Diesel	250	335	1/1/2002	No
SC	SCG009	C-21	10 Main Street	Cummins	NTA855G2	Diesel	300	402	12/6/2005	No
WC	WCG004		11 Main Street	Kohler/John De	150R0ZJ81/6076A	Diesel	150	201	5/7/2002	No
WC	WCG005		12 Main Street	Cummins	DGDK-5641387	Diesel	125	168	6/1/2004	No
Existing Emergency Compression Ignition Engines > 500 hp										
MS	MSG001	S-16	13 Main Street	Caterpillar	3412	Diesel	500	670	10/1/1990	No
MS	MSG002	S-17	14 Main Street	Cummins	VTA28-GS1	Diesel	500	670	2/1/1989	No
MS	MSG011	S-20	15 Main Street	Mitsubishi	S6A3-PTA	Diesel	500	670	4/24/2001	No
WC	WCG006		16 Main Street	Cummins	500DFED-4554	Diesel	500	670	9/1/2004	No
WC	WCG003		17 Main Street	Cummins	VTA28-GS2	Diesel	600	805	1/1/1986	No
GS350	NCG016		18 Main Street	Detroit Diesel	16V149Ti B	Diesel	1400	1275	1/1/1990	No
GS350	NCG017		19 Main Street	Detroit Diesel	16V149Ti B	Diesel	1400	1275	1/1/1990	No
Existing Emergency Spark Ignition Engines <= 500 hp										
AF	NCG001		20 Main Street	Kohler	30R7/272	Natural Gas	30	40	1/1/1993	No
GS300	MSG015		21 Main Street	Cummins	GTA855A	Natural Gas	215	288	6/1/2001	No
GS300	MSG016		22 Main Street	Cummins	GTA19 G2	Natural Gas	350	469	6/1/2002	No
GS300	MSG017		23 Main Street	Cummins	GTA19G	Natural Gas	350	469	6/8/2004	No
GS300	MSG021		24 Main Street	Cummins	GGKD-448-5271	Natural Gas	150	201	7/1/2000	No
GS300	MSG022		25 Main Street	Cummins	GG-500-4033	Natural Gas	150	201	7/1/2000	No
GS300	MSG023		26 Main Street	Cummins	GTA855-A	Natural Gas	215	288	2/1/2003	No
MS	MSG003		27 Main Street	Kohler	60 RZ	Natural Gas	60	80	10/1/1994	No
NC	NCG004		28 Main Street	Onan	45 GGFC	Propane	45	60	8/1/1998	No
NC	NCG005		29 Main Street	Caterpillar	(Olym G25F1	Propane	22.6	30	1/12/1999	No
NC	NCG014		30 Main Street	Cummins	DFCB-5627949	Natural Gas	300	450	8/5/2003	No
NC	NCG015		31 Main Street	Kohler	50RE02JB	Natural Gas	55	83	8/1/2005	No
SC	SCG002		32 Main Street	Kohler	15RMY7Z	Natural Gas	15	20	1/1/1983	No
SC	~~SCG003~~		33 Main Street	Kohler	10RZ82	Natural Gas	10	13	6/7/1985	No

Existing Emergency Engines Operating for Demand Response & Subject to RICE MACT

Site Status:	Area Source of HAPs
Engine Type:	Compression Ignition
New/Existing:	Existing (Installed pre 6/12/2006)
Opearting Category:	Emergency
Demand Response:	Available for more than 15 hours per year
Size Category:	> 500 hp

Area	Yale Emis Unit #	Title V EU#	Location Descrip	Make	Model #	Fuel:	kW	Est. hp	Install Date	Demand Response?
MS	MSG010	S-19	1 Central Ave	Mitsubishi	S12 H-PTA	Diesel	1000	1341	2/25/2002	Yes
MS	MSG014	S-23	2 Central Ave	Caterpillar	3516	Diesel	2000	2682	6/1/2002	Yes
MS	SPG002	S-27	3 Central Ave	Caterpillar	3516B	Diesel	2000	2682	3/1/2002	Yes
WC	WCG002		4 Central Ave	Caterpillar	D349TA	Diesel	750	1006	12/7/1995	Yes
WC	WCG001		5 Central Ave	Caterpillar	3512	Diesel	1500	2012	3/30/1992	Yes

Compliance Date	5/3/2013
Work Practices	**Table 2d & 40 CFR § 63.6603(a):** -Change the oil every 500 hours of operation or annually, whichever comes first (or analyze the oil per 63.6625(i) & (j)) -Inspect the air cleaner every 1,000 hours of operation or annualy, whichever comes first -Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary
Fuel Requirements	**40 CFR § 63.6604(d):** -Diesel fuel must meet requirements in 40 CFR 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to January 1, 2015, may be used until depleted. **40 CFR § 80.510(b):** -Maximum sulfur content of 15 ppm; and -Either a minimum cetane index of 40, OR a maximum aromatic content of 35% by volume
Monitoring, Installation, Operation & Maintenance Requirements	**40 CFR § 63.6625(e)(3):** -Operate and maintain the stationary RICE according to the manufacturer's written instructions or your own maintenance plan to maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions **40 CFR § 63.6625(f):** -Install a non-resettable hour meter **40 CFR § 63.6625(h):** -Minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. **40 CFR § 63.6625(i):** An oil analysis program may be followed in lieu of scheduled oil change specified in Table 2d. The oil analysis must be performed at the same frequency specified for changing the oil and must at a minimum analyze Total Base Number, viscosity, and percent water content. The condemning limits for these paremeters are: -Total Base Number is less than 30 percent of the oil's Total Base Number when new -Viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new -Percent water content (by volume) is greater than 0.5. If any of the limits are exceeded, change the oil within 2 days of receiving the results of the analysis or before commencing operation, whichever is later. Keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine
Continuous Compliance	**40 CFR § 63.6605:** -At all times you must operate and maintain any affected source in a manner consistent with safety and good air pollution control practices for minimizing emissions. **40 CFR § 63.6640(e):** -You must report each instance in which you did not meet the requirements in Table 8 (General Provisions) that apply to you **40 CFR § 63.6640(f):** -There is no time limit on the use of emergency stationary RICE in emergency situations. Operation for the purpose of maintenance and testing or demand response (for now) is limited to 100 hours per year

Recordkeeping	**40 CFR § 63.6655(a):** -A copy of each notification and report that you submitted to comply with this subpart; -Records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or monitoring equipment -Records of all required maintenance performed on the air pollution control and monitoring equipment. -Records of actions taken during periods of malfunction to minimize emissions in accordance with §63.6605(b), including corrective actions **40 CFR § 63.6655(e):** -Records of the maintenance conducted on the stationary RICE in order to demonstrate that you operated and maintained the stationary RICE and after-treament control device according to your own maintenance plan **40 CFR § 63.6655(f):** -Keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. ***If the engines are used for demand response operation, the owner or operator must keep records of the notification of the emergency situation, and the time the engine was operated as part of demand response*** **40 CFR § 63.6660(b):** -Keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.
Reporting	**40 CFR § 63.6650(f):** -Report all deviations as defined in this subpart in the Title V semiannual monitoring report. **40 CFR § 63.6650(h):** -Submit annual "demand resopnse" report beginning on March 31, 2016 covering calendar year 2015 -Report must include: company name and address where engine is located; Date of the report and beginning and ending dates of the reporting period; Engine site rating and model year; Latitude and longitude of the engine in decimal degrees reported to the fifth decimal place; Hours operated for demand response, including the date, start time, and end time for engine operation for those purposes; Number of hours the engine is contractually obligated to be available for demand response -(Likely Not Applicable in CT) - Report hours spent for operation under financial agreement with other entity, including the date, start time, and end time for engine operation for that purpose as well as the entity that dispatched the engine and the situation that necessitated the dispatch of the engine. -If there were no deviations from the fuel requirements in § 63.6604 that apply to the engine (if any), a statement that there were no deviations from the fuel requirements during the reporting period. -If there were deviations from the fuel requirements in § 63.6604 that apply to the engine (if any), information on the number, duration, and cause of deviations, and the corrective action taken. -Report to be submitted through CEDRI/CDX as soon as available.
Initial Notifications	Not required

New Compression Ignition Emergency Engines Subject to 40 CFR Part 60 Subpart IIII

Site Status:	Area Source of HAPs
Engine Type:	Compression Ignition
New/Existing:	New (Constructed post 6/12/2006)
Opearting Category:	Emergency
Demand Response:	NO demmand response operation
Size Category:	Various

Area	Yale Emis Unit #	Title V EU#	Location Descrip	Make	Model #	Fuel:	kW	Est. hp	Install Date	Engine Model Year	Demand Response?
MS	MSG018	S-46	1 Elm Street	Caterpillar/HO	Eng.: 3412B, Gen.:SR	Diesel	750	1006	10/1/2006	2006	No
NC	NCG002		2 Elm Street	Cummins	80DGCG	Diesel	80	107	3/1/2007	2006	No
NC	NCG003		3 Elm Street	Cummins	DSFAE-92707	Diesel	80	107	11/21/2009	2009	No
SC	CPG004		4 Elm Street	Caterpillar	3516B	Diesel	2000	2682	1/1/2007	2001	No
SC	CPG005	C-197	5 Elm Street	Caterpillar	3516C	#2 Fuel	2000	2682	5/1/2012	2010	No
SC	SCG012	C-201	6 Elm Street	Cummins	QSX15-G9	Diesel	500	670	5/5/2010	2009	No
SC	SCG013	C-202	7 Elm Street	Cummins	DGFC-580102	Diesel	200	268	5/12/2007	2006	No
NC	SCG015		8 Elm Street	Caterpillar	3516	Diesel	2000	2682	1/7/2013	2009	No
NC	SCG016		9 Elm Street	Caterpillar	3516	Diesel	2000	2682	1/7/2013	2009	No
WC	WCG007		10 Elm Street	Kohler	150REOZJF	Diesel	150	222	6/17/2015	2015	No
SC	SCG007		11 Elm Street	Cummins	QSL9-G2-NR3	Diesel	230	308	1/16/2015	2014	No
SC	SCG018		12 Elm Street	Kohler/ John Deere	250REOZJE	Diesel	255	385	3/30/2016	2016	No

RICE MACT Applicability

40 CFR § 63.6590(c)(1):
-A new stationary RICE located at an area source of HAP must meet the requirements of the RICE MACT by meeting the requirements of 40 CFR Part 60 Subpart IIII, for compression ignition engines or 40 CFR Part 60 Subpart JJJJ, for spark ignition engines.
-No further RICE MACT requirements apply for such engines.

NSPS Applicability

40 CFR § 60.4200(a)(2)(i):
-NSPS Subpart IIII applies to owners and operators of stationary CI ICE that *commence construction* after July 11, 2005, where the stationary CI ICE are manufactured after April 1, 2006, and are not fire pump engines.
-**NOTE**- *For the purposes of NSPS Subpart IIII, the date that construction commences is the date the engine is ordered by the owner or operator.*

Emissions Standards

Pre 2007 model year engines (<10 liters/cylinder) are subject to emissions standards of 40 CFR § 60.4205(a) & Table 1 of Subpart IIII

CPG004	2682 hp, Model Year 2001	**Table 1 of Supbart IIII (equivalent to Tier 1 standards for engines rated >750 hp):**
MSG018	1006 hp, Model Year 2006	Limits (g/hp-hr)
SCG013	268 hp, Model Year 2006	NOx: 6.9; HC: 1.0; CO: 8.5; PM: 0.4
NCG002	107 hp, Model Year 2006	**Table 1 of Supbart IIII (equivalent to Tier 1 standards for engines rated =>50 and <175 bhp):** Limits (g/hp-hr): NOx: 6.9 -- no limits for other pollutants

2007 model year and later emergency engines (<30 liters/cylinder) are subject to emissions requirements of 40 CFR §§ 60.4205(b) and 60.4202, which require engines to be certified to meet emissions standards for nonroad engines under 40 CFR §§ 89.112 & 89.113 (aka Tier 2 or Tier 3) applicable to the specific size and model year of each engine

NCG003	107 hp, Model Year 2009	Must be certified to meet Tier 3 emissions standards applicable to engines rated between 100<= hp <175.
SCG018	385 hp, Model Year 2016	Must be certified to meet Tier 3 emissions standards applicable to engines rated between 300<= hp <600.
SCG012	670 hp, Model Year 2009	Must be certified to meet Tier 3 emissions standards applicable to engines rated between 600<= hp <750
SCG007	308 hp, Model Year 2014	
WCG007	222 hp, Model Year 2015	
CPG005	2682 hp, Model Year 2010	Must be certified to meet Tier 2 emissions standards applicable to engines rated >750 hp
SCG015	2682 hp, Model Year 2009	
SCG016	2682 hp, Model Year 2009	

Fuel Requirements

40 CFR § 60.4207(b):
-Purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel - i.e., maximum sulfur content of 15 ppm; and **either** a minimum cetane index of 40, **or** a maximum aromatic content of 35% by volume.

Importing / Installing Requirements

40 CFR § 60.4208(a):
-After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.
40 CFR § 60.4208(b):
-After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.
40 CFR § 60.4208(i):
-The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

Monitoring Requirements

40 CFR § 60.4209(a):
-Install a non-resettable hour meter prior to startup of the engine (or meet requirements for non-emergency engines).
40 CFR § 60.4209(b):
-If equipped with a diesel particulate filter to comply with the emission standards, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

Compliance

40 CFR § 60.4206:
-Operate and maintain stationary CI ICE to achieve the emission standards as required in §§ 60.4204 and 60.4205 over the entire life of the engine.
40 CFR § 60.4211(a):
-Operate and maintain the stationary CI internal combustion engine according to the manufacturer's emission-related written instructions;
-Change only those emission-related settings that are permitted by the manufacturer; and
-Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply *[i.e., purchase compliant engines]*
40 CFR § 60.4211(b):
-A pre-2007 model year engine must demonstrate compliance according to one of the methods specified in paragraphs 40 CFR § 60.4211(b)(1) through (5). *[i.e., purchase certified engine OR keep records of engine manufacturer data indicating compliance with the standards OR verify through performance testing of the engine or a similar model engine]*
40 CFR § 60.4211(c):
-For 2007 model year and later engines, purchase an engine certified to the emission standards applicable to the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications.
40 CFR § 60.4211(f):
-Emergency stationary ICE may be operated for the purpose of maintenance and testing, provided the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine.
-Maintenance and testing is limited to 100 hours per year. There is no time limit on the use in emergency situations.
40 CFR § 60.4211(g):
-If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance, as specified in 60.4211(g)(1) through (3). *[i.e., site-specfic maintenance plan & performance testing]*

Notification, Reports, and Recordkeeping

40 CFR § 60.4214(b):
-The owner or operator is not required to submit an initial notification for emergency engines.
-Starting with the model year 2011, if the emergency engine does not meet the standards applicable to non-emergency engines, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.
40 CFR § 60.4214(c):
-If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.

New Spark Ignition Emergency Engines Subject to 40 CFR Part 60 Subpart JJJJ

Site Status:	Area Source of HAPs
Engine Type:	Spark Ignition
New/Existing:	New (Installed post 6/12/2006)
Opearting Category:	Emergency
Demand Response:	NO demmand response operation
Size Category:	=>130 hp <500

Area	Yale Emis Unit #	Title V EU#	Location Descrip	Make	Model #	Fuel:	kW	Est. hp	Install Date	Engine Model Year	Demand Response?
GS300	MSG020		Off-Site 1	Cummins	GGLB-579-1434	Natural Gas	150	201	6/1/2007	2007	No
GS300	MSG024		Off-Site 2	Onan	GGLB4666	Natural Gas	150	225	9/10/2010	2010	No
GS300	MSG026		Off-Site 3	Cummins	GGHH5115067	Natural Gas	100	150	6/16/2010	2010	No
NC	NCG007		Off-Site 4	Cummins	125GGHJ	Natural Gas	125	190	4/7/2014	2014	No
NC	NCG008		Off-Site 5	Cummins	GGLB-7234167	Natural Gas	187	281	9/4/2008	2008	No
NC	NCG012		Off-Site 6	Cummins	GGHH-120868 1	Natural Gas	100	150	9/1/2009	2009	No
NC	NCG013		Off-Site 7	Olympian	G150G1	Natural Gas	150	225	9/1/2009	2009	No
GS300	MSG025		Off-Site 8	Onan	GGHG5768294	Natural Gas	85	128	7/18/2006	2006	No
SC	SCG017		Off-Site 9	Kohler	80REZGD	Natural Gas	80	122	3/22/2016	2016	No

RICE MACT Applicability	**40 CFR § 63.6590(c)(1):** -A new stationary RICE located at an area source of HAP must meet the requirements of the RICE MACT by meeting the requirements of 40 CFR Part 60 Subpart IIII, for compression ignition engines or 40 CFR Part 60 Subpart JJJJ, for spark ignition engines. -No further RICE MACT requirements apply for such engines.
NSPS Applicability	**40 CFR § 60.4230(a)(4):** -NSPS Subpart JJJJ applies to owners and operators of stationary SI ICE that *commence construction* after June 12, 2006, where the stationary SI ICE are manufactured on or after January 1, 2009, for emergency engines with a maximum engine power greater than 19 KW (25 HP). -**NOTE-** *For the purposes of NSPS Subpart JJJJ, the date that construction commences is the date the engine is ordered by the owner or operator.*
Emissions Standards	**40 CFR § 60.4233(e):** -Owners and operators of stationary SI ICE with a maximum engine power greater than or equal 100 HP (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1. -For owners and operators SI ICE with a maximum engine power greater than or equal to 100 HP (except gasoline and rich burn engines that use LPG) manufactured prior to January 1, 2011 that were certified to the certification emission standards in 40 CFR part 1048 applicable to engines that are not severe duty engines, if such stationary SI ICE was certified to a carbon monoxide (CO) standard above the standard in Table 1 to this subpart, then the owners and operators may meet the CO certification (not field testing) standard for which the engine was certified. **Table 1:** -Emergency SI ICE rated =>130 hp (and manufactured on or fafter 1/1/2009) are subject to the following limits: In units of g/hp-hr: NOx: 2.0; CO: 4.0; VOC: 1.0 **-OR-** In units of ppmvd @15% Oxygen: NOx: 160; CO: 540: VOC: 86 -Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O2. -For purposes of NSPS JJJJ, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.
Importing / Installing Requirements	**40 CFR § 60.4236(c):** -For emergency stationary SI ICE with a maximum engine power of greater than 25 HP, owners and operators may not install engines that do not meet the applicable requirements in §60.4233 after January 1, 2011.

General Compliance Requirements	**40 CFR § 60.4234:** -Owners and operators of stationary SI ICE must operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 over the entire life of the engine. **40 CFR § 60.4243(b):** Demonstrate compliance with emissions standards by either: -Purchasing an engine certified according to procedures specified in Subpart JJJJ and operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required if you are an owner or operator. If you adjust engine settings according to and consistent with the manufacturer's instructions, your stationary SI internal combustion engine will not be considered out of compliance. **OR** -Purchasing a non-certified engine and demonstrating compliance with the emission standards through initial performance test and, to the extent practicable, maintaining and operating the engine in a manner consistent with good air pollution control practice for minimizing emissions. A maintenance plan and records of conduct **40 CFR § 60.4243(d):** -There is no time limit on the use of emergency stationary ICE in emergency situations. -Emergency stationary ICE may be operated for maintenance checks and readiness testing,for a maximum of 100 hours per calendar year, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. **40 CFR § 60.4243(g):** -If using air-to-fuel ratio controller (AFR) with operation of 3-way catalyst, the AFR controller must be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times.
Monitoring Requirements	**40 CFR § 60.4237(b):** -Install a non-resettable hour meter (or meet requirements for non-emergency engines). -NOTE for any emergency stationary SI ICE that is greater than or equal to 130 HP and less than 500 HP, this requirement only applies to an engine built on or after January 1, 2011.
Notification, Reports, and Recordkeeping	**40 CFR § 60.4245(a):** Owners and operators of all stationary SI ICE must keep records of the following information: -All notifications submitted to comply with this subpart and all documentation supporting any notification. -Maintenance conducted on the engine. -If the stationary SI internal combustion engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90, 1048, 1054, and 1060, as applicable. -If the stationary SI internal combustion engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to §60.4243(a)(2), documentation that the engine meets the emission standards. **40 CFR § 60.4245(b):** -For all stationary SI emergency ICE greater than or equal to 130 HP and less than 500 HP manufactured on or after July 1, 2011 that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation.

Non-Emergency, Compression Ignition Engines Subject to RICE MACT

Site Status:	Area Source of HAPs
Engine Type:	Compression Ignition
New/Existing:	Existing (Installed pre 6/12/2006)
Opearting Category:	Non-Emergency
Demand Response:	Yes (but doesn't affect requirements)
Size Category:	> 500 hp

Area	Yale Emis Unit #	Title V EU#	Location Descrip	Make	Model #	Fuel:	kW	Est. hp	Install Date
SC	CPG001	EU-7	Central Power Plant	Mitsubishi	S16R-PTA	#2 Fuel	1500	2012	7/1/1997
SC	CPG002	EU-8	Central Power Plant	Mitsubishi	S16R-PTA	#2 Fuel	1500	2012	7/1/1997
SC	CPG003	EU-9	Central Power Plant	Mitsubishi	S16R-PTA	#2 Fuel	1500	2012	7/1/1997

Compliance Date	5/13/2013
Emission Limitations	**40 CFR § 63.6603:** -Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in §63.6620 and Table 4 **40 CFR § 63.6603(a):** -Comply with the requirements in Table 2d to this subpart that apply **Table 2d:** -Limit concentration of CO in the stationary RICE exhaust to 23 ppmvd at 15 percent O2; or -Reduce CO emissions by 70 percent or more.
Operating Limitations	**40 CFR § 63.6603(a):** -Comply with the operating limitations in Table 2b to this subpart that apply **Table 2b:** -Maintain catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water from the pressure drop across the catalyst that was measured during the initial performance test -Maintain the temperature of your stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1350 °F. *[Sources can petition the Administrator for a different temperature range]*
Fuel Requirements	**40 CFR § 63.6604(a):** -Diesel fuel must meet requirements in 40 CFR 80.510(b) for nonroad diesel fuel **40 CFR § 80.510(b):** -Maximum sulfur content of 15 ppm; and -Either a minimum cetane index of 40, OR a maximum aromatic content of 35% by volume
Performance Tests	**40 CFR § 63.6612(a):** -Conduct any initial performance test according to Tables 4 and 5 within 180 days after the compliance date **40 CFR § 63.6615:** -Conduct subsequent performance tests as specified in Table 3 of this subpart. **40 CFR § 63.6620:** -The test must be conducted at any load condition within plus or minus 10 percent of 100 percent load for the stationary RICE -You must conduct three separate test runs for each performance test. -Each test run must last at least 1 hour, unless otherwise specified in this subpart. **40 CFR § 63.6620(i)** -The engine percent load during a performance test must be determined by documenting the calculations, assumptions, and measurement devices used to measure or estimate the percent load in a specific application. A written report of the average percent load determination must be included in the notification of compliance status. **Table 3:** -Conduct subsequent performance tests every 8,760 hours or 3 years, whichever comes first. **Table 4:** -Follow approved test methods for performance testing **Table 5:** -Demonstrate compliance by conducting performance tests and operating a CPMS for catalyst temperature and recording (not required to be continuous) of catalyst pressure drop
Monitoring, Installation, Operation & Maintenance Requirements	**40 CFR § 63.6625(b):** -Prepare a site-specific monitoring plan that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined in 40 CFR 63.6625(b)(1)(i) through (v) **40 CFR § 63.6625(g):** -Operate and maintain open or closed crankcase ventilation system in accorcance with manufacturer's specified maintenance requirements **40 CFR § 63.6625(h):** -Minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in Tables 1a, 2a, 2c, and 2d apply.

Initial Compliance	**40 CFR § 63.6630 & Table 5:** -Initial compliance is demonstrated by conducting initial performance test, recording the catalyst inlet temperature and pressure drop during the intial performance test; and installing CPMS for catalyst temperature.
Continuous Compliance	**Table 6:** -Conduct performance tests every 3 years or 8,760 hours, whichever comes first -Continuously monitor and record catalyst inlet temperature and maintain within required operating range -Measure pressure drop across catalys once per month to demonstrate within operating range established during performance test **40 CFR § 63.6605:** -Operate and maintain the engine, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **40 CFR § 63.6635:** -Except for monitor malfunctions, associated repairs, required performance evaluations, and required quality assurance or control activities, monitor catalyst temperature continuously at all times that the stationary RICE is operating -Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities may not be used but you must use all the valid data collected during all other periods. **40 CFR § 63.6640:** -Report each instance in which you did not meet each emission limitation or operating limitation. -If you change your catalyst, you must conduct a performance test and reestablish the values of the operating parameters measured during the initial performance test.
Recordkeeping	**40 CFR § 63.6655:** -Copy of each notification and report that submitted to comply with this subpart -Records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or the air pollution control and monitoring equipment -Records of performance tests and performance evaluations -Records of all required maintenance performed on the air pollution control and monitoring equipment. -Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation **Table 6:** -Records of perfomance tests -Records of catalyst inlet temperature (reduced to 4-hour rolling averages) -Records of catalyst pressure drop (monthly)
Reporting	**40 CFR § 63.6650:** -Submit each report in Table 7 that applies **Table 7:** -Submit semi-annual reports (in accordance w/ semi-annual reporting schedule in Title V permit) that identify any deviations, periods where CPMS was out-of-control, or any malfunctions -For reporting periods with no deviations or periods where CPMS was out-of-control include a statement that there were no such occurances during reporting periods **40 CFR § 63.6645:** -Submit initial notification, initial NOCS report; and notifications of performance tests (60-days in advance).

Non-Emergency, Spark Ignition Engines Subject to RICE MACT

Site Status:	Area Source of HAPs
Engine Type:	Spark Ignition
New/Existing:	Existing (Installed pre 6/12/2006)
Opearting Category:	Non-Emergency
Demand Response:	No
Size Category:	< 500 hp

Area	Yale Emis Unit #	Title V EU#	Location Descrip	Make	Model #	Fuel:	kW	Est. hp	Install Date
NC	NCG009		Off-Site A	Kohler	20RZ	Propane	20	30	1/1/2001
NC	NCG010		Off-Site B	Winco	CSAPSS8000-N	Propane	8	12	1/1/2003

Compliance Date	10/19/2013
Limitations / Work Practices	**40 CFR § 63.6603(a):** -Comply with the operating limitations in Table 2d to this subpart that apply **Table 2d:** -Change the oil every 1,440 hours of operation or annually, whichever comes first (or analyze the oil per 63.6625(j)) -Inspect the spark plugs every 1,440 hours of operation or annually, whichever comes first, replace as necessary -Inspect all hoses and belts every 1,440 hours of operation or annually, whichever comes first, replace as necessary *Note for 2-stroke engines, maintenance schedule is reduced to every 4,320 hours of operation or annually, whichever comes first*
Monitoring, Installation, Operation & Maintenance Requirements	**40 CFR § 63.6625(e):** -Operate and maintain the stationary RICE according to the manufacturer's written instructions or your own maintenance plan to maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions **40 CFR § 63.6625(h):** -Minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in Tables 1a, 2a, 2c, and 2d apply. **40 CFR § 63.6625(j):** An oil analysis program may be followed in lieu of scheduled oil change specified in Table 2d. The oil analysis must be performed at the same frequency specified for changing the oil and must at a minimum analyze Total Acid Number, viscosity, and percent water content. The condemning limits for these paremeters are: -Total Acid Number increases by more than 3.0 milligrams of KOH per gram from Total Acid Number of the oil when new -Viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new -Percent water content (by volume) is greater than 0.5. If any of the limits are exceeded, change the oil within 2 days of receiving the results of the analysis or before commencing operation, whichever is later. Keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine
Continuous Compliance	**40 CFR § 63.6605:** -Operate and maintain the engine, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **40 CFR § 63.6640:** -Report each instance in which you did not meet each emission limitation or operating limitation.
Recordkeeping	**40 CFR § 63.6655:** -Records of all required maintenance performed on the air pollution control and monitoring equipment.

Previous Engine Requirements

- Emergency Engines (Contiguous Only)
  - Record Run Times for ~20 Engines
    - Facilities Personnel Capture runtimes
    - EH&S obtain runtimes and enter into database.
- Non-Emergency Engines (Contiguous Only)
  - Record Run Times for 3 Engines
    - Power plant Historian Capture runtimes
    - EH&S obtain runtimes and enter into database.
    - Calculate Emissions

New Requirements per RICE MACT (Highlights Only)

- Emergency Engines (Including Non-Contiguous)
  - Record Run Times for 42 Engines
    - Many Engines located off Campus
    - Engine Run Times not currently captured.
      - Non-Emergency Runtime not to exceed 100 hours annually
    - Tune ups for some engines
    - Oil changes or oil testing for some engines
    - EPA Reporting
- Non-Emergency Engines
  - Record Run Times for 3 Engines
    - Power plant Historian Capture runtimes
    - EH&S obtain runtimes and enter into database.
    - Calculate Emissions
  - Catalyst temperature and pressure drop monitoring
  - Emissions Testing (Every 3 Years or 8,760 Hours)
  - Additional record keeping for demand response
  - EPA Reporting
- New Engines
  - Must meet proper EPA Tier Requirements
  - Same Requirements as above…plus
  - Additional Requirements depending on EPA Tier

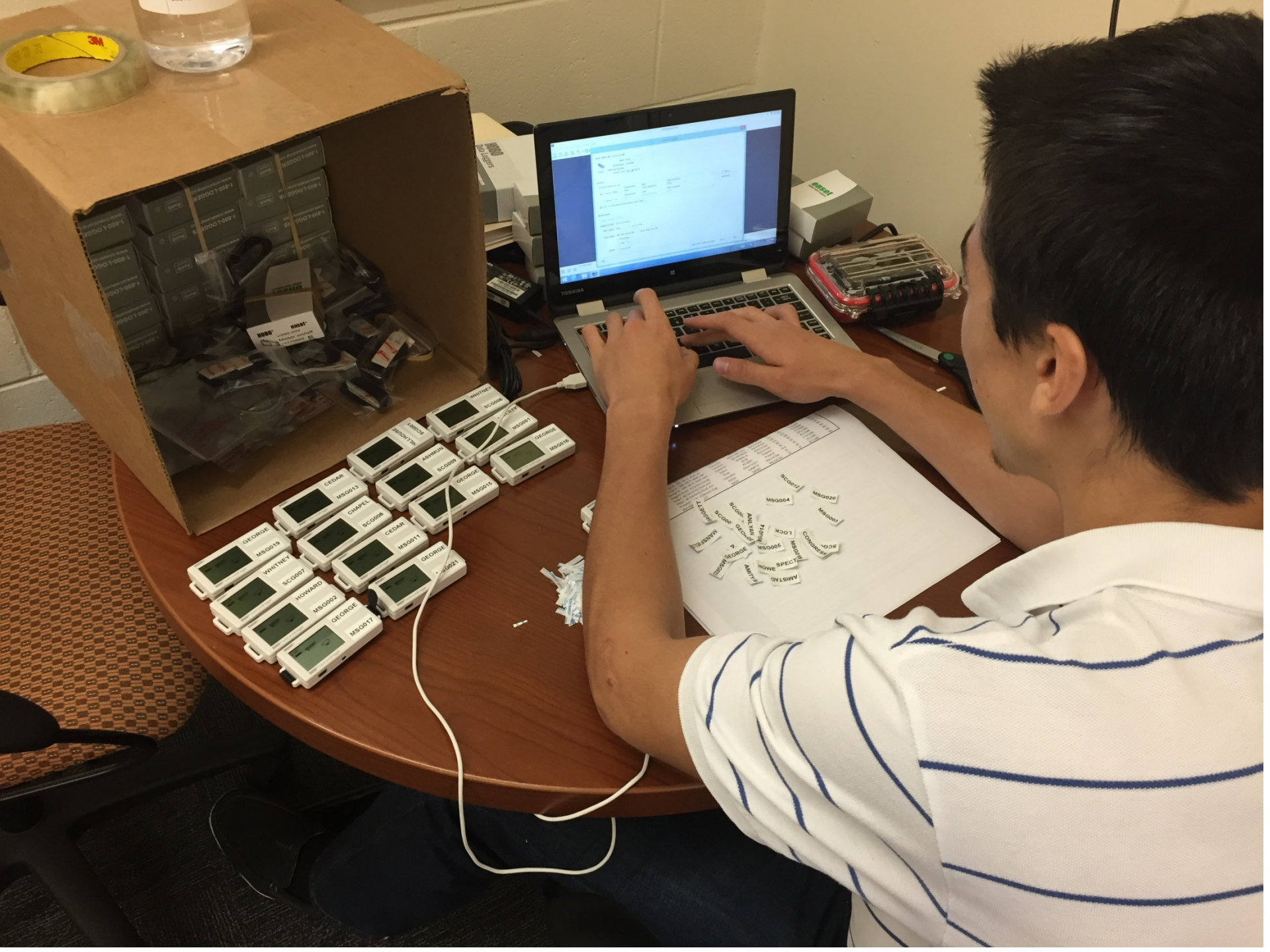
How Many Engines?

How to Monitor Runtimes for so Many Engines???

Loggers?

Data Loggers

Data Loggers


TOSHIBA
GEORGE MSG019
WHITNEY SCG007
HOWARD MSG002
GEORGE MSG017
CEDAR MSG013
CHAPEL SCG008
CEDAR MSG011
GEORGE
WHITNEY SCG006
ASHMUN SCG009
GEORGE MSG016
GEORGE MSG018
MSG004
MSG020
MSG003
MSG005
SPECT
AMISTAD

Path to Continued Compliance

- Install data monitors and initiate electronic recordkeeping
- Retrieve Data from Loggers Monthly at a minimum
- Track maintenance records and oil analysis
- EPA annual notifications
- Significant additional Staff Time to perform all compliance activities

How can we have a sustainable compliance program?

Needed to hire additional staff

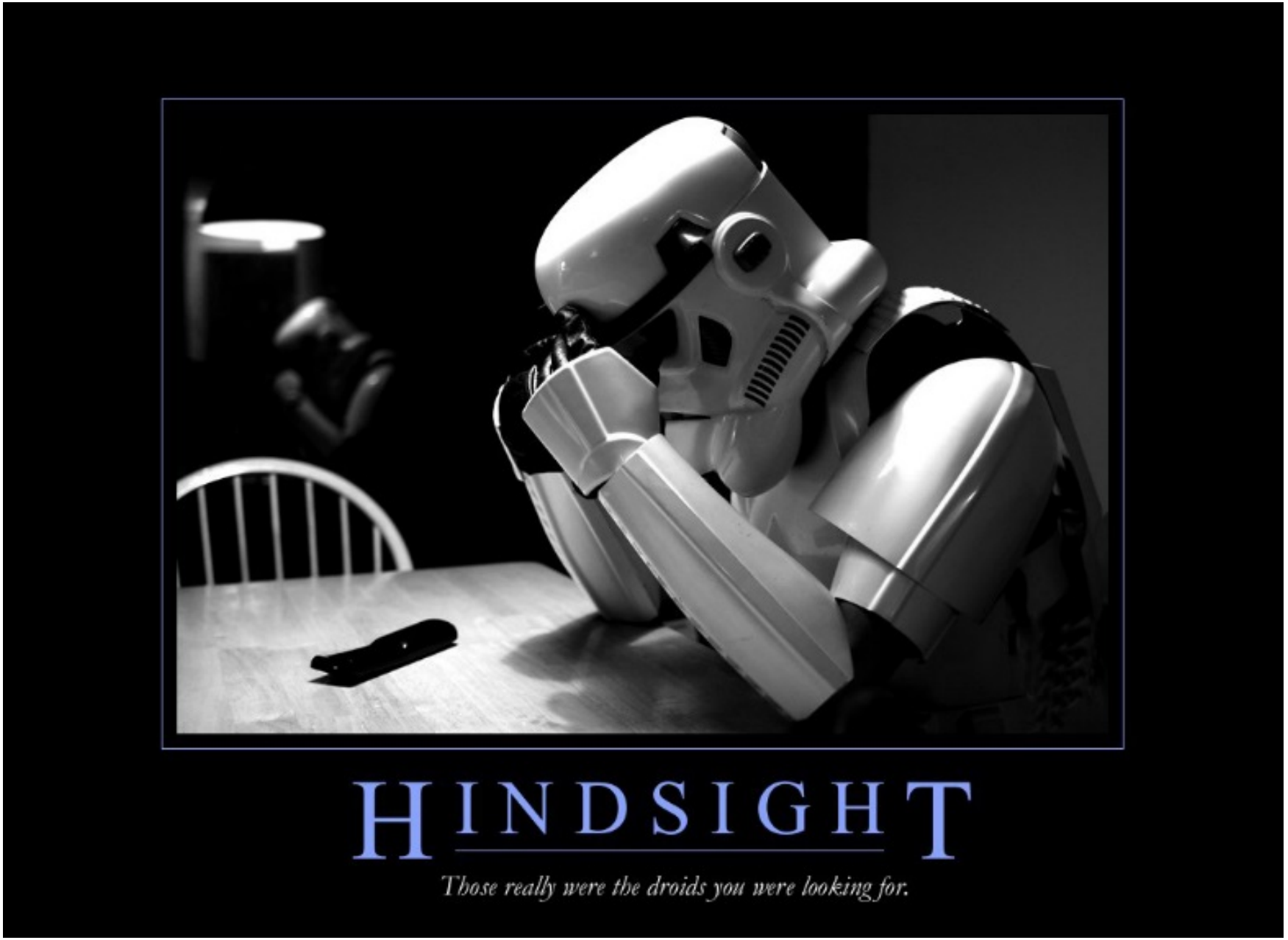
Handsome Dan?

Dan

Shuttle

Equipment Cost

- $92 per logger and we bought ~60
- $75 per license we bought 2
- $280 for the data shuttle
- $350 for the 2 in 1 small laptop/tablet



Those really were the droids you were looking for…

Questions?