

Air Quality Regulations for Stationary Reciprocating Internal Combustion Engines (RICE)

....and a brief update on Boiler MACT rules

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It's complicated!

- ▶ “40 CFR Part 63 Subpart ZZZZ...is the most complicated and confusing regulation in the entire suite of EPA NSPS and NESHAPS regulations, bar none. We seriously believe that a viable defense could be mounted against an EPA enforcement action with the simple but true statement, ‘your honor, we honestly could not discern our obligation under the rule in a timely manner’”
 - Public comment submitted per Executive Order 13563 (as stated in a 2011 presentation given by Melanie King, USEPA)

What are the rules?

- ▶ National Emissions Standards for Hazardous Air Pollutants (NESHAP)
 - 40 CFR 63 Subpart ZZZZ (RICE MACT)
 - Clean Air Act Section 112
 - Focus is air toxics (HAP) (formaldehyde, acetaldehyde, acrolein, methanol, and PAH)
 - Applies to engine owners/operators
 - All sizes of engines are covered

What are the rules?

- ▶ New Source Performance Standards (NSPS)
 - 40 CFR 60 Subparts IIII and JJJJ
 - Clean Air Act Section 111
 - Focus is criteria pollutants (NO_x, CO, VOC, PM)
 - Applies to new, modified, and reconstructed stationary CI/SI engines – both manufacturers and owner/operators

First Step to Compliance:

Inventory your engines

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Categorize Your Engines

Ignition?



Horse Power?

New,
Existing,
Reconstructed?

Major or Area
Source?

Stationary
or mobile?

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Stationary vs. Mobile



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Compression vs. Spark Ignition

- ▶ Spark Ignition (SI) – 22%
 - Gas-fired (most gasoline, but also natural gas, landfill, digester, propane)
 - Spark plug
 - Rich-burn or lean-burn, 2-stroke or 4-stroke

- ▶ Compression Ignition (CI) – 78%
 - Diesel-fueled
 - Dual fueled ($\geq 2\%$ diesel)



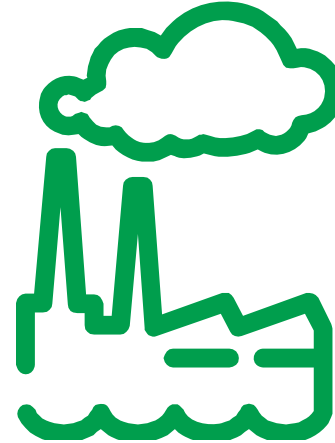
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Major Source vs. Area Source

- ▶ Major source: Potential to Emit (PTE)
 - 10 tons/yr or more of a single HAP, or
 - 25 tons/yr or more of combined HAP



Engine Type

- ▶ How do you use your engine?
 - Emergency or non-emergency?
 - Limited Use (<100 hr/yr)?
 - Black start ?
 - Rich-burn or lean-burn, 2-stroke or 4-stroke?
 - Burn landfill or digester gas?
 - Associated with a commercial, institutional, or residential entity?

Engine Size Rating

- ▶ What is the engine's brake horsepower (HP)?
Requirements vary by category:

- <100 HP
- 100–250 HP
- 250–300 HP
- 300–500 HP
- >500 HP



Existing vs. New

	> 500 HP at major source	≤500 HP at major source or all HP at area source
Existing	Construction began before Dec. 19, 2002	Construction began before June 12, 2006
New	Construction began on or after Dec. 19, 2002	Construction began on or after June 12, 2006
Reconstructed	Reconstruction began after Dec. 19, 2002	Reconstruction began after June 12, 2006

You need to know:

- CI stationary RICE or SI stationary RICE
- ____ displacement in liters/cylinder
- 2-Stroke
- 4-Stroke
- Lean Burn
- Rich Burn

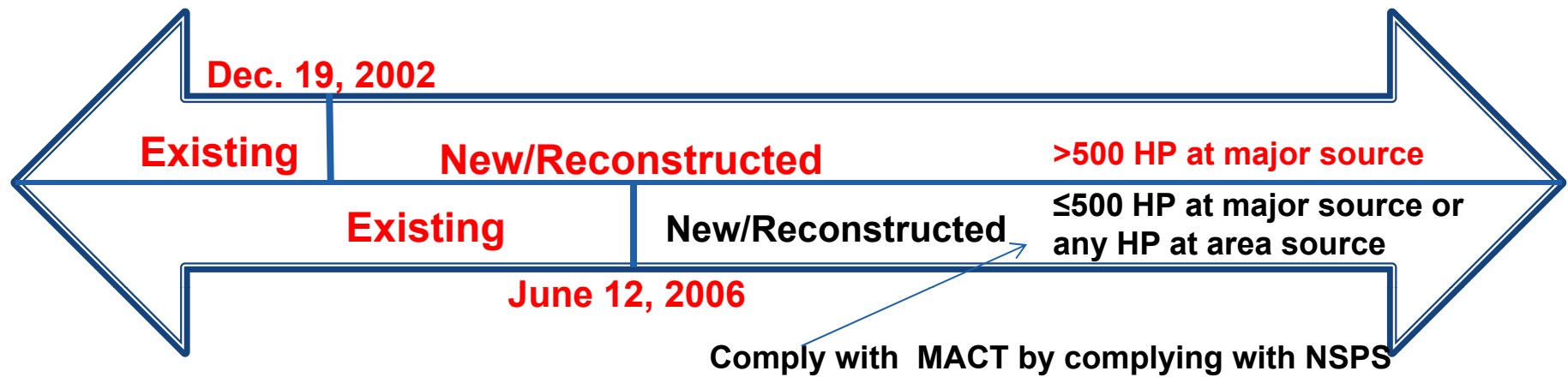
- Existing Source or New/Reconstructed

USE:

- Emergency
- Non-emergency
- Limited use
- Black start

- Engine HP _____
- Manufacturer _____
- Location _____
- Major or Area Source

When does RICE MACT apply?



- Mainly owner/operators
- Existing non-emergency engines have the most requirements
- Existing emergency engines at residential, institutional, or commercial area sources are not covered.

Key dates



▶ Initial Notifications

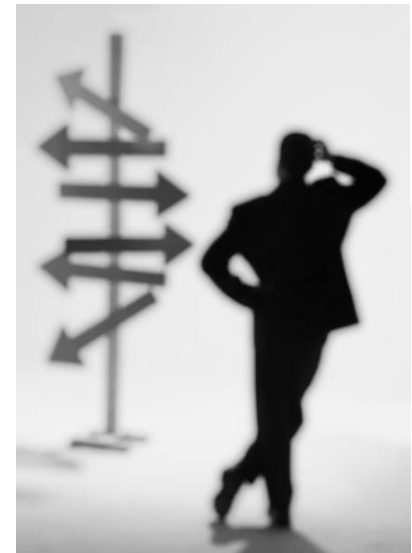
- August 31, 2010: Existing CI RICE
- February 16, 2011: Existing SI RICE

▶ Compliance:

- June 15, 2007
 - Existing RICE >500 HP at major sources
- May 3, 2013
 - Most existing CI RICE
- October 19, 2013
 - Existing SI RICE ≤ 500 HP at major, all SI at area sources
- Startup
 - New engines

Tools for Navigating MACT Rules

- ▶ RICE NESHAP TTN website
<http://www.epa.gov/ttn/atw/rice/ricepg.html>
 - ESPECIALLY Regulation Navigation tool at
<http://www.epa.gov/ttn/atw/rice/output/quiz.html>
- ▶ STP Air Quality Rulebook C-16
- ▶ State websites



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<http://www.epa.gov/ttn/atw/rice/output/quiz.html>

Stationary Reciprocating Internal Combustion Engines (RICE)

REG NAV: National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE rule)



RICE NESHAP Summary of Requirements*
For Non-Emergency Compression Ignition 300<HP≤500
Existing Area Sources constructed before June 12, 2006



NOTE: Only the tables relevant to this source category are linked.
Your **compliance date** is May 3, 2013.
Emission Limitations: 63.6603, Table 2d

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 (See section on Performance Tests below) and Table 4 to this subpart.

(a) If you own or operate an existing stationary RICE located at an area source of HAP emissions, you must comply with the requirements in [Table 2d](#) to this subpart and the operating limitations in Table 2b to this subpart which apply to you.

(b) If you own or operate an existing stationary non-emergency CI RICE greater than 300 HP located at area sources in areas of Alaska not accessible by the Federal Aid Highway System (FAHS) you do not have to meet the numerical CO emission limitations specified in Table 2d to this subpart. Existing stationary non-emergency CI RICE greater than 300 HP located at area sources in areas of Alaska not accessible by the FAHS must meet the management practices that are shown for stationary non-emergency CI RICE less than or equal to 300 HP in [Table 2d](#) to this subpart.

Operating Limitations: No Requirements

Fuel Requirements: For engines >300 HP and with a displacement of <=30 liters per cylinder only, 63.6604

§ 63.6604 If you own or operate an existing non-emergency, non-black start CI stationary RICE with a site rating of more than 300 brake HP with a displacement of less than 30 liters per cylinder that uses diesel fuel, you must use diesel fuel that meets the requirements in [40 CFR 80.510\(b\)](#) for nonroad diesel fuel. Existing non-emergency CI stationary RICE located in Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or at area sources in areas of Alaska not accessible by the FAHS are exempt from the requirements of this section.

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Do you own or operate a stationary engine?

Yes
 No

Stationary Reciprocating Internal Combustion Engines (RICE)
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Does your facility have the potential to emit 10 or more tons/year of any single hazardous air pollutant or 25 or more tons/year of any combination of hazardous air pollutants?

Yes
 No

Thank You


You have an area source

Next Question

This Question does not have an answer.

Potential to emit means the maximum amount of a pollutant that can be emitted from its physical and operating characteristics, including the stationary source's design, operating restrictions on hours of operation, and any other factors that may be considered. Emissions that are processed, shall be treated as if they were not emitted. The maximum amount of emissions is federally determined.


For oil and natural gas production facilities, the maximum amount of emissions is determined by the provisions in §63.760(a) may be used for natural gas transmission and storage facilities subject to subpart HHH of this part, the maximum amount of emissions is determined by §63.70(a)(1) and the maximum annual throughput for transmission facilities may be determined according to §63.1270(a)(2).



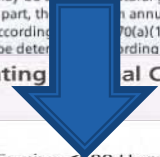
Stationary Reciprocating Internal Combustion Engines (RICE)

Existing Stationary Engine ≤500 Horse Power Located at Area Sources of HAP Non-Emergency Compression Ignition 300<Horsepower≤500

[Existing Stationary Engine ≤500 HP Located at Area Sources of HAP Non-Emergency CI 300<HP≤500](#)



NEXT



MACT Requirements can include:

- Emission controls and monitoring
- Performance testing
- Operating limitations
- Semiannual or annual compliance reports
- Maintenance requirements (e.g. oil changes)
- Non-resettable hour meters
- Records of maintenance
- Fuel type and usage records

...depending on the engine

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Emergency Engines



- ▶ No hour limits for emergency
- ▶ 100 hour limit for maintenance and readiness testing
- ▶ 50 hour limit for non-emergencies (counts as part of 100 hrs)
- ▶ Cannot be used for peak shaving or as part of a financial arrangement

unless...



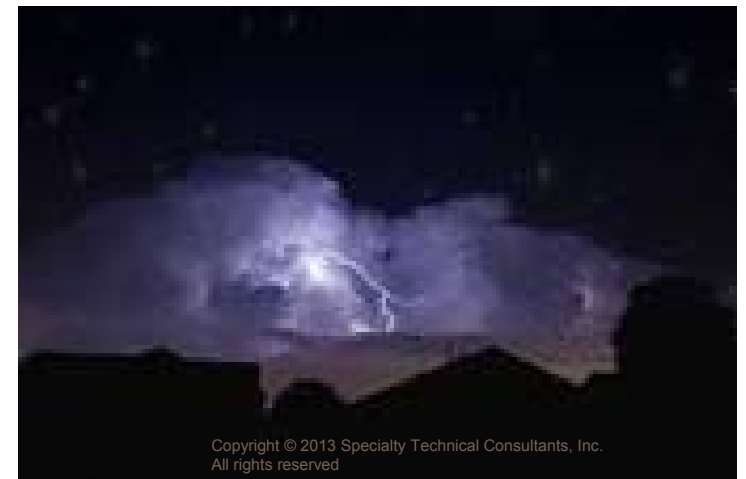
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...and this is new...

- ▶ Emergency engines may now be used up to 100 hours for combined:
 - maintenance and testing
 - EDR for Energy Emergency Alert Level 2 situations
 - responding when 5% or more change in voltage
 - heading off voltage collapse, or line overloads, that could result in local or regional power disruption (up to 50 hr)
- ▶ Starting in 2015, if used more than 15 hr/yr for EDR, must use clean fuel (ULSD) and file annual report



Existing emergency engines

- ▶ Install hour meter
- ▶ Know and follow your maintenance requirements
- ▶ Keep records
- ▶ Notifications not required (except > 500 HP at major source)

NEW emergency engines: NSPS





Questions on RICE MACT?



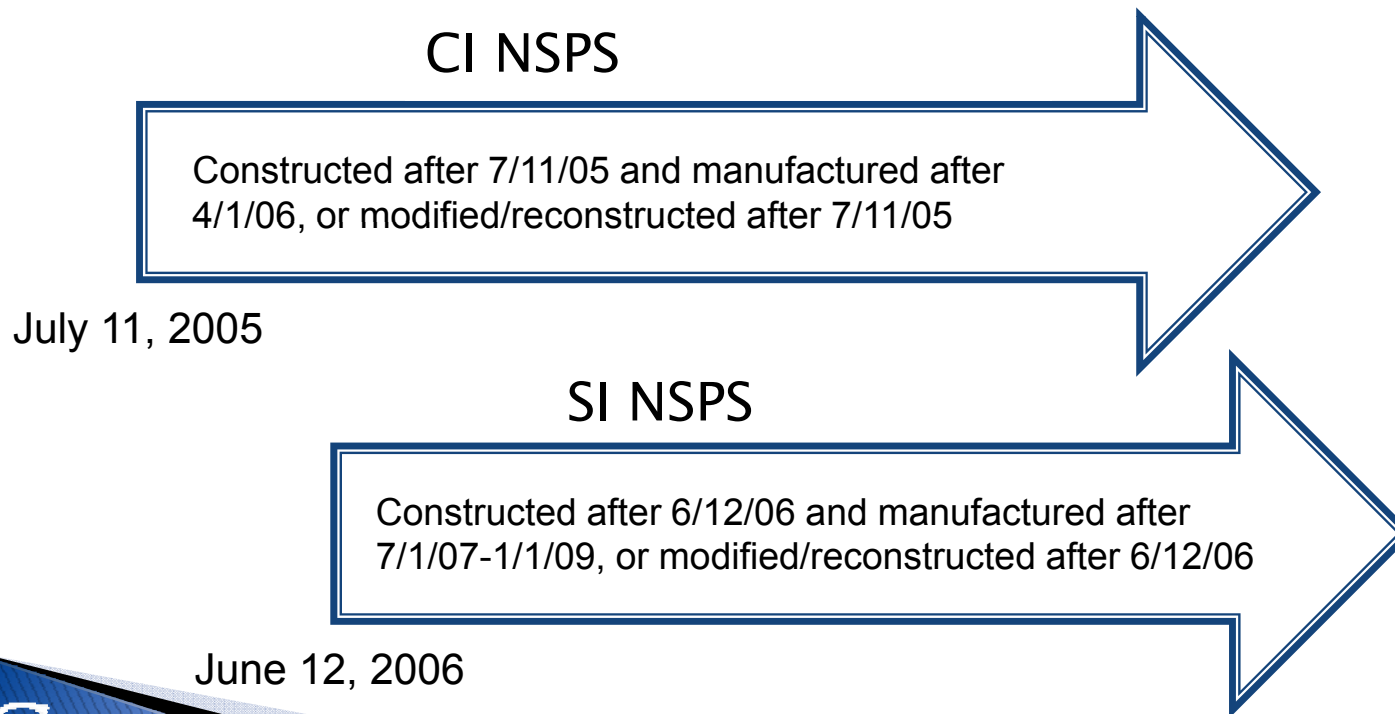
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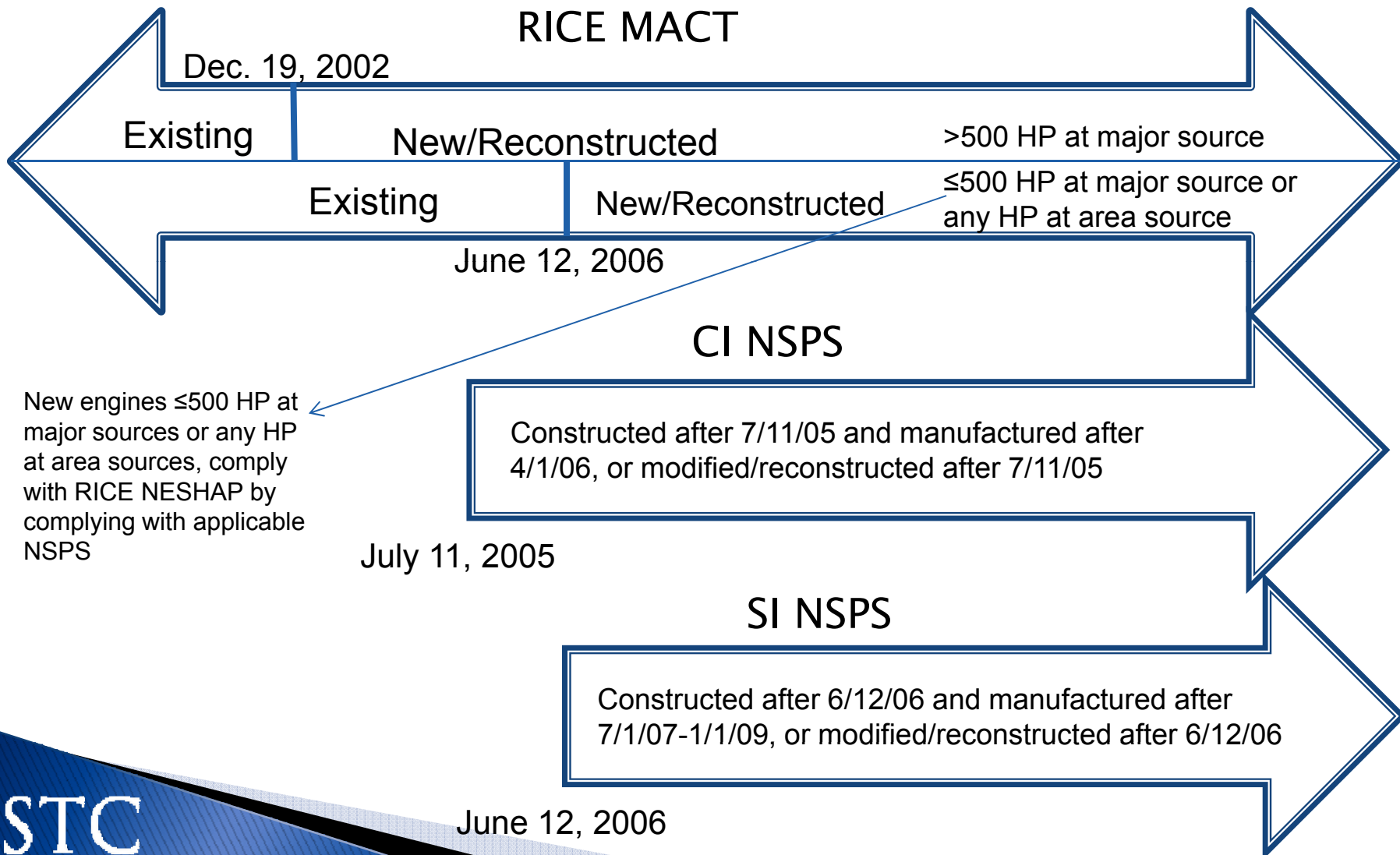
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When do you have to consider New Source (NSPS) Requirements?

- New and reconstructed engines
- Affects engine manufacturers, remanufacturers and owner/operators



Overlap of NESHAP/NSPS



Compliance for Owner/Operators

- ▶ Comply by purchasing an engine certified by the manufacturer OR
- ▶ Comply by meeting emission limits for an engine not certified by the manufacturer



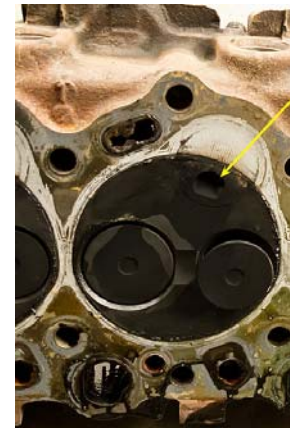
NSPS Compliance for Owner/Operators

- ▶ SI ICE – 40 CFR 60 Subpart JJJJ
 - Buy certified engine or conduct performance test(s)
 - Operate and maintain in accordance with manufacturer O&M procedures
 - Use low sulfur gasoline
 - Keep records
 - Maintenance
 - Initial notification (non-certified >500hp)
 - Operating hours for emergency SI
 - Certification documents



NSPS Compliance for Owner/Operators

- ▶ CI ICE – 40 CFR 60 Subpart III
 - Buy certified engine or conduct performance test(s)
 - Operate and maintain in accordance with manufacturer O&M procedures
 - Low sulfur diesel fuel requirements
 - Keep records
 - Maintenance
 - Initial notification (certain non-emergency engines)
 - Operating hours for emergency engines
 - Certification documents



Tools to help with NSPS

- ▶ Combustion Portal website

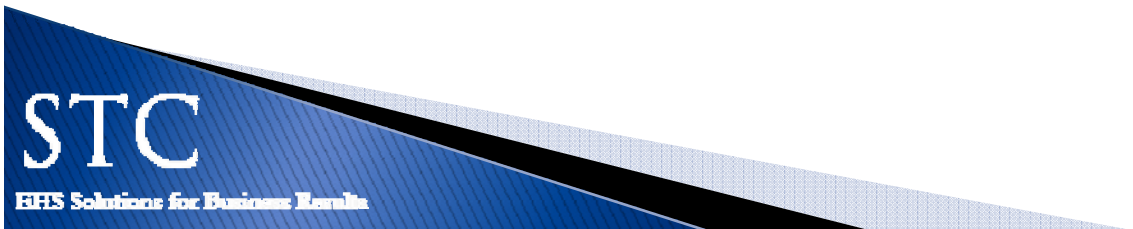
<http://www.combustionportal.org/rice.cfm>

- Useful, simple overview of requirements, applicability flowcharts
- ▶ STP Air Quality Rulebook Parts B-22 (Subpart III) and B-23 (Subpart JJJ)
- ▶ Manufacturers

Last week, EPA issued changes

- ▶ Final amendments apply to:
 - Emergency engine use
 - Hours used for emergency demand response (EDR)
 - Certain SI engines >500 HP in remote areas
 - Engines scheduled to be replaced in next few years and certain CI engines installed in 2006
 - THC compliance option for formaldehyde
 - Remote areas of Alaska – expansion of areas in Alaska that would qualify for less stringent standards

- ▶ <http://www.epa.gov/ttn/atw/rice/ricepg.html>



Summary: Steps to Compliance

- ▶ Categorize engines
- ▶ Determine requirements and compliance dates
- ▶ Submit notifications – if past due, send as soon as possible
- ▶ Track use and maintenance. If emergency or limited use engine, install hour meters and stay under threshold time limits
- ▶ If RICE have emission limits and need retrofit, get help from manufacturer, qualified consultants
- ▶ If performance test required, locate qualified testing firm, send in Notification of Performance Test 60 days before
- ▶ Submit Notification of Compliance Status to EPA before the May or October 2013 compliance dates



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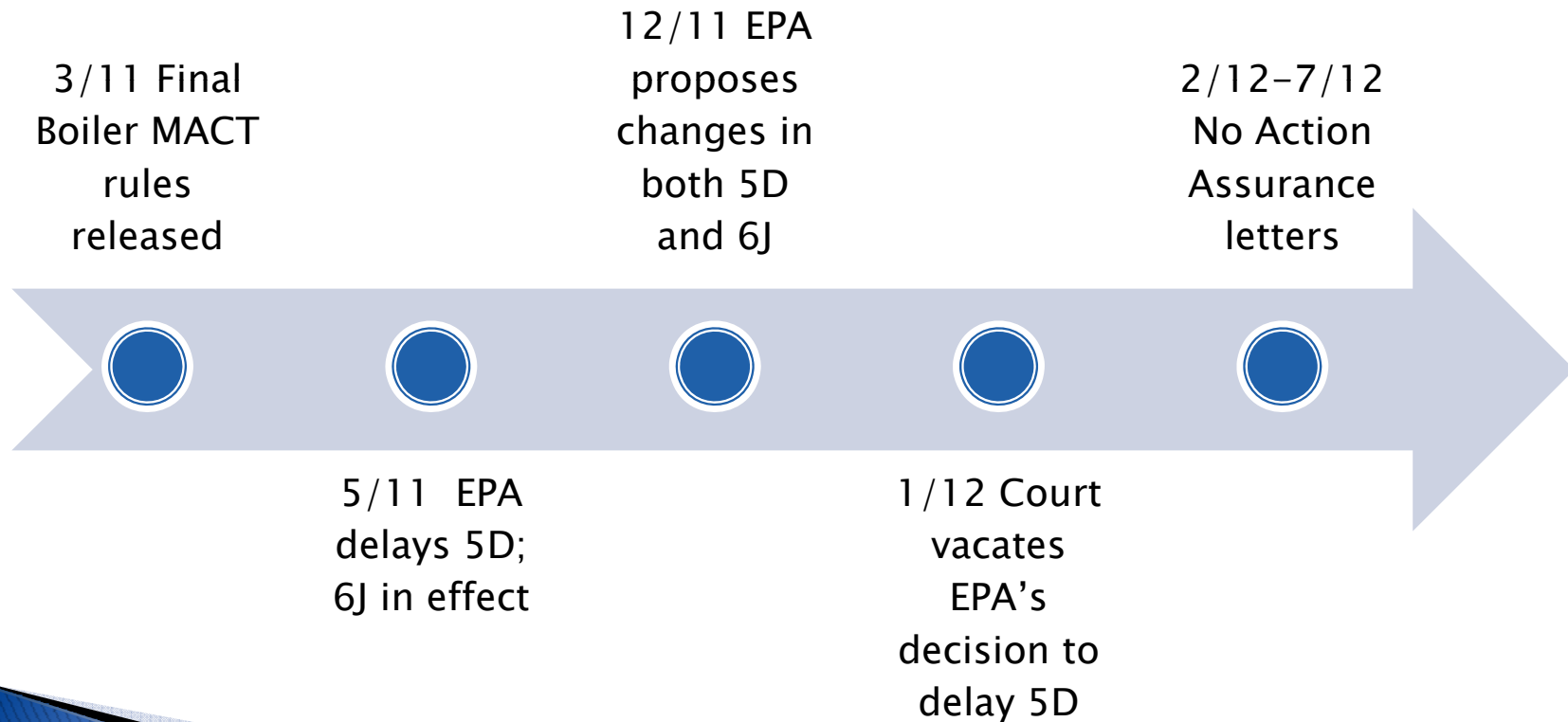
Questions?

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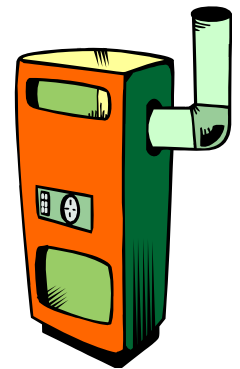
Update on Status of Boiler MACT

► Confusing history!



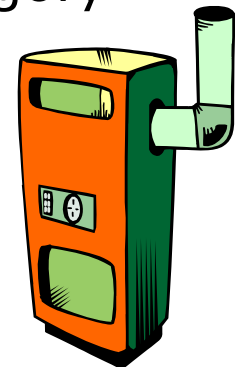
Boiler MACT update

- ▶ 12/21/12: EPA announces FINAL RECONSIDERATION RULE ISSUED for both major sources (5D) and area sources (6J)
- ▶ NOW WHAT?
 - Rules in effect after publication in Federal Register. No more “no action assurances”



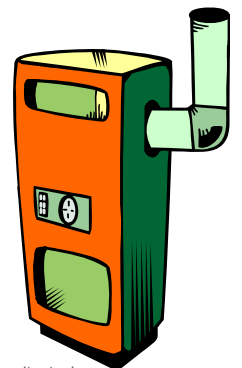
Major Sources (40 CFR 63 DDDDD)

- ▶ New categories for light and heavy industrial liquids
- ▶ New emission limits PM and CO for certain fuels
- ▶ Added alternative to use total selective metals emission limit instead of PM for HAP metals
- ▶ Replacing numeric dioxin limits with work practice standards
- ▶ Alternative PM monitoring approaches
- ▶ Revised limits for units outside continental USA
- ▶ Continuing to allow units burning natural gas to use work practice standards instead of emission limits
- ▶ Removing H₂S fuel spec for determining clean gas category (now only mercury content matters)



Area Sources (40 CFR 63 JJJJJ)

- ▶ **Initial notification deadline now January 20, 2014**
- ▶ **Initial tune-ups compliance date March 21, 2014**
- ▶ Seasonal and limited use subcategories added
- ▶ Allowing fuel switching without change from existing to new
- ▶ Periodic tune-ups every 5 years instead of 2 years for certain boilers
- ▶ New boilers burning low sulfur oil do not have to meet PM limit
- ▶ Reduced requirements for fuel testing for Hg and PM for certain boilers
- ▶ Allowing continuous emissions monitoring option for CO emissions



For more information...

www.epa.gov/airquality/combustion/actions.html

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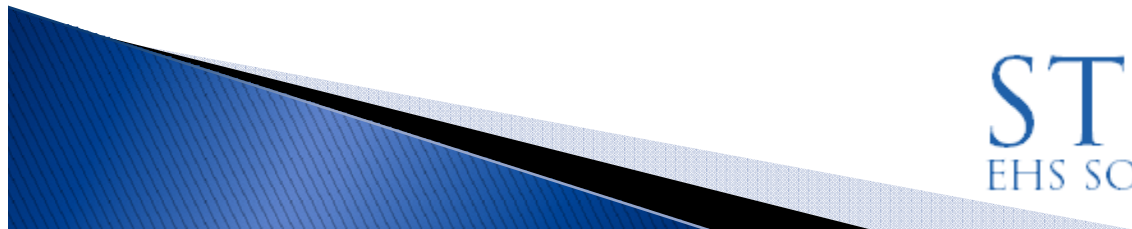
Thank You

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