Proposed Amendments: Stationary Engine NESHAP and NSPS

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Purpose

- Overview of June 7, 2012 Proposed Amendments to:
  - NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE)
    - 40 CFR part 63 subpart ZZZZ
  - NSPS for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE)
    - 40 CFR part 60 subpart IIII
  - NSPS for Stationary Spark Ignition (SI) ICE
    - 40 CFR part 60 subpart JJJJ
- Cost and Emissions Impacts
- Submitting Comments
- Q&A

Background

- EPA finalized amendments to the RICE NESHAP in March 2010 that established standards for:
  - Existing compression ignition (CI) [diesel] engines ≤500 HP at major sources of HAP
  - Existing CI engines of any size at area sources of HAP
  - Existing non-emergency CI engines >500 HP at major sources of HAP
- EPA finalized amendments to the RICE NESHAP in August 2010 that established standards for:
  - Existing SI engines ≤500 HP at major sources of HAP
  - Existing SI engines of any size at area sources of HAP
- After promulgation of the 2010 amendments, EPA received several petitions for reconsideration, petitions for judicial review, and other communications regarding several issues with the final rules

Issues Addressed in Proposed Amendments

- Emergency engine operation for demand response and peak shaving
- Requirements for existing 4-stroke SI RICE at area sources of HAP
- Total hydrocarbon (THC) compliance option for 4-stroke rich burn SI RICE
- Tier 1/Tier 2 certified CI RICE scheduled for replacement
- Tier 3 certified CI RICE
- CI RICE at area sources of HAP in remote areas of Alaska

Allowance for Emergency Demand Response

- Issue: Limitations on operation of emergency engines for emergency demand response (EDR)
- Current regulations:
  - RICE NESHAP:
    - Emergency engines can be used up to 15 hours per year for EDR when RTO/ISO determines that a blackout is imminent
    - No other operation as part of financial arrangement with another entity
  - ICE NSPS:
    - Engines used under a financial arrangement with another entity (including demand response and peak shaving) are not considered to be emergency engines

Allowance for Emergency Demand Response

- Proposed revisions:
  - RICE NESHAP and ICE NSPS:
    - Emergency engines can be used up to 100 hours per year for EDR in following situations:
      - Energy Emergency Alert (EEA) Level 2 is called
      - Voltage or frequency deviation of 5 percent or greater below standard
  - RICE NESHAP:
    - Clarify that when an emergency engine operates for more than allowable hours for non-emergency purposes, it will need to meet non-emergency engine requirements for the remaining life of the engine

Allowance for Peak Shaving

- Issue: Limitations on operation of emergency engines for peak shaving

- Current regulations:
  - RICE NESHAP and ICE NSPS:
    - Engines used under a financial arrangement with another entity (except RICE NESHAP allowance for EDR) or for peak shaving are not considered to be emergency engines

Allowance for Peak Shaving

- Proposed revision (RICE NESHAP only):
  - For **existing RICE at area sources** of HAP:
    - Allow 50 of 100 hours allowed for maintenance/testing/EDR to be used for non-emergency operation, including peak shaving to provide power to facility, or for local distribution system
  - Allowance for peak shaving ends on April 16, 2017
    - Coinciding with implementation of NESHAP From Coal and Oil-Fired Electric Utility Steam Generating Units

Emergency Engine Requirements

Category	Current Regulations		Proposed Amendments	
	RICE NESHAP	CI/SI ICE NSPS	RICE NESHAP	CI/SI ICE NSPS
Emergencies	No limit	No limit	No limit	No limit
Maintenance & Readiness Testing and Emergency Demand Response (EDR)	100 hours, of which 15 can be used for EDR in emergency situations (no maintenance/testing limit and no allowance for emergency demand response if engine is >500 HP at a major source installed prior to June 12, 2006)	100 hours No allowance for EDR operation	100 hours EDR must be in emergency situations	100 hours EDR must be in emergency situations
Non-Emergencies	50 hours Counts as part of the 100 hr/yr maintenance/EDR limit No peak shaving or operation through financial arrangement (except demand response)	50 hours Counts as part of the 100 hr/yr maintenance limit No peak shaving or operation through financial arrangement	50 hours Counts as part of the 100 hr/yr maintenance/EDR limit No peak shaving or operation through financial arrangement (except demand response), except peak shaving allowed for existing RICE at area sources through April 16, 2017	50 hours Counts as part of the 100 hr/yr maintenance/EDR limit No peak shaving or operation through financial arrangement (except demand response)

Area Source SI RICE Requirements

- Issue: Emission standards for existing 4-stroke SI RICE >500 HP at area sources of HAP

- Current regulation:
  - Existing 4-stroke SI RICE >500 HP at area sources of HAP must do the following:
    - Meet emission limits for CO or formaldehyde
    - Continuous parameter monitoring
    - Initial and subsequent performance testing
    - Submit notifications and compliance reports

Area Source SI RICE Requirements

- Proposed revision:
  - For existing 4-stroke SI RICE >500 HP at area sources of HAP that are in remote areas:
    - Management practices identical to those required for other existing SI engines at area sources
      - Change oil and filter every 1,440 hours of operation or annually
      - Inspect spark plugs, hoses, and belts every 1,440 hours of operation or annually, and replace as necessary
    - 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 within 220 yards on either side of a continuous 1-mile length of pipeline (DOT Class 1 area); or
      - Not located on a pipeline and having 5 or fewer buildings intended for human occupancy within a 0.25 mile radius around the engine

Area Source SI RICE Requirements

- Proposed revision:
  - For existing 4-stroke SI RICE >500 HP at area sources of HAP that are not in remote areas:
    - Equipment standard requiring catalyst on engine
    - 4-stroke lean burn RICE: 93% CO reduction or 47 ppmvd CO
    - 4-stroke rich burn RICE: 75% CO reduction or 30% THC reduction
    - Initial stack test plus annual "checks"
    - High catalyst inlet temperature engine shutdown, or continuous catalyst inlet temperature monitoring
    - Notifications and compliance reporting

THC Compliance Option

- Issue: Performance testing requirements for certain 4-stroke rich burn (4SRB) SI RICE
- Current regulation:
  - Following non-emergency 4SRB SI RICE must show compliance with formaldehyde concentration or % reduction standard through formaldehyde performance test
    - Existing >500 HP at major source of HAP
    - Existing >500 HP at area source of HAP (note: proposed to change)
    - New >500 HP at major source of HAP
- Proposed revision:
  - 4SRB SI RICE subject to the 76% formaldehyde reduction limit can show compliance by demonstrating THC emissions are being reduced by at least 30%

Tier 1/Tier 2 Engines Scheduled for Replacement

- Issue: Tier 1 and Tier 2 CI engines that must be replaced in next few years due to state/local rules
  - San Joaquin Valley District rule requires replacement of Tier 1 and 2 engines with Tier 3 or Tier 4 engines by January 1, 2015, or 12 years after installation date, but no later than June 1, 2018
    - Tier 1 = model years 1996 – 2001/2002
    - Tier 2 = model years 2001/2002 – 2005
- Current regulation:
  - If >300 HP and non-emergency, subject to CO emission limit
  - These engines would likely not comply with RICE NESHAP without catalyst retrofit

Tier 1/Tier 2 Engines Scheduled for Replacement

- Proposed revision:
  - Amend area source engine requirements to allow compliance using management practices until January 1, 2015, or 12 years after the installation date of the engine, but not later than June 1, 2018, for Tier 1 and 2 CI engines that will be replaced due to state/local rules
  - Change would apply to any engine in U.S. meeting this criterion; we request information on areas that have state/local rules

Tier 3 Engines at Area Sources of HAP

- Issue: Tier 3* (model year 2006) CI engines that were constructed (installed) from January 1 – June 12, 2006

- Current regulation:
  - If >300 HP and non-emergency, subject to CO emission limit
  - These engines would likely not comply with RICE NESHAP without catalyst retrofit
  - Identical Tier 3* engine installed after June 12, 2006, does not require retrofit to comply with applicable EPA rule for that engine (NSPS)

*Tier 2 for engines ≥560 kW

Tier 3 Engines at Area Sources of HAP

- Proposed revision:
  - For engines at area sources of HAP, specify that certified Tier 3* CI engine installed before June 12, 2006, is in compliance with RICE NESHAP
  - Change would apply to any engine in U.S. meeting this criterion; we request information on areas that have engines meeting this criterion

*Tier 2 for engines ≥560 kW

What is "Remote Alaska" Under 2010 RICE NESHAP?

- From 2006 CI NSPS – If on Federal Aid Highway System (FAHS) – not remote

- Current regulation:
  - Remote is currently also delineated in NESHAP as:
    - Not accessible by FAHS
      - FAHS includes AK Marine Highway – areas with year-round ferry service, even if not on contiguous road system
- Issue:
  - We received requests after rule was finalized to expand the area considered to be remote for areas on FAHS but very much like those that are not

Reduced Requirements for Remote Alaska

- Current regulation:
- For existing CI RICE at area sources, meet the management practices in Table 2d of subpart ZZZZ
  - No CO emission limitations,
  - No fuel requirements
  - No crankcase ventilation system requirements

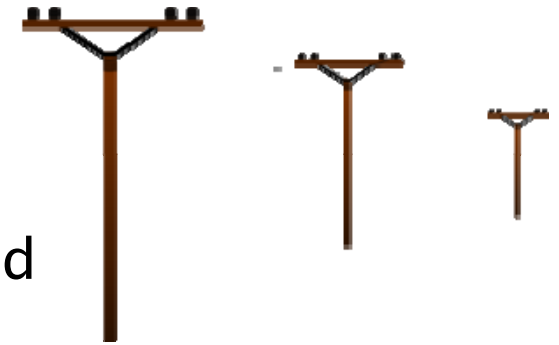
New Proposed Delineation of Remote Alaska

- Proposed revision:
- Expansion of "remote" delineation to include area source CI engines located in areas that are accessible by FAHS if they meet 3 criteria:
  1. Engine is located in area not connected to "Railbelt" grid
  2. At least 10% of power generated by engine annually is used for residential purposes
  3. Generating capacity of area source is less than 12 MW, or renewable energy backup and is used less than 500 hours per year on 10-year rolling average

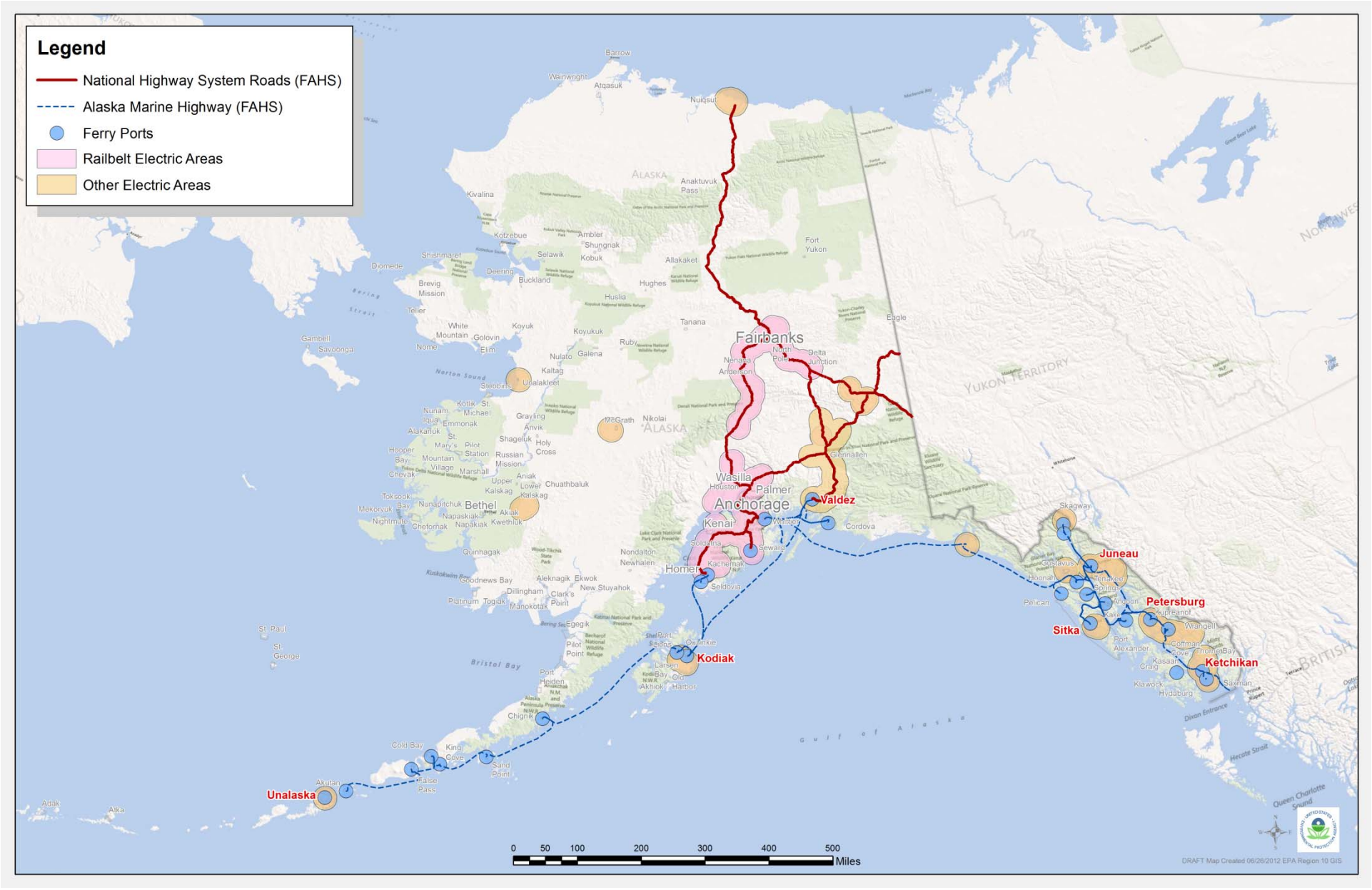
What is the Alaska Railbelt Grid?

- 1st Criterion:
  - Engine is located in area <u>not connected to "Railbelt" grid</u>

- Refers to the service areas of the six regulated public utilities that extend from Fairbanks to Anchorage and the Kenai Peninsula.
  - Golden Valley Electric Association,
  - Chugach Electric Association,
  - Matanuska Electric Association,
  - Homer Electric Association,
  - Anchorage Municipal Light & Power, and
  - The City of Seward Electric System.



Alaska FAHS and Railbelt Grid



New Proposed Delineation of Remote Alaska

- 2nd Criterion: Residential purposes
  - In some cases residential power is provided by the local industry in town
    - In order to not impact residential use
      - If at least 10% of power generated by engine annually is used for residential purposes, criterion met

New Proposed Delineation of Remote Alaska

- 3rd Criterion:
  - For low load generation Or Renewable backup
    - Generating capacity of the area source is less than 12 MW,
    - Or, if greater capacity, engine is used exclusively for backup power for renewable energy, and
      - Back-up limits of
        - 500 hours per year
        - On a 10-year rolling average

Cost and Emissions Impacts: Changes from 2010 RICE NESHAP Amendments

	Reductions from 2010 Rule		Reductions from 2010 Rule with Proposed Amendments	
	CI RICE	SI RICE	CI RICE	SI RICE
HAP	1,000	6,000	1,000	1,800
CO	14,000	109,000	14,000	22,000
PM	2,800	--	2,800	--
NOx	--	96,000	--	9,600
VOC	27,000	31,000	27,000	9,100

	Costs of 2010 Rule		Costs of 2010 Rule with Proposed Amendments (2010$)	
	Capital	Annual	Capital	Annual
Spark Ignition (2009$)	$383 million	$253 million	$103 million	$115 million
Compression Ignition (2008$)	$744 million	$373 million	$740 million	$373 million

Commenting on the Proposed Reconsideration

- Federal Register publication June 7, 2012 (77 FR 33812) http://www.gpo.gov/fdsys/pkg/FR-2012-06-07/pdf/2012-13193.pdf
- Notice of public hearing/extension of comment period will be published June 21, 2012
- Submit comments by August 9, 2012 to Docket No. EPA-HQ-OAR-2008-0708
  - www.regulations.gov
  - Email: a-and-r-docket@epa.gov
  - Fax: (202) 566-1741
  - Mail: Air and Radiation Docket and Information Center, Environmental Protection Agency, Mailcode: 6102T, 1200 Pennsylvania Ave., NW, Washington, DC 20460
  - Hand Delivery: Air and Radiation Docket and Information Center, U.S. EPA, Room B102, 1301 Constitution Avenue, NW, Washington, DC
- Suggest also emailing copy of comments to: king.melanie@epa.gov

Timeline of Key Dates

Milestone	Date
Proposal	June 7, 2012
End of public comment period	August 9, 2012
Final rule signature	December 14, 2012*
Compliance date for existing CI RICE	May 3, 2013
Compliance date for existing SI RICE	October 19, 2013

*per EnerNOC settlement agreement

Contact Information

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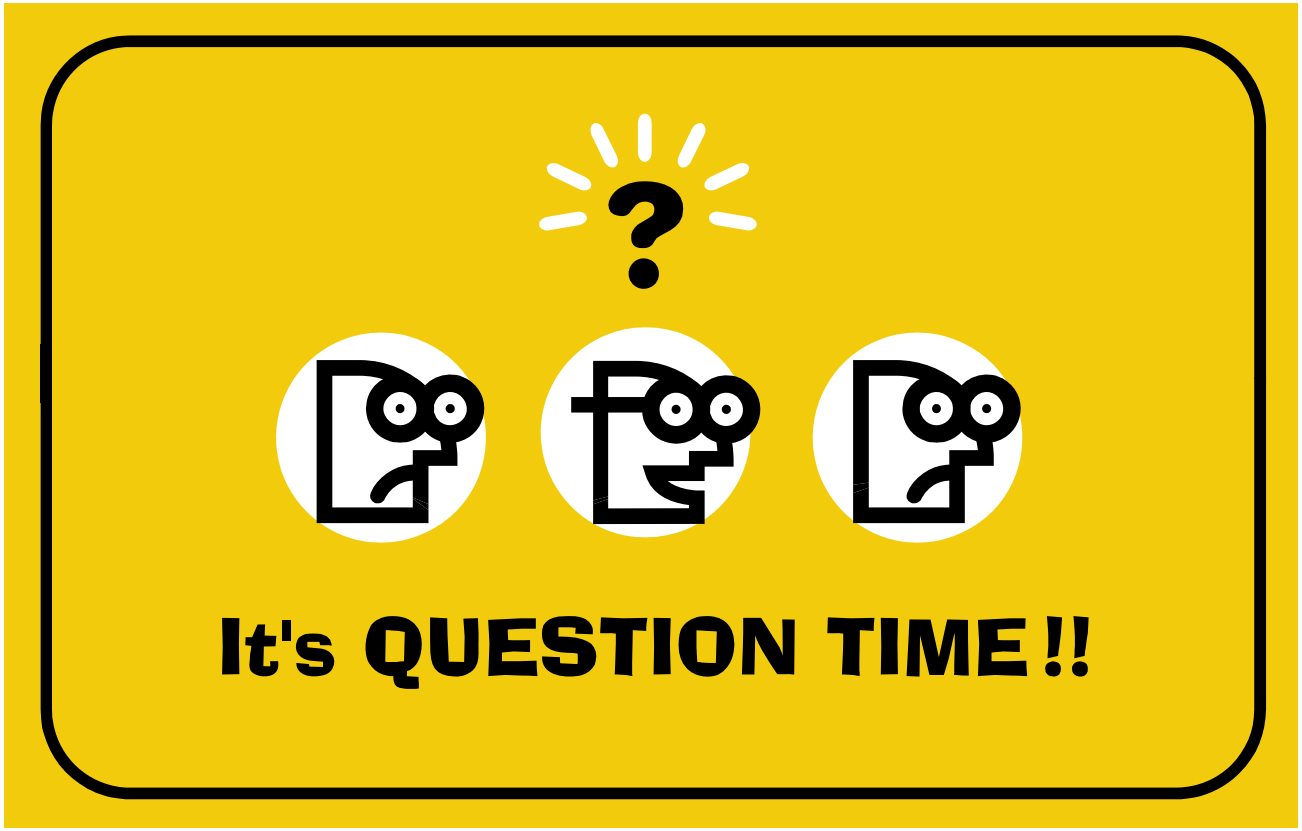
U.S. EPA Regional Office RICE NESHAP Contacts:
http://www.epa.gov/ttn/atw/rice/EPARegionalRICEcontacts.pdf


It's QUESTION TIME !!