NOTES ON EPA RICE RULES AND DEMAND RESPONSE

What's My Source Type?

- Most hospitals fall under Area Source category
    - Emits 10 tons per year or less of Hazardous Air Pollutants
    - Examples of toxic air pollutants include benzene, which is found in gasoline; perchloroethylene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries. Examples of other listed air toxics include dioxin, asbestos, toluene, and metals such as cadmium, mercury, chromium, and lead compounds.

What's My Permit Type?

- Lifetime permits generally cover sites that their total Potential to Emit is less than 100 tons per year of the 5 regulated pollutants. No hourly limitations on operations.
- Regulated pollutants are: CO, NOx, SO2, PM, VOM
- FESOP (Federally Enforceable State Operating Permit) covers larger sites and allow for operating limits on equipment. Think boilers with fuel oil as backup or emergency generators.

Equipment types requiring permits:

- Fuel Burning Units (boilers and dryers): 10 MMBtu/hr
- Electric Generation Equipment (emergency, non-emergency, and standby): greater than 1,000 kW
- Storage Tanks for Fuel Oil: 10,000 gallons
- Dry cleaning equipment (perchloroethylene): 30 gal/month
- ETO Sterilizers

Is My Engine Emergency or Non-Emergency?

<u>Emergency Engines</u>

- Unlimited use for emergencies
- 100 hr/yr for maintenance/testing
- CI RICE must use ultra low sulfur diesel fuel

<u>Non-Emergency Engines</u>

- All other operations

What's my stationary Reciprocating Internal Combustion Engine (RICE) compliance?

- Your source type dictates your compliance path.
- Determine your engine source type:
- Did you begin construction (or reconstruction) on your stationary engine before June 12, 2006?
    - Yes – you have an Existing Area Source
    - No – you have a New or Reconstructed Area Source
- Compliance path is dictated by size of engine (see attachments)
    - Includes maintenance requirements such as changing oil/filters, inspecting plugs and hoses, and recording run hours.

- Emergency engines must have a non-resettable hour meter installed.
- Non-emergency engines must pass initial emission performance test and are subjected to operating limitations – catalyst pressure drop and inlet temperatures, emission control requirements, and/or reporting and notifications.

Considering Engine Retrofit or Replacement to participate in Demand Response?

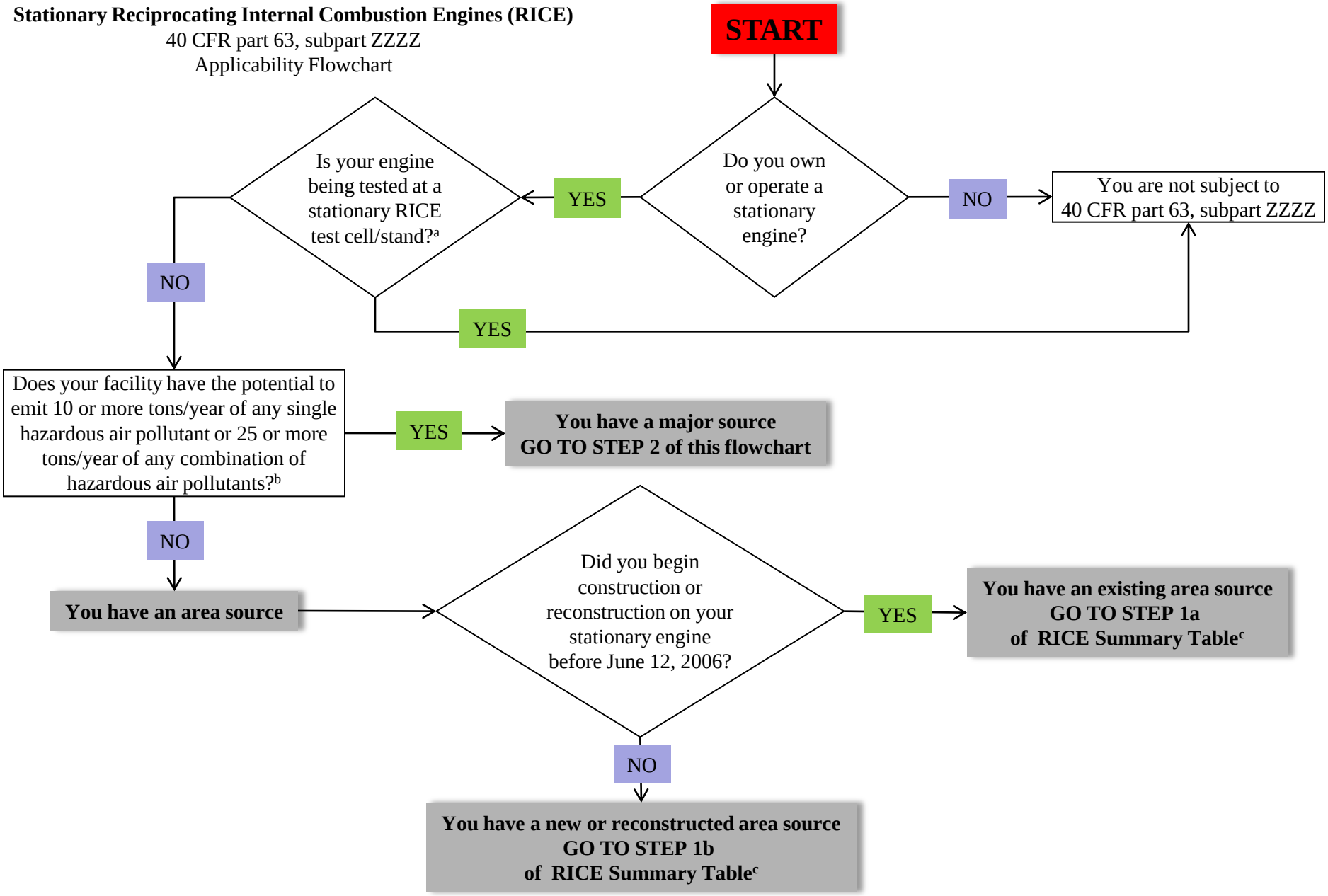
- Explore availability of new technologies
- Get several quotes – they may vary
- Compare efficiency of current and new engines and fuel costs
- Carefully asses capital and operating cost tradeoffs, review NPV of investment and ROR.

How do I convert to Non-Emergency?

- Review existing operating permit to determine current limitations on run-hours
  - May need to modify the operating permit after conversion to allow for additional run hours
- Apply for a Construction Permit for the Reconstructed Source
  - This is for the emission control and monitoring equipment that needs to be installed.
- Schedule a Performance Test
  - Select emissions testing company
  - Testing company conducts a site visit
  - Testing company prepares site-specific test plan according to Guideline Document GD-042
  - Source submits test plan to EPA and state agency at least 60 days prior to the test date.
  - EPA/state agency reviews the test plan and either accepts as is or requests revisions.
  - If needed the test company revises the test plan and the source resubmits to agency.
  - Agency accepts the test plan.
  - Agency may request an onsite pretest meeting.
  - Testing company conducts the test program.
  - Test company prepares an emissions test report according to Guideline Document GD-043, and submits to source.
  - Source submits report to agency within 45-60 days of completion of test.
  - EPA reviews the report and either accepts it or requests clarifications, revisions etc.
  - Test company addresses comments & submits final document to source, which then submits final document to agency.
- After construction and testing is complete, request that the Construction Permit be incorporated into the Operating Permit and confirm all files are up to date. Keep copies!

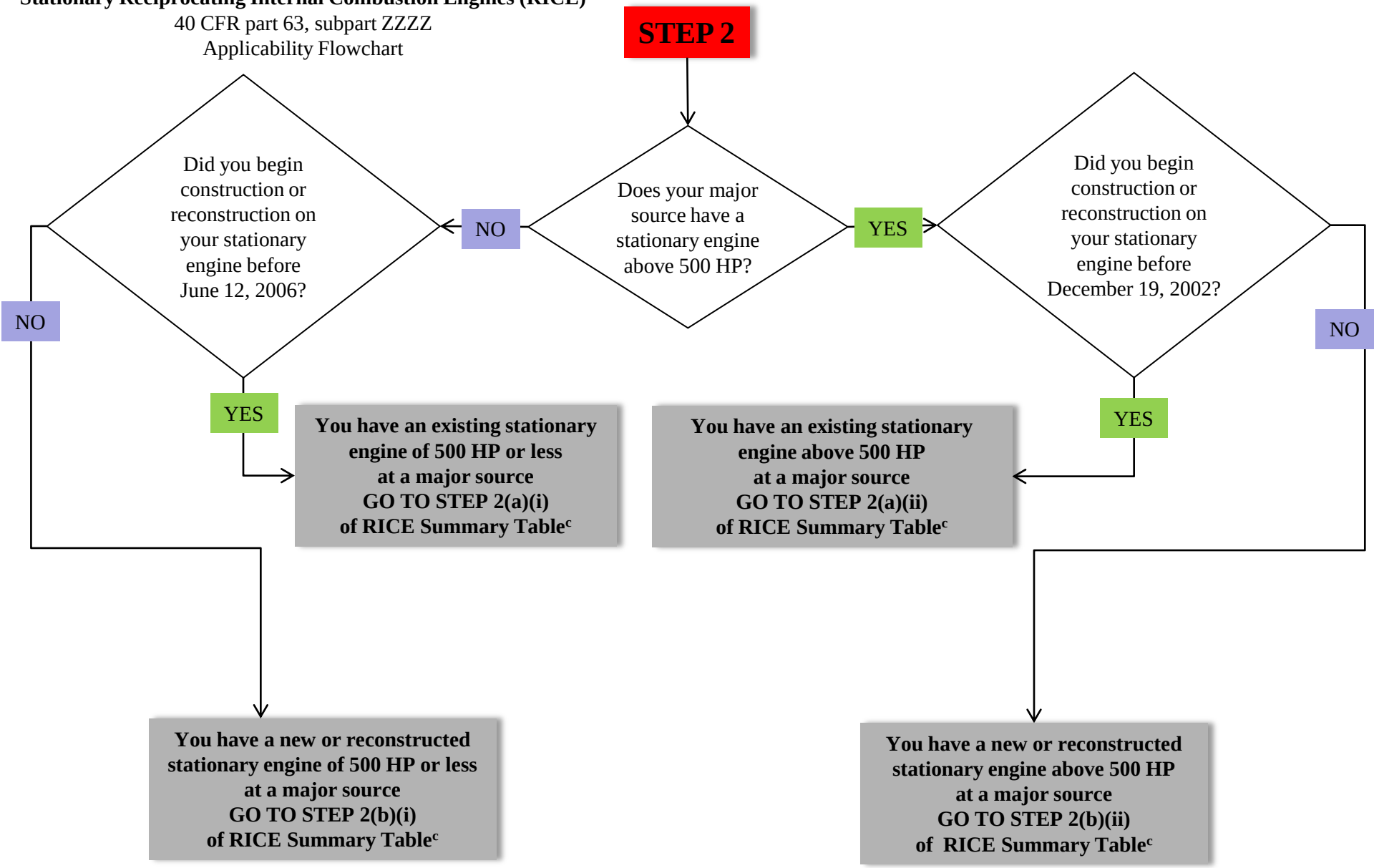
EXHIBITS

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



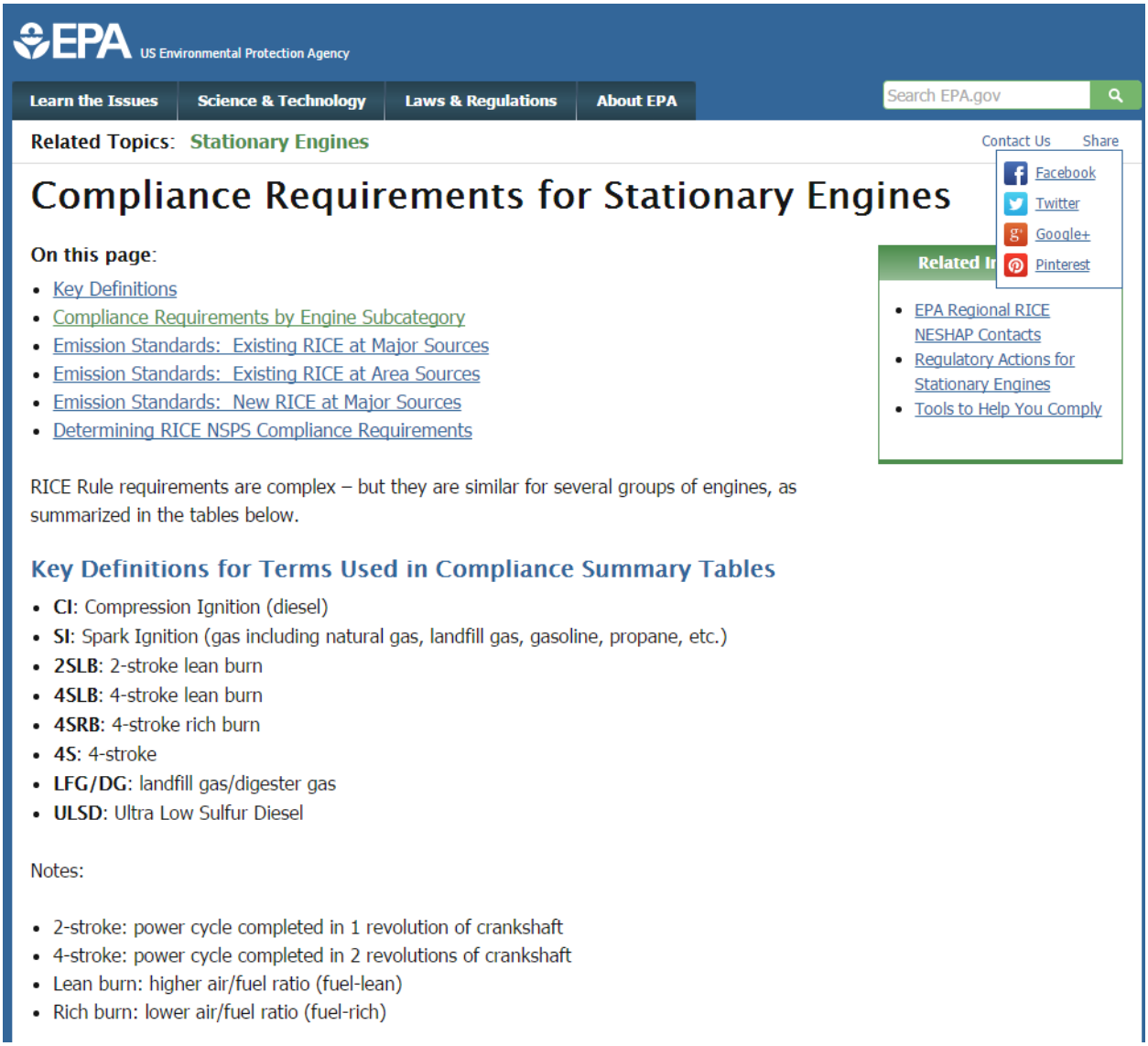
[a]An engine test cell/stand is any apparatus used for testing uninstalled stationary or uninstalled mobile (motive) engines.
[b]For assistance in determining the potential to emit, please refer to http://www.epa.gov/ttn/chief/ap42/index.html or contact your EPA regional office or state permitting staff.

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.

https://www.epa.gov/stationary-engines/compliance-requirements-stationary-engines#Compliance Requirements



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

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

Engine Subcategory	Compliance Requirements

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

Emission Standards: Existing RICE Located at Area Sources

HP	Engine Subcategory					
	Non-emergency					Emergency or Black Start
	CI	SI 2SLB	SI 4S in remote areas	SI 4S not in remote areas	SI LFG/DG	
≤300	Change oil/filter & inspect air cleaner every 1,000 hours or annually; inspect hoses/belts every 500 hours or annually	Change oil/filter, inspect spark plugs, & inspect hoses/belts every 4,320 hours or annually	Change oil/filter, inspect spark plugs, & inspect hoses/belts every 1,440 hours of operation or annually	Change oil/filter, inspect spark plugs, & inspect hoses/belts every 1,440 hours of operation or annually	Change oil/filter, inspect spark plugs, & inspect hoses/belts every 1,440 hours of operation or annually	Change oil/filter & inspect hoses/belts every 500 hours or annually; inspect air cleaner (CI) or spark plugs (SI) every 1,000 hours or annually
300-500	49 ppm CO or 70% CO reduction*					
>500	23 ppm CO or 70% CO reduction		Change oil/filter, inspect spark plugs, & inspect hoses/belts every 2,160 hours of operation or annually	if engine used >24 hrs/yr: 4SLB: Install oxidation catalyst 4SRB: Install NSCR		

Performance Testing

CO: EPA Method 10, ASTM D 6522-00

Subpart ZZZZ appendix A for existing 4-stroke SI RICE >500 HP at non-remote area sources

Formaldehyde: EPA Method 320 or 323, ASTM D 6438-03

THC: EPA Method 25A

- Three 1-hour runs required for most tests
- % reduction standard: measure at catalyst inlet and outlet simultaneously
- Measure at ±10% of 100% load for:
  - Existing/new SI 4SRB >500 HP at major source
  - New CI and SI 2SLB >500 HP at major source
  - New SI 4SLB >250 HP at major source