

RICE NESHAP Requirements for Stationary Engines at Area Sources of Hazardous Air Pollutants¹

This document provides guidance on the requirements for stationary engines at area sources of hazardous air pollutants (HAP). An area source of HAP is any source that is not a major source of HAP. A major source is one that emits or has the potential to emit 10 tons or more per year of a single HAP or 25 tons or more per year of any combination of HAP. Refer to the rule at 40 CFR part 63 subpart ZZZZ for the requirements for stationary engines at major sources of HAP.

General Overview

What is the RICE NESHAP?

The National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (“RICE NESHAP”) limits emissions of toxic air pollutants from stationary reciprocating internal combustion engines. The pollutants emitted from stationary engines are known or suspected of causing cancer and other serious health effects.

What engines are affected by this rule?

The RICE NESHAP applies to stationary reciprocating internal combustion engines. Stationary engines are commonly used to generate electricity and to power pumps and compressors, and also in emergencies to produce electricity and pump water for flood and fire control. All sizes of stationary engines are covered by the rule.

The RICE NESHAP does not apply to engines used in motor vehicles and mobile nonroad equipment. Mobile nonroad engines are those that are:

- Self-propelled (such as tractors, bulldozers)
- Propelled while performing their function (such as lawnmowers)
- Portable or transportable (has wheels, skids, carrying handles, dolly, trailer, or platform) and do not remain in one location for more than 12 months, or full annual operating period of a seasonal source

What do I need to consider when determining compliance requirements?

The applicable RICE NESHAP requirements typically differ depending on whether the engine is a compression ignition (CI) or a spark ignition (SI) engine. Compression ignition engines are generally those that use diesel fuel. Spark ignition engines generally use gaseous fuels such as natural gas, gasoline, propane, or digester gas.

The RICE NESHAP requirements for an engine also depend on factors including the engine size and type, construction date, and application (non-emergency or emergency). The requirements also depend on whether the facility is a major source or an area source of HAP.

How do I determine if my engine is considered “existing” or “new”?

Engines located at an area source of HAP are considered “existing” if the original owner/operator of the engine entered into a contract for the on-site installation of the engine before June 12, 2006.

¹ The content provided in this document is intended solely as assistance in determining requirements for compliance under the RICE NESHAP. Any variation between the rule and the information provided in this document is unintentional, and, in the case of such variations, the requirements of the rule govern.

Engines for which the original owner/operator of the engine entered into a contractual obligation for the on-site installation of the engine on or after June 12, 2006 are “new” engines. Note that relocating an existing engine to a new location (same facility or elsewhere) does not change the engine’s status as an “existing” engine.

What do I have to do to comply with the rule?

The specific compliance requirements for emergency engines are found on p. 3-5 of this document. The specific compliance requirements for non-emergency engines are found on p. 6-8 of this document.

By what date must my engine(s) comply with the rule?

Existing CI engines must comply by May 3, 2013. Existing SI engines must comply by October 19, 2013. New engines must comply upon startup.

What if I was not aware of this rule? What happens?

Contact your EPA Regional Office. A list of RICE NESHAP contacts for each state can be found here: <http://www.epa.gov/ttn/atw/icengines/docs/EPARegionalRICEcontacts.pdf>

Where can I go for more information?

EPA RICE NESHAP website: <http://www.epa.gov/ttn/atw/icengines/>

EPA Region 1 RICE website: <http://www.epa.gov/region1/rice/>

EPA Region 10 RICE website: http://yosemite.epa.gov/R10/airpage.nsf/Enforcement/rice_rules

Electronic Code of Federal Regulations: <http://www.ecfr.gov>

Requirements for Emergency Engines

What are emergency engines?

Emergency engines are engines that are operated to provide electrical power or mechanical work during an emergency situation. Examples include engines used to produce power for critical networks or equipment when electric power from the local utility is interrupted, or engines used to pump water in the case of fire or flood.

Are there any stationary emergency engines that are not covered by the rule?

The RICE NESHAP does not apply to existing residential, commercial, and institutional emergency stationary engines located at an area source of HAP emissions, provided that the engines do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for emergency demand response or voltage/frequency deviations and the engines do not otherwise operate in non-emergency situations as part of a financial arrangement with another entity.

Residential emergency stationary engines include those used in residential establishments such as homes or apartment buildings. Commercial emergency stationary engines are used in commercial establishments such as office buildings, hotels, stores, telecommunications facilities, restaurants, financial institutions such as banks, doctor's offices, and sports and performing arts facilities. Institutional emergency stationary engines are used in institutional establishments such as medical centers, nursing homes, research centers, institutions of higher education, correctional facilities, elementary and secondary schools, libraries, religious establishments, police stations, and fire stations. See this link for additional guidance regarding the types of facilities that are considered residential, commercial, or institutional:

http://www.epa.gov/ttn/atw/icengines/docs/guidance_emergency_engine_def.pdf.

What are the operational limitations for emergency engines?

In order to be considered an emergency engine, the engine must meet the RICE NESHAP operational requirements for emergency engines, which are as follows:

- There is no time limit on the use of the engine in emergency situations
- The engine may be used for up to 100 hours per calendar year for any combination of the following purposes:
 - Maintenance checks and readiness testing
 - Emergency demand response when an Energy Emergency Alert Level 2 has been declared by the Reliability Coordinator
 - Periods where the voltage or frequency deviates by 5 percent or more below standard
- The engine may be used for up to 50 hours per calendar year for any combination of the following purposes, but the operation counts as part of the 100 hours per calendar year for maintenance, testing, and emergency demand response:
 - Non-emergency situations, provided there is no financial arrangement with another entity
 - Peak shaving in local system operator program until May 3, 2014 if existing engine
 - Local reliability as part of a financial arrangement with another entity if all of the following conditions are met:
 - engine is an existing engine
 - engine is dispatched by local transmission/distribution system operator

- dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads
- dispatch follows reliability, emergency operation, or similar protocols that follow specific NERC, regional, state, public utility commission, or local standards or guidelines
- power is provided only to the facility or to support the local distribution system
- engine owner/operator identifies and records dispatch and standard that is being followed

What do I have to do to comply with this rule?

For Existing Emergency Engines, Owners and Operators Must:

- Change oil and filter every 500 hours of operation or annually, whichever comes first (you may use an oil analysis program to extend the oil change requirement)
- Inspect air cleaner for CI engines or spark plugs for SI engines every 1,000 hours of operation or annually, whichever comes first, and replace as necessary
- Inspect hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary
- Operate and maintain the engine per the manufacturer's instructions or your own maintenance plan
- 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
- Equip the engine with a non-resettable hour meter if one is not already installed
- Keep records of engine maintenance
- Keep records of the hours of operation recorded through the non-resettable hour meter, including how many hours are spent for emergency operation and what classified the operation as emergency

Emergency Engines in Emergency Demand Response or Local Reliability Programs:

In addition to meeting the requirements above, starting January 1, 2015, owners and operators of emergency engines meeting the below three (3) criteria must use ultra low sulfur diesel fuel (if the engine uses diesel fuel; existing diesel fuel obtained prior to January 1, 2015, may be used until depleted) and submit an annual report of the dates and times that the engine operated for emergency demand response or for local reliability.

1. Larger than 100 HP with a displacement less than 30 liters per cylinder, and either
2. Operated or contractually obligated to be available greater than 15 hours per year (up to the maximum of 100 hours per year) for emergency demand response or voltage/frequency deviation, or
3. Operated for local reliability (up to the maximum of 50 hours per year).

The annual report must contain the following information:

- Facility name and address
- Engine rating, model year, latitude/longitude
- Date, start time, and end time for operation for emergency demand response, voltage/frequency deviations, and local reliability

- Number of hours engine is contractually obligated for emergency demand response or voltage/frequency deviation
- Entity that dispatched engine for local reliability and situation that necessitated dispatch
- For CI engines, deviations from ultra low sulfur diesel fuel requirement

The first annual report must cover the calendar year 2015 and must be submitted no later than March 31, 2016. Subsequent annual reports for each calendar year must be submitted no later than March 31 of the following calendar year. The annual report must be submitted through the Compliance and Emissions Data Reporting Interface that is accessed through EPA's Central Data Exchange (<http://www.epa.gov/cdx>).

New Emergency Engines

New emergency engines must meet the requirements of the New Source Performance Standards, 40 CFR part 60 subpart IIII for CI engines and 40 CFR part 60 subpart JJJ for SI engines, if applicable. These engines have no further requirements under the RICE NESHAP.

Requirements for Non-Emergency Engines

What are non-emergency engines?²

Non-emergency engines are engines that are operated to provide electrical power or mechanical work primarily during non-emergency situations. Any engine that does not meet the RICE NESHAP definition of an emergency engine is considered to be a non-emergency engine. Emergency engines are generally operated during an emergency situation, such as when electric power from the local utility is interrupted, or to pump water in the case of fire or flood. A more detailed description of an emergency engine can be found in the previous section of this document.

What are the emission standards for existing non-emergency engines?

The emission standards for existing non-emergency engines are provided in the table below.

Emission Standards for Existing Non-Emergency Engines

HP	Engine Subcategory					
	CI	SI 2-Stroke Lean Burn	SI 4-Stroke in remote areas	SI 4-Stroke not in remote areas	Landfill or Digester Gas	
≤300	Change oil/filter ^a & inspect air cleaner every 1,000 hours or annually; inspect hoses/belts every 500 hours or annually, whichever comes first	Change oil/filter ^a , inspect spark plugs, & inspect hoses/belts every 4,320 hours or annually, whichever comes first	Change oil/ filter ^a , inspect spark plugs, & inspect hoses/belts every 1,440 hours of operation or annually, whichever comes first		Change oil/ filter ^a , inspect spark plugs, & inspect hoses/belts every 1,440 hours of operation or annually, whichever comes first	
300-500			49 ppm CO or 70% CO reduction			
>500			23 ppm CO or 70% CO reduction	Change oil/ filter ^a , inspect spark plugs, & inspect hoses/belts every 2,160 hours of operation or annually, whichever comes first		If engine used >24 hrs/yr ^b : 4SLB: Install oxidation catalyst 4SRB: Install non-selective catalytic reduction

^a You may use an oil analysis program to extend the oil change requirement. See 40 CFR 63.6625(i)-(j).

^b If engine used ≤24 hr/yr: change oil/filter & inspect air cleaner every 500 hours or annually; inspect hoses/belts every 500 hours or annually, whichever comes first.

² This guidance does not cover the requirements for non-emergency engines whose only purpose is to start up a combustion turbine, known as “black start” engines; certain non-emergency CI engines in remote areas of Alaska; certain non-emergency CI engines on offshore vessels that are Outer Continental Shelf sources; and certain non-emergency CI engines certified to the Tier 1, 2 or 3 standards in Table 1 of 40 CFR 89.112. Refer to the rule at 40 CFR part 63 subpart ZZZZ for the requirements for these engines.

What are the other compliance requirements for existing non-emergency engines?

In addition to meeting the emission standards, owners and operators must comply with the requirements listed below. Also, all engines that are subject to the rule must 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 apply to the engine.

Existing non-emergency CI engines of 300 horsepower (HP) or less and existing non-emergency SI engines of 500 HP or less

- Operate and maintain the engine per the manufacturer's instructions or your own maintenance plan
- Keep records of engine maintenance

Existing non-emergency CI engines larger than 300 HP

- Initial performance test to demonstrate compliance with emission limit
- If larger than 500 HP:
 - subsequent performance testing every 8,760 hours of operation or 3 years, whichever comes first (every 5 years if engine operates less than 100 hours per calendar year)
 - keep catalyst pressure drop within 2 inches of water from pressure drop measured during initial performance test; measure and record catalyst pressure drop monthly
 - keep catalyst inlet temperature between 450-1,350°F; continuously monitor and record catalyst inlet temperature
- Use ultra low sulfur diesel fuel
- Equip engine with closed crankcase ventilation system or open crankcase filtration system
- Submit required notifications
- Submit semiannual compliance reports (annual if engine operates less than 100 hours per calendar year)

Existing non-emergency SI 4-stroke engines larger than 500 HP that are in remote areas

- Operate and maintain the engine per the manufacturer's instructions or your own maintenance plan
- Keep records of engine maintenance

The engine must be in a remote area on the initial compliance date (October 19, 2013) to be considered a remote engine. An engine is in a remote area if it meets one of the following three criteria:

1. The engine is located in an offshore area that is beyond the line of ordinary low water along that portion of the coast of the United States that is in direct contact with the open seas and beyond the line marking the seaward limit of inland waters.
2. The engine is located on a pipeline segment that has 10 or fewer buildings intended for human occupancy and no buildings with four or more stories within 220 yards on either side of the centerline of any continuous 1-mile length of pipeline and does not lie within 100 yards of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period.

3. The engine is not located on a gas pipeline and has 5 or fewer buildings intended for human occupancy and no buildings with four or more stories within a 0.25 mile radius around the engine.

Existing non-emergency SI 4-stroke engines larger than 500 HP that are not in remote areas

- Initial and annual catalyst activity checks to show that 4-stroke lean burn engine carbon monoxide (CO) emissions are reduced by at least 93 percent or more or limited to 47 parts per million (ppm), and 4-stroke rich burn engine CO emissions are reduced by at least 75 percent or more or limited to 270 ppm or total hydrocarbons is reduced by 30 percent or more
- Equip engine with high temperature engine shutdown or continuously monitor catalyst inlet temperature and maintain between 450-1,350°F for 4-stroke lean burn engines and 750-1,250°F for 4-stroke rich burn engines
- Submit required notifications
- Submit semiannual compliance reports (annual if engine operates less than 100 hours per calendar year)

What are the emission standards and other compliance requirements for new non-emergency engines?

New non-emergency engines must meet the requirements of the New Source Performance Standards, 40 CFR part 60 subpart IIII for CI engines and 40 CFR part 60 subpart JJJJ for SI engines, if applicable. These engines have no further requirements under the RICE NESHAP.