

RULE 431. STATIONARY INTERNAL COMBUSTION ENGINES

(Adopted 11/13/96, Proposed 11/12/2014)

A. APPLICABILITY. This Rule applies to any stationary internal combustion engine rated at greater than 50 brake horsepower and operated on any gaseous or liquid fuel, including but not limited to gasoline, natural gas, field gas, waste gas, liquefied petroleum gas (LPG), or diesel fuel. Note that this Rule is based on a 1996 performance standard that set minimum retrofit requirements for existing units at that time. For new or modified emission units, more stringent requirements likely apply in accordance with District Rule 204, Requirements. Contact the District for site specific requirements prior to purchase or setting bid specifications.

B. DEFINITIONS

1. "Diesel Engine": A compression ignited two or four-stroke engine in which liquid fuel injected into the combustion chamber ignites when the air charge has been compressed to a temperature sufficiently high for auto-ignition.
2. "Emergency Standby Engine": An internal combustion engine used only as follows:
 - a. When normal power line or natural gas service fails; or
 - b. For the emergency pumping of water for either fire protection or flood relief.

An emergency standby engine may not be operated to supplement a primary power source when the load capacity or rating of the primary power source has been either reached or exceeded.

3. "Lean-burn Engine": Any two or four-stroke spark-ignited engine that is not a rich-burn engine.
4. "Location": Any single site at a building, structure, facility, or installation.
5. "Maintenance Operation": The use of an emergency standby engine and fuel system during testing, repair and routine maintenance to verify its readiness for emergency standby use.
6. "Rated Brake Horsepower": The maximum brake horsepower rating at maximum revolutions per minute (rpm) specified for the engine by the manufacturer. Alternately the rated brake horsepower of an engine shall be the maximum allowable and enforceable rating specified by the District, stated in the Permit to Operate, and accepted by the engine operator.

7. "Retrofit": A modification to an existing engine in which an aftercooler, turbocharger, or emissions control device has been added or the engine has been rebuilt to the extent that the crankshaft has been removed and replaced.
8. "Replacement": The removal of an existing engine and subsequent installation of a different engine in its place.
9. "Rich-burn Engine": Any four-stroke, naturally aspirated, spark-ignited engine or any spark-ignited internal combustion engine that is operated with an exhaust stream oxygen concentration of less than four (4) percent by volume before add-on controls. For engines using a catalyst, the exhaust gas oxygen content shall be determined from the uncontrolled exhaust stream before the catalyst.
10. "Stationary Internal Combustion Engine": Any internal combustion engine of the reciprocating type that is operated at the same location for more than one year or is attached to a foundation.

C. EXEMPTIONS. With the exception of recordkeeping and reporting requirements necessary to justify an exemption, the provisions of this Rule shall not apply to the operation of stationary internal combustion engines used under the following conditions:

1. Engines rated at less than or equal to 50 brake horsepower.
2. Engines operated less than 200 hours per calendar year.
3. Emergency standby engines operated during either an emergency or maintenance operation. Maintenance operation is limited to 100 hours per calendar year.
4. Engines used in research or teaching programs.
5. Engines used in agricultural operations in the growing of crops or the raising of fowl or animals.
6. Engine test stands used for evaluating engine performance.
7. Diesel engines used to power cranes and welding equipment.

D. REQUIREMENTS

1. Spark-Ignited Engines: The owner or operator of a spark-ignited engine to which this Rule is applicable shall limit emissions from that engine to no more than the following:

Engine Type	NOx (ppm _v)	CO (ppm _v)
Rich-burn	50	4500
Lean-burn	125	4500

where: ppm_v = parts per million by volume referenced at dry stack-gas conditions and 15 percent by volume stack-gas oxygen (dry at 15% O₂)
 NO_x = oxides of nitrogen (calculated as nitrogen dioxide)
 CO = carbon monoxide

2. In lieu of compliance with a NO_x emission limit in Subsection D.1, the owner or operator of a spark-ignited engine may achieve and maintain a NO_x reduction by volume percentage specified below:

Rich-burn	90 percent
Lean-burn	80 percent

NO_x reduction by volume percentages shall be determined in accordance with Subsections F.1 and F.2. The emission limits for CO listed in Subsection D.1 shall still be applicable.

3. Diesel Engines: The owner or operator of a diesel engine shall limit emissions from that engine or its replacement to no more than 600 ppm_v NO_x, or a NO_x reduction by volume percentage of 30 percent as determined in accordance with Subsections F.1 and F.2. In addition, CO emissions shall be limited to 4500 ppm_v. All ppm_v values shall be referenced at dry stack-gas conditions and 15 percent by volume stack-gas oxygen.
4. No person shall allow the discharge into the atmosphere of ammonia (NH₃) emissions in excess of 20 ppm_v from any emission control device requiring NH₃ installed and operated pursuant to the requirements of Subsection D.1, D.2, or D.3 above.
5. The owner or operator of any stationary internal combustion engine subject to the provisions of Section D of this Rule shall demonstrate compliance with the emission limits at least once every 8760 hours of engine operation or once every three (3) calendar years, whichever comes first.

- E. ENGINE OPERATOR INSPECTION PLAN. The owner or operator of an engine subject to the provisions of Subsection D.1, D.2, or D.3 of this Rule shall submit an Engine Operator Inspection Plan (Plan) for approval by the Air Pollution Control Officer (APCO). The Plan shall be updated after any change in operation. The operator may request a change to the Plan at any time.

The Plan shall include the following:

1. The manufacturer, model number, rated horsepower, and combustion type (i.e., rich-burn, lean-burn, or diesel) of the engine.
2. A description of the NO_x control system installed on the engine (if any), including type (e.g., nonselective catalyst, "clean-burn" combustion) and manufacturer, as

well as a description of any ancillary equipment related to the control of emissions (e.g., automatic air/fuel ratio controller, fuel valves).

3. The facility-defined equipment identification number and the location of the engine on a map or plot plan of the affected facility.
4. A specific engine inspection procedure to ensure that the engine is operated in compliance with the provisions of this Rule. The procedure shall include an inspection schedule and the inspection log format as required by Section G below. Inspections shall be conducted every quarter or after every 2,000 hours of engine operation. In no event shall the frequency of inspection be less than once per year.
5. A description of each preventive or corrective maintenance procedure or practice that will be used to maintain the engine and NO_x control system in compliance with the provisions of this Rule.

F. TEST METHODS

1. NO_x and CO emissions, and oxygen content for compliance source tests shall be determined by using ARB Method 100.
2. Percentage NO_x reductions shall be determined by measuring concurrently at the inlet and outlet of the emission control device. For engines not employing emission control devices, percentage NO_x reductions shall be determined by measuring the uncontrolled NO_x emissions prior to modification and comparing with NO_x emissions after engine modification. A source test plan for the measurement of uncontrolled NO_x emissions shall be submitted to the District for approval no less than 15 days prior to testing.
3. Source test data point intervals shall be no greater than five (5) minutes and data points shall be averaged over fifteen (15) consecutive minutes.
4. NH₃ emissions shall be determined using Bay Area Air Quality Management District Method ST-1B.
5. An alternative source test method may be used provided the alternative method is at least as accurate as the test methods listed above and further provided that the alternative method has been approved by the ARB or EPA, and has received prior written approval from the APCO.

G. RECORDKEEPING

1. The operator of any engine subject to the provisions of Section D of this Rule shall maintain an inspection log that includes, on a monthly basis the following data:
 - a. Date and results of each engine inspection,

- b. A summary of any preventive or corrective maintenance taken,
 - c. The total hours of operation,
 - d. The type and quantity of fuel used, and
 - e. Any additional information required in the Engine Operator Inspection Plan.
2. The operator shall maintain the inspection log for a period of three (3) years after the date of each entry. The log shall be available for inspection by the District upon request.
- H. REPORTING. On or before March 1 of each year, each owner or operator with engines subject to the provisions of this Rule shall submit a report to the APCO specifying the actual annual fuel usage and operating hours for each affected engine. The report shall also include the engine manufacturer, model number, facility-defined equipment identification number, and a summary of the maintenance reports as required in Section G.
- I. COMPLIANCE SCHEDULE
1. Diesel Engines: After May 1, 2000, any person with an existing stationary internal combustion diesel engine to which this Rule is applicable shall comply with the requirements of Subsection D.3 upon retrofit or replacement of that diesel engine. A complete Authority to Construct Application shall be submitted to the APCO at least 60 days prior to retrofit or replacement.
2. The owner or operator of an engine subject to the provisions of Subsection D.1, D.2, or D.3 shall submit an Engine Operator Inspection Plan no later than 60 days after receiving a District Permit to Operate.