

310 CMR 7.20 Engines and Combustion Turbines

(1) Definitions

Emergency means an electric power outage due to failure of the grid, on-site disaster, local equipment failure, or public service emergencies such as flood, fire, or natural disaster. Emergency shall also mean when the imminent threat of a power outage is likely due to failure of the electrical supply or when capacity deficiencies result in a deviation of voltage from the electrical supplier to the premises of three percent (3%) above or five percent (5%) below standard voltage.

Engines mean spark ignition and compression ignition stationary reciprocating internal combustion engines.

Rated Power Output means the maximum electrical or equivalent mechanical power output stated on the nameplate affixed to the engine or turbine by the manufacturer.

Supplier means a person that manufactures, assembles, or otherwise supplies engines or turbines.

Turbine means a stationary combustion turbine.

(2) General Applicability

- (a) 310 CMR 7.20 in its entirety shall apply to engines and combustion turbines that are installed on and after July, 2004 and that are not subject to Prevention of Significant Deterioration (40 CFR 52.21) or Non-Attainment Review at 310 CMR 7.00: Appendix A.
- (b) Engines that operate in a manner subject to 40 CFR 89, 90, 91, and 92 are exempt from the requirements of 310 CMR 7.20 in its entirety.

(3) Emergency Engines and Turbines

(a) Applicability 310 CMR 7.20(3) shall apply to all emergency engines with a rated power output equal to or greater than 37kW and emergency turbines with a rated power output less than 1 MW that are constructed, substantially reconstructed or altered after July 1, 2004. Peaking power units, load shaving units or units in an energy assistance program are subject to the requirements of 310 CMR 7.20(4).

- 1. Emergency turbines with a rated power output equal to or greater than 1 MW shall comply with the provisions of 310 CMR 7.02(5).
- 2. Emergency engines and turbines that are subject to 310 CMR 7.02(8)(i) or 310 CMR 7.03(10) shall continue to be subject to the

requirements of such sections as applicable and the fuel requirements of 310 CMR 7.20(3)(c).

3. Emergency engines and turbines subject to 310 CMR 7.20(3) are not subject to the requirements of 310 CMR 7.02(5).

(b) Emission Limitations Emergency engines and turbines must comply with the emission limitations set forth in this section.

1. Emergency engines with a rated power output equal to or greater than 37 kW but less than 1 MW must comply with the applicable emission limitations set by the US EPA for non-road engines (40 CFR 89) at the time of installation. The owner or operator of an emergency engine subject to the requirements of 310 CMR 7.20(3)(b)1. must obtain from the supplier, a statement that a certificate of conformity has been obtained from the Administrator pursuant to 40 CFR 89.105. Any engine certified under the US EPA non-road standards is automatically certified to operate as an emergency engine pursuant to 310 CMR 7.20(3).
2. All emergency engines with a rated power output equal to or greater than 1 MW shall comply with the emission limitations in Table 1 of this subsection.

Table 1
Emission Limitations – Emergency Engines

Rated Power Output	Oxides of Nitrogen	Carbon Monoxide	Particulate Matter
≥1 MW to < 2MW	18.3 lbs/MW-hr	5.0 lbs/MW-hr	0.45 lbs/MW-hr
≥ 2 MW	16.3 lbs/MW-hr	1.5 lbs/MW-hr	0.45 lbs/MW-hr

3. All emergency turbines with a rated power output less than 1 MW shall comply with the emission limitations contained in Table 2.

Table 2
Emission Limitations – Emergency Turbines

Rated Power Output	Oxides of Nitrogen
< 1 MW	0.60 pounds/MW - hr

(c) Fuel Requirements No person shall accept delivery for burning in any engine or turbine subject to 310 CMR 7.20(3), diesel fuel that does not meet the current U.S. Environmental Protection Agency sulfur limits for fuel as implemented and allowed by 40 CFR 80.29, 40 CFR 80.500(a), and 40 CFR 80.520(a) and (b).

(d) Operational Requirements

1. Hours of Operation The engine(s) or turbine(s) shall not be operated more than 300 hours during any rolling 12-month period. This operating restriction includes normal maintenance and testing procedures as recommended by the manufacturer and periods when the primary power source for a facility has been lost during an emergency, such as a power outage, an on site disaster or an act of God. A non-turnback hour counter shall be installed, operated and maintained in good working order on each unit.
2. Operation and Maintenance The engine(s) or turbine(s) shall be operated and maintained in accordance with the manufacturer's recommended operating and maintenance procedures.
3. Sound Engines, turbines and associated equipment shall be constructed, operated and maintained in a manner to comply with the requirements of 310 CMR 7.10 Noise.
4. Stack Height and Emission Dispersion
 - a. All engines or turbines shall utilize an exhaust stack that discharges so as to not cause a condition of air pollution. The stack height shall be a minimum of ten feet above, the lower of, the facility rooftop or the engine or turbine enclosure. Particular care must be taken to locate stack exits to avoid impact with building fresh air intakes.
 - b. Exhaust stacks shall be configured to discharge the combustion gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted combustion gases, including but not limited to rain protection devices "shanty caps" and "egg beaters".
 - c. Engines and Turbines with a rated power output equal to or greater than one MW shall be equipped with a stack with a minimum stack height of 1.5 times the height of the building on which the stack is located. If the stack is lower than 1.5 times the building height or lower than the height of a structure that is within 5L of the stack (5L being five times the lesser of the height or maximum projected width of the structure), an EPA Guideline air quality model shall be run to document that the operation of the applicable engine or turbine will not cause an exceedance of any National Ambient Air Quality Standard.
5. Visible Emissions Engines and turbines must comply with all the requirements of 310 CMR 7.06(1) (a) & (b).

(e) Emission Certification, Monitoring and Testing

1. Certification No person shall cause, suffer, allow, or permit the installation and subsequent operation of an emergency engine or emergency turbine unless said person has certified compliance with the requirements of 310 CMR 7.20(3) in its entirety in accordance with the provisions of 310 CMR 70.03 Compliance Certification Requirements. Certification shall include a statement that the installed engine or turbine is capable of complying with the emission limitations for the first three years of operation.
2. Monitoring The Department may require emission or other monitoring to assure compliance with the requirements of 310 CMR 7.20(3).
3. Testing Tests to certify compliance with emission limitations must be performed in accordance with EPA reference Methods, California Air Resources Board Methods, or equivalent methods as approved by the Department. Particulate matter, from liquid fuel reciprocating engines, shall be determined by International Organization for Standardization Method 8178. Testing shall be conducted at full design load of the engine or turbine. The Department may require emission or other testing to assure compliance with the emission limitations or fuel requirements.

(f) Record Keeping and Reporting The owner or operator shall maintain records described in 310 CMR 7.20(3)(f)1. through 4. Such records shall be made available to the Department or its designee upon request. The owner or operator shall certify that records are accurate and true in accordance with 310 CMR 70.03 Compliance Certification Requirements.

1. Information on equipment type, make and model, and rated power output; and
2. A monthly log of hours of operation, gallons of fuel used, fuel type, sulfur content, and heating value. A monthly calculation of the total hours operated and gallons of fuel used in the previous 12 months shall be kept on site; and
3. Purchase orders, invoices, and other documents to support information in the monthly log.
4. Copies of certificates and other information from the manufacturer.

(4) Engines and Turbines

(a) Applicability 310 CMR 7.20(4) in its entirety shall apply to engines with a rated power output equal to or greater than 50kW and to turbines with a rated

power output less than or equal to 10 MW that are constructed, substantially reconstructed, or altered on or after July 1, 2004.

1. Engines and turbines subject to 310 CMR 7.20(3) are not subject to the requirements of 310 CMR 7.20(4).
2. The owner or operator of any engine or turbine subject to 310 CMR 7.20(4) to be operated as a peaking power production unit, load shaving unit, or unit in an energy assistance program, may file a Comprehensive Plan Application required by 310 CMR 7.02(5) for approval of such unit in lieu of complying with the requirements of 310 CMR 7.20(4). Application must be made and Department written approval granted prior to construction, substantial reconstruction, or alteration.

(b) Emission Limitations Engines or turbines subject to 310 CMR 7.20(4) shall comply with the emission limitations established in Table 3 and 4 below.

1. A supplier of an engine or turbine may seek to certify that its engines or turbines meet the emission limitations established in Tables 3 and 4. Certification will apply to a specific make and model number of engine or turbine. Certification means that the engine or turbine is capable of meeting the emission limitations for the lesser of 15,000 hours of operation or the first three years of operation. Supplier certification shall be on forms provided by the Department.
2. On or before December 31, 2010, the Department shall complete a review of the state of, and expected changes in, technology and emission rates. The purpose of this review will be to determine whether the Table 3 emission limitations for engines to be installed on and after July, 2012, should be amended.
3. Beginning in 2017 and every five years thereafter, the Department shall review the state of technology and emission rates and determine whether the emission limits defined in Tables 3 and 4 should be amended.
4. The Department may from time to time review the state of technology and emission rates to determine whether the emission limits defined in Table 4 should be amended.

Table 3
Emission Limitations – Engines

Installation Date	Oxides of Nitrogen	Particulate Matter (Liquid Fuel)	Carbon Monoxide	Carbon Dioxide
On and after 1/1/04	0.6 lbs/MWh	0.7 lbs/MWh; ≥ 1 MW 0.09 lbs/MW	10 lbs/MWh	1900 lbs/MWh
On and after 1/1/08	0.3 lbs/MWh	0.07 lbs/MWh	2 lbs/MWh	1900 lbs/MWh
On and after 1/1/12	0.15 lbs/MWh	0.03 lbs/MWh	1 lb/MWh	1650 lbs/MWh

Table 4
Emission Limitations – Turbines

Rated Power Output	Oxides of Nitrogen	Ammonia	Particulate Matter	Carbon Monoxide
Less than 1 MW	0.47 lbs/MW-hr Gas		0.10 lbs/MW-hr	0.47 lbs/MW-hr Gas
1 to 10 MW	0.14 lbs/MW-hr Gas 0.34 lbs/MW-hr Oil	2.0 ppm	0.10 lbs/MW-hr	0.09 lbs/MW-hr Gas 0.18 lbs/MW-hr Oil

(c) Fuel Requirements No person shall accept delivery for burning in any engine or turbine subject to 310 CMR 7.20(4), diesel fuel that does not meet the current U.S. Environmental Protection Agency sulfur limits for fuel as implemented and allowed by 40 CFR 80.29, 40 CFR 80.500(a) and 40 CFR 80.520(a) and (b).

(d) Operational Requirements

1. Operation and Maintenance The engine(s) and turbine(s) shall be operated and maintained in accordance with the manufacturers recommended operating and maintenance procedures.

2. Sound Engines, turbines and associated equipment shall be constructed, operated and maintained in a manner to comply with the requirements of 310 CMR 7.10 Noise.
3. Stack Height and Emission Dispersion
 - a. All engines or turbines shall utilize an exhaust stack that discharges so as to not cause a condition of air pollution. The stack height shall be a minimum of ten feet above, the lower of, the rooftop or the engine or turbine enclosure. Particular care to locate stack exits to avoid impact with building fresh air intakes.
 - b. Exhaust stacks shall be configured to discharge the combustion gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted combustion gases, including but limited to, the rain protection devices “shanty caps” and “egg beaters”.
 - c. Engines and Turbines with a rated power output equal to or greater than one MW shall be equipped with a stack with a minimum stack height of 1.5 times the height of the building on which the stack is located. If the stack is lower than 1.5 times the building height or lower than the height of a structure that is within 5L of the stack (5L being five times the lesser of the height or maximum projected width of the structure), an EPA Guideline air quality model shall be run to document that the operation of the applicable engine or turbine will not cause an exceedance of any National Ambient Air Quality Standard.
4. Visible Emissions Engines and turbines must comply with all the requirements of 310 CMR 7.06(1) (a) & (b).

(e) Emission Certification, Monitoring and Testing

1. Certification No person shall cause, suffer, allow, or permit the installation and subsequent operation of an engine or turbine unless said person has certified compliance with the requirements of 310 CMR 7.20(4) in its entirety in accordance with the provisions of 310 CMR 70.03(2), (3), and (4). Certification shall include a statement from the manufacturer that the installed engine or turbine is capable of complying with the emission limitations for 15,000 hours of operation or the first three years of operation, whichever comes first.
2. Monitoring The Department may require emission or other monitoring to assure compliance with the requirements of 310 CMR 7.20(4).
3. Testing Tests to certify compliance with emission limitations must be performed in accordance with EPA reference Methods, California Air Resources Board Methods, or equivalent methods as approved by the Department. Particulate matter, from liquid fuel reciprocating engines, shall be determined by the International Organization for Standardization

Method 8178. The Department may require emission or other testing to assure compliance with the emission limitations or fuel requirements.

- (f) Record Keeping and Reporting The owner or operator shall maintain records described in 310 CMR 7.20(4)(f)1. through 4. Such records shall be made available to the Department or its designee upon request. The owner or operator shall certify that records are accurate and true in accordance with 310 CMR 70.03 Compliance Certification Requirements.
1. Information on equipment type, make and model, and maximum power output; and
 2. A monthly log of hours of operation, gallons of fuel used, fuel type and heating value, and a monthly calculation of the total hours operated and gallons of fuel used in the previous 12 months shall be kept on site; and
 3. Purchase orders, invoices, and other documents to support information in the monthly log.
 4. Copies of certificates and other information from the manufacturer.
- (5) Change in Operational Status An owner or operator of an engine or turbine subject to the requirements of 310 CMR 7.20(3) Emergency Engines and Turbines may elect to remove the hours of operation restriction to operate in a non-emergency by complying with either of the two following methods.
- (a) Submit an application for approval and receive approval under the requirements of 310 CMR 7.02(5); or
 - (b) Certify to the Department that the engine or turbine meets all applicable requirements of 310 CMR 7.20(4).