

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT

RULE 475 - ELECTRIC POWER GENERATING EQUIPMENT

*(Adopted: 05/07/76; Amended: 10/08/76; CARB Ex. Ord. G-73: 02/01/77;
Readopted: 7/25/77; Amended: 05/16/81; 01/22/96; 08/25/97)*

(A) General

(1) Purpose

- (a) The purpose of this rule is to limit emissions of oxides of nitrogen (NO_x) and Particulate Matter from non-mobile, Electric Power Generating Equipment.

(2) Applicability

- (a) The rule applies to non-Mobile Electric Power Generating Equipment having a maximum Rated Heat Input of more than 50 million Btu (MMBtu) per hour. If the non-Mobile Electric Power Generating Equipment is operated in such a manner that exceeds the maximum Rated Heat Input such that the equipment operates over 50 MMBtu per hour, such equipment is also subject to this rule.
- (b) The NO_x emission limits of this rule shall not apply to Electric Power Generating Equipment which is subject to a NO_x emission limit in District Rule 1157, 1158, 1159 or 1160.

(B) Definitions

For the purposes of this rule, the following definitions apply:

- (1) "Air Contaminant" - any discharge, release, or other propagation into the atmosphere directly or indirectly caused by man and includes, but is not limited to, smoke, charred paper, dust, soot, grime, carbon, fumes, gases, odors, particulate matter, acids or any combination thereof.
- (2) "Air Pollution Control Officer" (APCO) - the person appointed to the position of Air Pollution Control Officer of the District pursuant to the provisions of the California Health & Safety Code §40750, and his or her designee.
- (3) "California Air Resources Board" (CARB) - the California State Air Resources Board the powers and duties of which are described in Part 2 of Division 26 of the California Health & Safety Code (commencing with §39500).
- (4) "Continuous Emissions Monitoring System (CEMS)" - The total equipment necessary for the continuous determination and record keeping of process gas NO_x concentrations and NO_x emission rates. The system must meet the

requirements of 40 CFR Part 60, Subpart A, and Appendix B, and must comply with the quality assurance procedures specified in 40 CFR Part 60, Appendix F.

- (5) "District" - the Mojave Desert Air Quality Management District the geographical area of which is described in District Rule 103.
- (6) "Electric Power Generating Equipment" - any article, machine, equipment or contrivance which is used to generate electric power. If the simultaneous operations of more than one internal combustion engine, Gas Turbine or other such equipment are required for the generation of electric power, then the minimum number necessary shall be considered as one piece of Electric Power Generating Equipment.
- (7) "Emission Control System Operating Parameters" – any operating parameter(s) of installed emission control equipment that the District deems necessary to analyze for the determination of compliance. Such parameters may include, but are not limited to, the ammonia and gas flow rates, exhaust temperature, humidity, water injection rate, exhaust gas flow rate and the temperature for water injection.
- (8) "Gas Turbine" - an internal combustion engine fired on natural gas that operates with rotary rather than reciprocating motion.
- (9) "Heat Input" - the chemical heat released due to fuel combustion in Electric Power Generating Equipment, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.
- (10) "Higher Heating Value" - the total heat liberated, including the heat of condensation of water, per mass of fuel burned (Btu per pound) when fuel and dry air at standard conditions undergo complete combustion and all resultant products are brought to standard conditions.
- (11) "Mobile Source" - a device by which any person or property may be propelled, moved, or drawn upon the surface, waterways, or through the atmosphere, and which emits Air Contaminants. For the purpose of this rule, mobile source includes registered motor vehicles which are licensed and/or driven on the public roadways of the state of California.
- (12) "Monitoring Plan" – a document which specifies the parameters to be monitored and records to be kept for each piece of Electric Power Generating Equipment subject to the Rule. Parameters to be monitored and/or recorded may include, but are not limited to: annual hours of operation; equipment load; the type, higher heating value and annual usage of each fuel; occurrence and duration of start-up, shut-down and breakdown periods; the results of compliance tests; monitored NO_x, Particulate Matter and stack-gas oxygen (O₂) concentrations; and Emission Control System Operating Parameters.
- (13) "Particulate Matter" - any material, except uncombined water, which exists in a finely divided form as a liquid or solid at standard conditions.

- (14) "Rated Heat Input" - the Heat Input capacity of the Electric Power Generating Equipment as specified by the manufacturer, expressed in terms of MMBtu per hour.
- (15) "United States Environmental Protection Agency" (USEPA) - the United States Environmental Protection Agency, the Administrator of the USEPA and his or her authorized representative.

(C) Requirements

(1) Gas Turbines

- (a) A person shall not emit from Gas Turbines which are used to produce electric power:
 - (i) NO_x, expressed as nitrogen dioxide (NO₂), referenced at dry stack-gas conditions and 15.0 percent by volume stack-gas oxygen, in excess of 42 parts per million by volume (ppmv).
 - (ii) Particulate Matter that exceeds **both** of the following two limits:
 - 1. 5 kilograms (11 pounds) per hour; and
 - 2. 7.6 milligrams per standard cubic meter (0.003 grains/standard cubic foot), referenced at standard, dry stack-gas conditions and 15.0 percent by volume stack-gas oxygen.

(2) All Other Electric Power Generating Equipment

- (a) A person shall not emit from any Electric Power Generating Equipment, except Gas Turbines:
 - (i) NO_x, expressed as NO₂, referenced at dry stack-gas conditions and 3.0 percent by volume stack-gas oxygen, in excess of:
 - 1. 80 ppmv, when operated on gaseous fuel;
 - 2. 160 ppmv, when operated on liquid fuel;
 - 3. 225 ppmv, when operated on solid fuel; or
 - 4. the heat input weighted average of the limits specified in (C)(2)(a)(i)1-3 above, when operated on combinations of gaseous, and/or liquid, and/or solid fuels.
 - (ii) Particulate Matter that exceeds **both** of the following two limits:
 - 1. 5 kilograms (11 pounds) per hour; and
 - 2. 23 milligrams per standard cubic meter (0.01 gr/standard cubic foot), referenced at standard, dry stack-gas conditions and 3.0 percent by volume stack-gas oxygen.

(D) Monitoring and Records

(1) Frequency

- (a) All Electric Power Generating Equipment subject to subsection (C)(1)(a)(i) or (C)(2)(a)(i) shall demonstrate compliance with the NO_x emission limits through emission compliance testing not less than once every twelve months. This twelve month period shall be measured based upon the permit renewal date or on an annual schedule as otherwise specified in writing by the District.
- (b) Electric Power Generating Equipment shall demonstrate compliance with the Particulate Matter emission limits through emission compliance testing not less than once every 12 months, unless the equipment is fired exclusively on natural gas. Electric Power Generating Equipment fired exclusively on natural gas shall demonstrate compliance with the Particulate Matter emission limits not less than once every 60 months. If the Electric Power Generating Equipment is fired on any fuel other than natural gas within the 60 month period, compliance with the Particulate matter emission limits shall be demonstrated when firing natural gas and when firing the fuel other than natural gas not less than once every twelve months.

(2) Procedures

- (a) Compliance testing required by this rule shall follow the administrative procedures outlined in the District's Compliance Test Procedural Manual. All emission determinations shall be made as stipulated in the test protocol accepted by the District. The results from compliance testing must be submitted to the District:
 - (i) For NO_x testing, on or before each annual permit renewal date or on an annual schedule as otherwise specified in writing by the District; and
 - (ii) For Particulate Matter testing, on a five year schedule beginning with the annual permit renewal date in 1998 or on a five year schedule as otherwise specified in writing by the District, unless subject to a shorter time frame pursuant to subsection (D)(1)(b), in which case results from compliance testing must be submitted on or before each annual permit renewal date or on an annual schedule as otherwise specified in writing by the District.
- (b) Compliance with the NO_x emission limit in subsection (C)(1) shall be based upon fifteen consecutive minute averages. Particulate Matter emission concentrations and emission rate shall be based upon the average of three (3) one-hour runs.

- (c) Compliance with the NO_x emission limits in subsection (C)(2) shall be based upon hourly averages. Particulate Matter emission concentrations and emission rate shall be based upon the average of three (3) one-hour runs.
- (d) Any owner or operator of Electric Power Generating Equipment subject to the NO_x limits of this Rule shall submit a Monitoring Plan to the District for approval. Upon approval of the Monitoring Plan, the District will notify the owner or operator in writing. The owner or operator shall keep current and on site for a minimum of two years such records as are specified in the District-approved Monitoring Plan. Records shall be updated routinely and made available to the District, CARB and USEPA upon request.
- (e) Any owner or operator of Electric Power Generating Equipment subject to the Particulate Matter limits of this Rule shall keep records current and on site for a minimum of two years.

(E) Test Methods

- (1) Compliance with the Particulate Matter limits in subsections (C)(1) and (C)(2) may be demonstrated using USEPA Method 5.
- (2) For Electric Power Generating Equipment not equipped with CEMS, compliance with the NO_x emission limit in subsection (C)(1) may be determined using USEPA Method 20 with the following modifications for a 15 minute average: each test shall consist of 15 minutes of sampling and the average over the 15 minutes shall be determined by integrating the area under the curve of the strip chart recorder or by averaging, at a minimum, the measurements from 30 equally spaced integrals over the 15 minute period.
- (3) For Electric Power Generating Equipment equipped with CEMS, compliance with the NO_x emission limit in subsection (C)(1) may be determined using USEPA Method 7E with the following modifications for a 15 minute average: each test shall consist of 15 minutes of sampling and the average over the 15 minutes shall be determined by integrating the area under the curve of the strip chart recorder or by averaging, at a minimum, the measurements from 30 equally spaced integrals over the 15 minute period.
- (4) Compliance with the NO_x emission limit in subsection (C)(2) may be demonstrated using USEPA Method 7E.
- (5) Determination of percent by volume stack-gas oxygen shall be determined using USEPA Method 3A or USEPA Method 3.
- (6) Certification of the higher heating value of a fuel, if not provided by a third party fuel supplier, shall be determined by one of the following methods:
 - (i) ASTM Test Method D240-87 or D2382-88 for liquid hydrocarbon fuels.

- (ii) ASTM Test Method D1826-88, or D1945-81, in conjunction with ASTM D3588-89 for gaseous fuels.
- (7) Alternative test methods may be used upon obtaining the approval of the Air Pollution Control Officer, CARB and USEPA.

(F) Compliance Schedule

- (1) The owner or operator of Electrical Power Generating Equipment which had previously been, or was in operation as of August 26, 1996 shall demonstrate final compliance with all applicable standards and requirements of the rule and submit verification to the District by January 1, 1998.
- (2) The owner or operator of Electric Power Generating Equipment which was not yet in operation as of August 26, 1996 shall comply with the provisions of this rule immediately upon commencing operation.

(G) Effective Date

- (1) The amendments to this Rule shall become effective on the date on which USEPA takes final action approving the Rule as a revision to the applicable State Implementation Plan and under conditions consistent with the provisions of Resolution 96-15 governing the effective date of those amendments.
- (2) Notwithstanding subsection (G)(1), the amendments to this Rule shall become effective as to the gas fired GE Frame 5 Model R Turbine located at Trona California on such earlier date as set forth in Resolution No. 96-15.

[SIP Information: Approved 01/11/99, 64 FR 1517, 40 CFR 52.220(c)(254)(i)(H)(1); Submitted as amended 08/26/96 on 10/18/96; Approved 09/08/78, 43 FR 40011, 40 CFR 52.220(c)(39)(ii)(C); Approved 06/14/78, 43 FR 25684, 40 CFR 52.220(c)(37)(i)(A)]