

# RULE 1158

## Electric Power Generating Facilities

### (A) General

(1) Purpose:

- (a) The purpose of this rule is to limit NO<sub>x</sub> emissions from Electric Power Generating Facilities.

(2) Applicability:

- (a) This rule applies to all existing electrical generating steam boilers, including any auxiliary boiler used in conjunction with an electrical generating steam boiler, combined-cycle turbine units and to replacement units that are located within the Federal Ozone Non-attainment Area.

### (B) Definitions

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

- (1) "Aggregated (Facility-wide) Limit" - means the annual emissions limit applicable to any Electric Power Generating Facilities (facility). The aggregated emissions cap is expressed in pounds of NO<sub>x</sub>; expressed as total annual NO<sub>x</sub> emissions in pounds from each permit unit and then aggregated (summed) for all boilers and combined-cycle turbine units at the facility.
- (2) "Annual Capacity Factor (ACF)": The ACF determines which level of emissions limits of subsection (C)(1) will apply to the boiler permit unit. The ACF shall be determined for peaking units, cycling units or baseload units, respectively, by the following calculation:

$$ACF_{pu} = \frac{\text{(actual megawatt hours)}}{(8760 \text{ hrs/yr.}) \times \text{(rated capacity in megawatts)}}$$

$$ACF_{cu} = \frac{\text{(actual megawatt hours)}}{(8760 \text{ hrs/yr.}) \times \text{(rated capacity in megawatts)}}$$

$$ACF_{bu} = \frac{(\text{actual megawatt hours})}{(8760 \text{ hrs/yr.}) \times (\text{rated capacity in megawatts})}$$

- (3) "Annual Heat Input": the total heat input of fuels, in Btu, burned by a permit unit in a calendar year, as determined from the higher heating value and cumulative annual usage of each fuel.
- (4) "Boiler or Steam Generator": any combustion equipment (fired with any fuel) used to produce steam. Boiler or steam generator does not include any waste heat recovery boiler that is used to recover sensible heat from the exhaust of a combustion turbine.
- (5) "Cogeneration Facility": a facility which produces:
- (a) electric energy; and
  - (b) steam or forms of useful energy (such as heat) which are used for industrial or commercial heating or cooling purposes.
- (6) "Combined-cycle Turbine Unit" - Any stationary gas turbine operated both for the production of electrical energy from shaft work and the useful energy produced from heat recovered from its exhaust gases.
- (7) "Electric Utility": a power plant which is directly regulated by the Public Utilities Commission, which provides power directly to rate-payers, and which is not a Qualifying Small Power Production Facility per Public Utility Regulatory Policies Act regulations ([18 CFR Ch.1, Subpart B](#)).
- (8) "Electric Power Generation Facility": any electrical generating steam boilers, including auxiliary boilers, or combined-cycle turbine units used in conjunction with an electrical generating steam boiler.
- (9) "Emissions Aggregating": means the sum of the emissions for the facility. Aggregated annual emissions are expressed as the accumulated pounds of NOx per (specified time period).

$$EM_1 + EM_2 + EM_3 + EM_4 = EM_{cap}$$

$$EM_1 = \text{lbs NOx/time (boiler 1)} \quad EM_2 = \text{lbs NOx/time (boiler 2)}$$

$$EM_3 = \text{lbs NOx/time (unit 3)} \quad EM_4 = \text{lbs NOx/time (unit 4)}$$

$$EM_{cap} = \text{the emissions cap per time}$$

- (10) "Emissions Control Plan": a document prepared by the facility which outlines how an existing facility will comply with the requirements of this rule. The plan shall contain the following:
- (a) a list of all permit units with their rated heat inputs and estimated annual capacity factors; and
  - (b) for each permit unit subject to the emissions limits of subsection (C)(2) or (C)(3), a statement as to the selected method of achieving the applicable standard; and
  - (c) for permit units for which installation of NO<sub>x</sub> reduction technology by May 31, 1995 is not practicable, a demonstration of why such installation cannot be achieved by that date, and a schedule of clearly defined compliance milestones that represent the most expeditious schedule practicable toward final compliance.
  - (d) and shall be reviewed by the District at least once every three years or at such time as applications are received by the District for new or revised Authority(ies) to Construct or Permit(s) to Operate.
- (11) "Emission Control System Operating Parameters" - Any operating parameter(s) that the District deems necessary for the determination of compliance.
- (12) "Federal Ozone Non-attainment Area": That portion of San Bernardino County that lies within the lines which begin at: (a) the San Bernardino - Riverside County boundary, running north along the range line common to Range 3 East and Range 2 East; (b) then west along the township line common to Township 2 North and Township 3 North; (c) then north along the San Bernardino - Los Angeles County Boundary and the San Bernardino - Kern County Boundary; (d) then east along latitude 35 degrees, 10 minutes north; (e) then south along longitude 115 degrees, 45 minutes west, and west along the San Bernardino - Riverside County Boundary.
- (13) "Heat Input": the chemical heat released due to fuel combustion in a permit unit, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.
- (14) "Heat-input Weighted Average (Combined fuels)" When a permit unit is operated on combinations of gaseous and liquid fuels, the emissions limits for the applicable annual capacity factor class shall be calculated for each boiler by the following formula:

Sample calculation:

$$\text{Emission limit} = \frac{(\text{gas ppmv} * x) + \text{liquid ppmv} * y}{x + y}$$

where x = actual heat input from gaseous fuel

y = actual heat input from liquid and/or solid fuel

- (15) "Higher Heating Value, (HHV)": the total heat liberated 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.
- (16) "Independent Power Producer": a power plant which is not directly regulated by a Public Utilities Commission, which provides power to an Electric Utility rather than directly to rate-payers, and which is a Qualifying Small Power Production Facility per Public Utility Regulatory Policies Act regulations ([18 CFR Ch.1, Subpart B](#)).
- (17) "NO<sub>x</sub> Emissions, (NO<sub>x</sub>)": the sum of any oxides of nitrogen which can be measured in the flue gas, expressed as nitrogen dioxide (NO<sub>2</sub>).
- (18) "Parts per Million (by Volume), (ppmv)": the number of gas molecules of a given species, or group, in one million total gas molecules.
- (19) "Permit Unit": any boiler or steam generator and/or combined-cycle turbine unit required to have a Permit to Operate pursuant to District [Rule 203](#).
- (20) "Process Heater": any combustion equipment fired with any fuel, which transfers heat from combustion gases to water or process streams. Process heater does not include any dryers in which the material being dried is in direct contact with the products of combustion, such as: cement or lime kilns, glass melting furnaces, or smelters.
- (21) "Rated Heat Input": the heat input capacity (in MMBtu/hr) specified on the nameplate of the permit unit, unless:
- (a) the permit unit is limited by permit condition to a lesser heat input than specified on the nameplate, in which case the limiting condition shall be used as the rated heat input; or
  - (b) the permit unit is operated above the heat input capacity specified on the nameplate, in which case the maximum operated rate shall be used as the rated heat input.

- (22) "Reasonably Available Control Technology (RACT)": the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility .
- (23) "Shut-down Period": the one hour time period immediately preceding a continuous period in which fuel flow to the permit unit is zero, or shut off for 30 minutes or longer.
- (24) "Solar Power Production Facility": an independent power producer which is a Solar Thermal Power plant per Public Resources Code §25140.
- (25) "Start-up Period": the one hour time period immediately following a continuous period in which fuel flow to the permit unit is zero, or shut off for 30 minutes or longer.
- (26) "Thermal Stabilization Period" - The start up or shut down time necessary to bring the heat recovery steam generator to the proper operating temperature, not to exceed two hours.

(C) Requirements

- (1) NO<sub>x</sub> RACT Emissions Limits for Boilers:
  - (a) All boilers shall not emit oxides of nitrogen in excess of the following:
 

<u>Permit Unit Classification</u>	<u>NO<sub>x</sub> Limit</u>
For Baseline units (ACF <sub>bu</sub> = 60% and greater)	70 ppmv on gaseous fuels 115 ppmv on liquid fuels
For Cycling units (ACF <sub>cu</sub> = 31 to 59%)	100 ppmv on gaseous fuels 115 ppmv on liquid fuels
For Peaking units (ACF <sub>pu</sub> = less than 30%)	125 ppmv on gaseous fuels 225 ppmv on liquid fuels
  - (b) All ppmv emission limits for boilers are referenced at dry stack-gas conditions and 3.0 percent by volume stack-gas oxygen as an hourly average.
  - (c) If the ACF of a permitted unit becomes greater than that prescribed for its permit unit classification, then such unit shall thereafter be classified as belonging to the next greater permit unit classification.

- (2) NO<sub>x</sub> RACT Emissions Limits for Combined-cycle Turbines:
- (a) All Combined-Cycle Turbine Units shall not emit NO<sub>x</sub> in excess of the following:

NO<sub>x</sub> Limit

42 ppmv on gaseous fuels

65 ppmv on liquid fuels

- (b) All ppmv emission limits for combined-cycle turbine unit is referenced at dry stack-gas conditions and 15.0 percent by volume stack-gas oxygen as an hourly average.

- (3) Aggregated Annual NO<sub>x</sub> Emissions Cap:

- (a) The Electric Power Generation Facility of Southern California Edison, or its successor, located at Coolwater Facility in Dagger, California, shall not operate the facility with facility-wide NO<sub>x</sub> emissions in excess of the following aggregated annual limits:

<u>Year</u>	<u>Aggregated Annual Cap (Tons/year)</u>
Ending December 31, 1996	1,516
Ending December 31, 1997	1,484
Ending December 31, 1998	1,453
Ending December 31, 1999	1,421
Ending December 31, 2000	1,387
Ending December 31, 2001	1,353
Ending December 31, 2002	1,319
After December 31, 2002	1,319

- (4) General Equipment Requirements:

- (a) The owner/operator of any permit units which are subject to the requirements of [Subsections \(C\)\(1-3\)](#) above, shall:
- (i) install volumetric flow rate meters in each liquid fuel line; or

- (ii) install volumetric flow rate meters in conjunction with temperature and pressure probes in each gaseous fuel line; or
  - (iii) maintain a fuel log in the form and manner prescribed and approved by the APCO.
- (b) The owner/operator of any permit units which are subject to the requirements of Subsections (C)(1-3) shall have CEMS equipment installed, certified and operating on all emissions points. The CEMS equipment shall be certified in accordance with 40 CFR 75, Appendix A, Section 6.
  - (c) The owner/operator of any permit unit subject to the requirements of section (C)(1-3) above shall submit an Emissions Control Plan for District approval.
  - (d) When any exemption pursuant to subsection (D)(3) is no longer applicable, the facility shall submit an Emissions Control Plan to the District within 90 days following such termination of exempt status.
  - (e) When the annual capacity factor (ACF) threshold for the permit unit classification is exceeded, the permit unit is thereafter to be permitted as belonging to the next higher classification.

## (D) Exemptions

- (1) During periods of unexpected curtailment of gaseous fuels, boiler permit units subject to the requirements of subsection (C)(1) which normally burn only gaseous fuel shall:
  - (a) comply with a NO<sub>x</sub> emission limit of 225 ppmv NO<sub>x</sub> when burning liquid fuel.
  - (b) This exemption shall not exceed the period of natural gas curtailment.
  - (c) This exemption shall apply when equipment is undergoing compliance testing. For the purpose of this exemption, the applicable compliance testing time period shall not exceed 48 hours per calendar year).
- (2) The following classes of facilities, which are subject to District Rules 1157 or 1159, are exempt from this rule:
  - (a) Cogeneration Facility
  - (b) Process Heaters

- (c) Independent Power Producers
- (d) Solar Power Production Facilities
- (3) The provisions of Section (C)(1) of this rule shall not apply to permit units which have no annual heat input (annual heat input equals zero).
  - (a) The owner/operator of any permit unit who wishes to claim an exemption pursuant to this subsection shall meet the record keeping requirements of this rule so as to be able to prove the exemption status.
- (4) Electric Power Generation Facility located outside of the Federal Ozone Non-attainment Area are exempt from requirements of this rule.

## (E) Monitoring and Records

- (1) CEMS Quality Assurance Testing:
  - (a) An initial CEMS Certification Test shall be conducted on or before May 31, 1995, and the report shall be submitted to the District within 90 days of the completion of the testing.
  - (b) Following the initial certification of the installed CEMS, the company shall follow the Quality Assurance Procedures as outlined in 40 CFR 75, Appendix B. The Quality Assurance Program includes, but is not limited to: a daily Calibration Error determination; a quarterly Linearity Error Test; and an annual Relative Accuracy Test Audit.
- (2) Testing Procedures:
  - (a) All testing required by this rule shall be in accordance with the applicable procedures outlined in 40 CFR 60, and/or 40 CFR 75. All testing shall be approved by the District pursuant to the District's Compliance Test Procedural Manual.
  - (b) Relative Accuracy Test Audits shall be conducted in accordance with provisions of 40 CFR 75, Appendix A, Section, Part 6.5.
  - (c) Compliance determinations shall not be established based on data obtained from testing, including integrated sampling methods, during a start-up period or shut-down period of boilers nor during the thermal stabilization period for combined-cycle turbine units.

- (d) All pounds of NO<sub>x</sub> per day shall be determined as the sum of the hourly mass emissions.
- (3) Additional Procedures - Boilers:
- (a) All concentration emission limits specified in subsections (C)(1) and (D)(1) for boilers are referenced at dry stack-gas conditions and 3.0 percent by volume stack-gas oxygen as an hourly average.
- (4) Additional Procedures - Combined-cycle Turbine Units
- (a) All concentration emission limits specified in subsection (C)(2) for combined-cycle turbine units are referenced at dry stack-gas conditions and 15.0 percent by volume stack-gas oxygen as an hourly average.
- (5) Records and Reporting
- (a) The owner/operator of a permit unit subject to this rule shall monitor and record for each unit:
    - (i) The cumulative annual usage of each fuel. (The cumulative annual usage of each fuel shall be monitored from service meters, purchase or tank fill records, or by any other acceptable methods, as approved by the Air Pollution Control Officer.)
    - (ii) The HHV for liquid fuels burned shall be determined from daily samples and reported as a monthly average for each month.
  - (b) Boiler and Turbine Operating Logs: On a daily basis for each permit unit, the owner/operator shall maintain an operating log that includes, as a minimum, the following information:
    - (i) the actual start-up and stop times;
    - (ii) the hours of operation per day;
    - (iii) the hourly averaged NO<sub>x</sub> emission concentration for each permit unit;
    - (iv) A monthly summary of the accumulative aggregated annual pounds of NO<sub>x</sub> emissions for the facility; and
    - (v) the type and quantity of fuel used.
  - (c) The owner/operator of a permit unit exempt pursuant to subsection (D), shall monitor and record for each permit unit the hours of operation on liquid fuel, on a daily basis .

- (d) The owner/operator of any permit unit required to perform CEMS Quality Assurance Testing shall make the reports available to the MDAQMD upon request.
- (e) All data and records required to be kept pursuant to this rule shall:
  - (i) be kept current and on site for a minimum of three years, and
  - (ii) provided to District or state personnel on request.

(F) Test Methods

- (1) Certification and Quality Assurance Testing shall be subject to the protocols prescribed in the District's Compliance Procedural Manual as well as 40 CFR 60, Appendix A and 40 CFR 75 Appendix A and B.
- (2) Compliance Testing for Boilers shall be performed in accordance with the following methods.
  - (a) Oxides of Nitrogen - EPA Method 7E or ARB Method 100.
  - (b) Stack Gas Oxygen - EPA Method 3 or 3A or ARB Method 100
  - (c) NO<sub>x</sub> Mass Emission Rate - EPA Method 19
  - (d) HHV determination shall be by one of the following test methods:
    - (i) for liquid hydrocarbon fuels - ASTM D 240-87 or ASTM D 2382-88; or
    - (ii) for gaseous fuels - ASTM D 1826-88, or ASTM D 1945-81 in conjunction with ASTM D 3588-89.
- (3) Compliance Testing for Combined-cycle Turbine Units shall be performed in accordance with the following methods.
  - (a) NO<sub>x</sub> Concentrations/Mass Emissions NO<sub>x</sub> Emissions shall be determined by EPA Test method 7E and 3A or by EPA Test Method 20.
  - (b) Heating Value The Higher Heating Value shall be determined:
    - (i) for liquid fuels - ASTM Test Method D 240-87
    - (ii) for distillate fuel - ASTM Test Method D 2382-88
    - (iii) for gaseous fuels - ASTM Test Method 3588-91; or ASTM Test Method D 1826-88; or ASTM Test Method D 1945-81.

## (G) Compliance Schedule

- (1) The owner/operator of a permit unit subject requirements of section (C) shall submit to the District for approval an initial Emissions Control Plan for the facility on or before April 15, 1995.
- (2) The owner/operator of a permit unit subject requirements of section (C) shall demonstrate final compliance with all applicable standards and requirements of the rule:
  - (a) By May 31, 1995 for permit units with NO<sub>x</sub> control technology in place or permit units subject to subsection (C)(2) and (C)(3); or
  - (b) Within six months of installation of NO<sub>x</sub> reduction technology.
- (3) The owner/operator of a permit unit exempt pursuant to section (D) shall fulfill the following requirements, if and when such exemption no longer applies, shall:
  - (a) Submit a revised Emissions Control Plan within 90 days of the date of the change of status; and
  - (b) When applicable, submit an application(s) for an Authority To Construct/Permit To Operate (ATC/PTO) to the District no later than six months after the date of the change of status.
  - (c) No later than three calendar years following the submission of the Emissions Control Plan, demonstrate final compliance with all applicable standards and requirements of the rule.

## (H) Severability of Portions of this Rule

- (1) If any portion of this rule is found to be invalid or unenforceable, such finding shall have no effect on the validity and enforceability of the remaining portions of the rule, which are severable and shall continue to be in full force and effect.

[SIP: Approved 07/20/99 64 FR 38832, 40 CFR 52.220(c)(254)(i)(H)(2)]