

RULE 1158

Electric Power Generating Facilities

(A) General

(1) Purpose:

- (a) The purpose of this rule is to limit NO_x emissions from Electric Power Generating Facilities.

(2) Applicability:

- (a) This rule applies to all Electric Utility electrical power generating Boiler or Steam Generator, including any auxiliary boiler used in conjunction with an electrical generating Boiler or Steam Generator, Combined-Cycle Turbine Units and to successor and replacement units that are located within the Federal Ozone Non-attainment Area.

(B) Definitions

The definitions contained in District Rule 102 – *Definition of Terms* shall apply unless the term is otherwise defined herein:

- (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_x; expressed as total annual NO_x emissions in pounds from each permit unit and then aggregated (summed) for all boilers and combined-cycle turbine units at the facility.
- (2) “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.
- (3) “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).
- (4) “Electric Power Generation Facility” – Any electrical power generating Boiler or Steam Generator, including auxiliary boilers, or Combined-Cycle Turbine Units used in conjunction with an electrical generating Boiler or Steam Generator.

- (5) “Emissions Aggregating” – means the sum of the emissions for the facility. Aggregated annual emissions are expressed as the accumulated pounds of NO_x per (specified time period).

$$EM1 + EM2 + EM3 + EM4 = EM_{cap}$$

Where:

EM1	=	lbs NO _x /time (boiler 1)
EM2	=	lbs NO _x /time (boiler 2)
EM3	=	lbs NO _x /time (unit 3)
EM4	=	lbs NO _x /time (unit 4)
EM _{cap}	=	the emissions cap per time

- (6) “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 units with their Rated Heat Inputs ; and
 - (b) For each unit subject to the emissions limits of subsection (C)(1) or (C)(2), a description of the emissions control systems proposed for each unit, as well as a description of any ancillary equipment related to the control of emissions, and expected technical performance specifications for any NO_x emissions control systems.; and
 - (c) For units for which installation of NO_x reduction technology by the date specified in section G 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 (3) 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.
- (7) “Emission Control System Operating Parameters” – Any operating parameter(s) that the District deems necessary for the determination of compliance.
- (8) “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.
- (9) “Low Use” – A unit whose annual operation does not exceed 1000 hours.

- (10) “NOx Emissions (NOx)” – The sum of any oxides of nitrogen which can be measured in the flue gas, expressed as nitrogen dioxide (NO₂).
- (11) “Rated Heat Input” – The Heat Input capacity (in MMBtu/hr) specified on the nameplate of the unit, unless:
 - (a) The 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 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.
- (12) “Shut-down Period” – The one (1) 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.
- (13) “Start-up Period” – The one (1) 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.
- (14) “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 (2) hours.

(C) Requirements

- (1) NOx RACT Emissions Limits for Boilers or Steam Generators:
 - (a) All Boilers or Steam Generators shall not emit NOx in excess of the following:

NOx Emissions (ppmv)	
Gaseous Fuel	Liquid Fuel
30	40
70 (Low Use)	70 (Low Use)

- (b) All ppmv emission limits for Boilers or Steam Generators are referenced at dry stack-gas conditions and 3.0 percent by volume stack-gas oxygen as an hourly average.
- (2) NOx RACT Emissions Limits for Combined-Cycle Turbines:
 - (a) All Combined-Cycle Turbine Units shall not emit NOx in excess of the following:

Unit Rating (MW)	NOx Emissions (ppmv)	
	Gaseous Fuel	Liquid Fuel
0.3 to <2.9	42	65
2.9 to <10.0	25 x E/25	65
10.0 and up, With SCR	9 x E/25	25 x E/25
10.0 and up, Without SCR	15 x E/25	42 x E/25
4.0 and up, Low Use	42	65

Unit efficiency (E) shall be determined as follows:

$$E = \frac{(\text{MRE} [\text{Continuous}] \text{ at LHV})(\text{LHV})}{(\text{HHV})}$$

where

LHV = the lower heating value of the fuel

HHV = the higher heating value of the fuel

MRE = manufacturer's rated thermal efficiency of gas turbine only without consideration of any downstream energy recovery

Turbine efficiency (E) shall not be less than 25 percent; a turbine with an efficiency lower than 25 percent shall be assigned an efficiency of 25 percent for the purposes of this rule.

- (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 NOx Emissions Cap:
 - (a) The Electric Power Generation Facility of Southern California Edison, or its successor, located at Coolwater Facility in Daggett, California, shall not operate the facility with facility-wide NOx emissions in excess of the following aggregated annual limits:

Year	Aggregated Annual Cap (Tons/year)

Year	Aggregated Annual Cap (Tons/year)
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
After June 26, 2017	1,319 less 10 %

- 4) Emission Limitations during Start-up, Shut-down, and Thermal Stabilization Periods
- (a) The emission limits in found in subsections (C)(1) and (C)(2), do not apply during start-up, shut-down, and thermal stabilization periods.
- (b) Boilers or Steam Generators shall meet at least one of the following averaged over the duration of the Start-up or Shut-down Period:
- (i) 115 ppm @ 3% O₂ on gaseous fuels,
 - (ii) 135 ppm @ 3% O₂ on liquid fuels.
- (c) Combined-Cycle Turbine Units shall not emit NO_x in excess of the following averaged over the duration of the Start-up, Shut-down, or Thermal Stabilization Period:
- (i) 70 ppm @ 15% O₂ for turbines fired on gas or,
 - (ii) 0.16 pounds per MMBtu input for turbines fired on gas or liquid fuels or,
 - (iii) 226 ppm @ 15% O₂ for turbines fired on liquid fuels.
- (5) General Equipment Requirements:
- (a) The owner/operator of any units which are subject to the requirements of subsections (C)(1) and (2) 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 units which are subject to the requirements of subsections (C)(1) and(2) 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 unit subject to the requirements of subsection (C)(1) and(2) 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.
- (6) Loss of Low Use status

- (a) Any operation of a unit qualifying as Low Use, and subsequently exceeding the Low Use threshold, shall require the operator to comply with the applicable non-Low Use emission limit specified in section (C) above, according to the compliance schedule in subsection (G)(4).

(D) Exemptions

- (1) During periods of unexpected curtailment of gaseous fuels, Boiler or Steam Generator units subject to the requirements of subsection (C)(1) which normally burn only gaseous fuel shall:
 - (a) Comply with a NO_x emission limit of 225 ppmv NO_x 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) Units, which are subject to District Rules 1157 - *Boilers and Process Heaters* or 1159 - *Stationary Gas Turbines*, are exempt from this rule.
- (3) The provisions of subsection (C)(1) of this rule shall not apply to units which have no Annual Heat Input (Annual Heat Input equals zero).
 - (a) The owner/operator of any 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) All pounds of NO_x per day shall be determined as the sum of the hourly mass emissions.
- (3) Additional Procedures – Boilers or Steam Generators:
- (a) All concentration emission limits specified in subsections (C)(1) and (D)(1) for Boilers or Steam Generators 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 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 (APCO)).
 - (ii) The HHV for liquid fuels burned shall be determined from daily samples and reported as a monthly average for each month.
 - (iii) Units claiming Low Use shall monitor and record operating hours on a daily basis.
 - (b) Boiler or Steam Generator and Combined-Cycle Turbine Operating Logs: On a daily basis for each unit, the owner/operator shall maintain an operating log that includes, as a minimum, the following information:
 - (i) The actual start-up and shut-down times;
 - (ii) The hours of operation per day;
 - (iii) The hourly averaged NO_x emission concentration for each unit; and
 - (iv) A monthly summary of the accumulative aggregated annual pounds of NO_x emissions for the facility; and
 - (v) The type and quantity of fuel used.

- (c) The owner/operator of a unit exempt pursuant to section (D)(1), shall monitor and record for each unit the hours of operation on liquid fuel, on a daily basis.
- (d) The owner/operator of any 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 (3) 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 or Steam Generators shall be performed in accordance with the following methods.
 - (a) Oxides of Nitrogen - EPA Method 7E- Determination of Nitrogen Oxides Emissions From Stationary Sources or ARB Method 100-Procedures for Continuous Gaseous Emission Stack Sampling.
 - (b) Stack Gas Oxygen - EPA Method 3- Gas Analysis for the Determination of Dry Molecular Weight or 3A- Determination of Oxygen and Carbon Dioxide Concentrations in Emissions From Stationary Sources or ARB Method 100-Procedures for Continuous Gaseous Emission Stack Sampling.
 - (c) NO_x Mass Emission Rate - EPA Method 19-Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates.
 - (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_x Concentrations/Mass Emissions NO_x 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 unit subject to the requirements of section (C) shall submit to the District for approval an initial Emissions Control Plan for the facility six (6) months after date of rule adoption.
- (2) The owner/operator of a unit subject to the requirements of section (C) shall demonstrate final compliance with all applicable standards and requirements of the rule:
 - (a) Twelve (12) months after rule adoption or loss of Low Use status, for units with NOx control technology in place or units subject to subsection (C)(2); or
 - (b) Within six (6) months of installation of NOx reduction technology.
- (3) The owner/operator of a 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 one (1) calendar year following the submission of the Emissions Control Plan, demonstrate final compliance with all applicable standards and requirements of the rule.
- (4) The owner or operator of any unit claiming Low Use status must notify the APCO within seven (7) days if the hour-per-year limit is exceeded. If the hour per-year-limit is exceeded, the exemption shall be permanently withdrawn. Within 30 days after the exceedance, the owner or operator must submit an Emission Control Plan.

(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)]

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