

ATTACHMENT C

**CEC AIR QUALITY APPLICATION
FOR SIMPLE-CYCLE GAS TURBINE GENERATION UNITS**

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California Energy Commission
Air Quality Application for Simple-Cycle Gas Turbine Generation Units

EQUIPMENT DESCRIPTION:

This Authority To Construct Is Issued And Is Valid For This Equipment Only While It Is In The Configuration Set Forth In The Following Description:

Installation Of Four Simple-Cycle Gas Turbine Generators Consisting Of:

1. Simple Cycle Gas Turbine, [General Electric], [Frame 7b], [727MMBtu/hr (HHV)], [Nominal Electrical Output (60MW) at ISO conditions], Natural Gas-Fired.
2. Selective Catalytic Reduction NOx Control System, [Engelhard], [TBD].
3. Ammonia Injection System, [Engelhard], [TBD], with 25,000 gallon aqueous ammonia (19.5%) storage tank.
4. Oxidation Catalyst System, [Engelhard], [TBD].
5. Continuous emission monitoring system (CEMS) designed to continuously record the measured gaseous concentrations, and calculate and continuously monitor and record the NOx and CO concentrations in ppmvd corrected to 15% oxygen on a dry basis.

PERMIT CONDTIONS:

The Equipment For Which This Authority To Construct Is Issued May Be Operated Only When In Compliance With The Following Conditions:

1. Consistency with Analyses: Operation of this equipment shall be conducted in accordance with all information submitted with the application (and supplements thereof) and the analyses under which this permit is issued unless otherwise noted below.
2. Conflicts Between Conditions: In the event that any condition herein is determined to be in conflict with any other condition contained herein, then, if principles of law do not provide to the contrary, the condition most protective of air quality and public health and safety shall prevail to the extent feasible.
3. Reimbursement of Costs: All reasonable expenses, as set forth in the District's rules or regulations, incurred by the District for all activities that follow the issuance of this permit, including but not limited to permit condition implementation, compliance verification and emergency response, directly and necessarily related to enforcement of the permit shall be reimbursed by the owner/operator as required by the District's rules or regulations.
4. Access to Records and Facilities: As to any condition that requires for its effective enforcement the inspection of records or facilities by representatives of the District, the Air Resources Board (ARB), the U.S. Environmental Protection Agency (U.S. EPA), or the California Energy Commission (CEC), the owner/operator shall make such records

available or provide access to such facilities upon notice from representatives of the District, ARB, U.S. EPA, or CEC. Access shall mean access consistent with California Health and Safety Code Section 41510 and Clean Air Act Section 114A.

5. Notification of Commencement of Operation: The owner/operator shall notify the District of the date of anticipated commencement of turbine operation not less than 10 days prior to such date. Temporary operations under this permit is granted consistent with the District's rules and regulations.
6. Operations: The gas turbine, emissions controls, CEMS and associated equipment shall be properly maintained and kept in good operating condition at all times when the equipment is in operation.
7. Visible Emissions: No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark or darker than Ringlemann 1 or equivalent 20% opacity.

ALTERNATIVE EMISSION LIMITS

FOR CAUSE, AN APPLICANT MAY PROPOSE AN ALTERNATE NO_x EMISSION LIMIT UP TO, BUT NOT EXCEEDING, 25 PPM FOR THE SUMMER OF 2001. HOWEVER, THE APPLICANT MUST APPLY BACT AND MEET A NO_x EMISSION LIMIT OF 5 PPM PRIOR TO JUNE 1, 2002. THE FOLLOWING ALTERNATE CONDITION 8 SHOULD BE USED IN THIS SITUATION.

8. Emission Limits:
 - 8.1. Oxides of nitrogen (NO_x) emissions from the gas turbine shall not exceed 25 ppmvd @ 15% O₂ (1-hour rolling average), except during periods of startup and shutdown as defined by this permit, through May 31, 2002. By June 1, 2002, NO_x emissions from the gas turbine shall not exceed 5 ppmvd @ 15% O₂ (1-hour rolling average), except during startup and shutdown. The NO_x emission concentrations shall be verified by a District-approved continuous emission monitoring system (CEMS) and during any required source test.
 - 8.2. By June 1, 2002, ammonia emissions from the gas turbine shall not exceed 10 ppmvd @ 15% O₂ (1-hour rolling average), except during periods of startup and shutdown as defined in this permit. The ammonia emission concentration shall be verified by the continuous recording of the ratio of the ammonia injection rate to the NO_x inlet rate to the SCR control system (molar ratio). A minimum NH₃/NO_x molar ratio of 1.0 shall be used at all times. The maximum allowable NH₃/NO_x molar ratio shall be determined during any required source test, and shall not be exceeded until reestablished through another valid source test.
 - 8.3. By June 1, 2002, carbon monoxide (CO) emissions from the gas turbine shall not exceed 6 ppmvd @ 15 % O₂ (1-hour rolling average), except during periods of startup and shutdown as defined in this permit. The CO emission concentration shall be verified by a District-approved CEMS and during any required source test.

- 8.4 By June 1, 2002, volatile organic compound (VOC) emissions from the gas turbine shall not exceed 2 ppmvd @ 15% O₂ (1-hour rolling average), except during periods of startup and shutdown as defined in this permit. The VOC emission concentration shall be verified during any required source test.
- 8.5 Particulate matter emissions less than ten microns in diameter (PM₁₀) from the gas turbine shall not exceed 4.8 pounds per hour, except during periods of startup and shutdown as defined in this permit. The PM₁₀ mass emission rate shall be verified during any required source test.
- 8.6 Oxides of sulfur emissions (SO_x) from the gas turbine shall not exceed 0.44 pounds per hour, except during periods of startup and shutdown as defined in this permit. The SO_x emission rate shall be verified during any required source test.
9. Turbine Startup: Startup of the gas turbine shall not exceed a time period of 10 minutes each per occurrence, or another time period based on good engineering practice and approved in advance by the District. The startup clock begins with the turbine's initial firing and continues until the unit meets the emission concentration limits.
10. Turbine Shutdown: Shutdown of the gas turbine shall not exceed a time period of 10 minutes each per occurrence, or another time period based on good engineering practice and approved in advance by the District. Shutdown begins with initiation of the turbine shutdown sequence and ends with the cessation of turbine firing.
11. Mass Emission Limits: Mass emissions from the gas turbine shall not exceed the daily, quarterly, and annual mass emission limits listed in Table 1 and Table 2 below.

TABLE 1 – MASS EMISSION LIMITS (EXCLUDING STARTUPS AND SHUTDOWNS) THE FOLLOWING EMISSION LIMITS SHOULD BE APPLIED TO THE FACILITY UNTIL ACTUAL EMISSION RATES CAN BE DETERMINED UPON INSTALLATION OF XONON.

Pollutant	Daily (lb)	Quarterly (tons)	Annual (tons)
NO _x (as NO ₂)	583.0	N/A for AVAPCD	111.3
VOC	162.2	N/A for AVAPCD	31.0
CO	496.8	N/A for AVAPCD	94.8
SO _x (as SO ₂)	38.4	N/A for AVAPCD	7.3
PM ₁₀	422.2	N/A for AVAPCD	80.6

TABLE 2 – MASS EMISSION LIMITS - STARTUPS AND SHUTDOWNS

Pollutant	Annual (tons)
NOx (as NO ₂)	1.6
VOC	3.6
CO	1.3
SOx (as SO ₂)	0.1
PM10	0.9

The daily, quarterly and annual mass limits are on a calendar basis. Compliance shall be based on sliding average one-hour readings through the use of process monitors (e.g., fuel use meters), CEMS, and source test results; and the monitoring, recordkeeping and reporting conditions of this permit.

12. Operational Limits: In order to comply with the emission limits of this rule, the owner/operator shall comply with the following operational limits:
- (a) The heat input to the gas turbine shall not exceed the following:
 - Hourly: 727 MMBtu/hr
 - Daily: 17,448 MMBtu/day
 - Quarterly: N/A
 - Annual: 6,179,500 MMBtu/year
 - (b) Only PUC Quality natural gas (General Order 58-a) shall be used to fire the gas turbine. The natural gas shall not contain total sulfur in concentrations exceeding 5 gr/100 scf or hydrogen sulfide exceeding 0.25 gr/100 scf.
 - (c) The owner/operator of the gas turbine shall comply with the daily, quarterly, and annual emission limits listed in Table 1 by not operating more than 24 hours per day, 2,160 hours per calendar quarter, or 8,500 hours per year.
 - (d) The damper on the gas turbine bypass stack shall remain in a fully closed position except during periods of startup and shutdown as defined in this permit.
 - (e) The owner/operator of the gas turbine shall comply with the annual emission limits listed in Table 2 by limiting the turbine startups to no more than 50 occurrences per year, and by limiting turbine shutdowns to no more than 50 occurrences per year.
13. Monitoring Requirements: The owner/operator shall comply with the following monitoring requirements:
- (a) The gas turbine exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods.

- (b) The ammonia injection system shall be equipped with an operational ammonia flowmeter and injection pressure indicator accurate to plus or minus five percent at full scale and calibrated once every twelve months.
- (c) The gas turbine exhaust shall be equipped with continuously recording emissions monitor(s) for NO_x, CO (if required by AVAPCD) and O₂. Continuous emissions monitors shall comply with the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring concentrations and mass emissions during normal operating conditions and during startups and shutdowns.
- (d) The fuel heat input rate shall be continuously recorded using District-approved fuel flow meters along with quarterly fuel compositional analyses for the fuel's higher heating value (wet basis).
- (e) The total sulfur and hydrogen sulfur content of the fuel gas shall be analyzed on a quarterly basis.

14. Source Testing/RATA: Within sixty days after startup of the gas turbines, and at a minimum on an annual basis thereafter, a relative accuracy test audit (RATA) must be performed on the CEMS in accordance with 40 CFR Part 60 Appendix B Performance Specifications and a source test shall be performed. Additional source testing may be required at the discretion of the District to address or ascertain compliance with the requirements of this permit. The written test results of the source tests shall be provided to the District within thirty days after testing. A complete test protocol shall be submitted to the District no later than 30 days prior to testing, and notification to the District at least ten days prior to the actual date of testing shall be provided so that a District observer may be present. The source test protocol shall comply with the following: measurements of NO_x, CO, VOC, and stack gas oxygen content shall be conducted in accordance with ARB Test Method 100; measurements of PM₁₀ shall be conducted in accordance with ARB Test Method 5; and measurements of ammonia shall be conducted in accordance with Bay Area Air Quality Management District test method ST-1B. Alternative test methods, and source testing scope, may also be used to address the source testing requirements of the permit if approved in advance by the District. The initial and annual source tests shall include those parameters specified in the approved test protocol, and shall at a minimum include the following:

- a. NO_x (as NO₂) – ppmvd at 15% O₂ and lb/MMBtu (inlet to SCR (if applicable), and Exhaust);
- b. Ammonia – ppmvd at 15% O₂ (Exhaust);
- c. CO – ppmvd at 15% O₂ and lb/MMBtu (Exhaust);
- d. VOC – ppmvd at 15% O₂ and lb/MMBtu (Exhaust);
- e. PM₁₀ – lb/hr (Exhaust);
- f. SO_x – lb/hr (Exhaust);
- g. Natural gas consumption, fuel High Heating Value (HHV), and total fuel sulfur content;
- h. Turbine load in megawatts;
- i. Stack gas flow rate (SDCFM) calculated according to procedures in U.S. EPA Method 19.
- j. Exhaust gas temperature (°F)

- k. Ammonia injection rate (lb/hr or moles/hr)
15. A written quality assurance program must be established in accordance with 40 CFR Part 75, Appendix B and 40 CFR Part 60 Appendix F.
16. The owner/operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart GG.
17. The owner/operator shall notify the District of any breakdown condition consistent with the District's breakdown regulations.
18. The District shall be notified in writing in a timeframe consistent with the District's breakdown regulations following the correction of any breakdown condition. The breakdown condition shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the actions taken to restore normal operations.
19. Recordkeeping: The owner/operator shall maintain the following records:
- (a) hourly, daily, quarterly and annual quantity of fuel used and corresponding heat input rates;
 - (b) the date and time of each occurrence, duration, and type of any startup, shutdown, or malfunction along with the resulting mass emissions during such time period;
 - (c) emission measurements from all source testing, RATAs and fuel analyses;
 - (d) daily, quarterly and annual hours of operation;
 - (e) hourly records of NO_x and CO, emission concentrations and hourly ammonia injection rates and ammonia/NO_x ratio.
 - (f) for the continuous emissions monitoring system; performance testing, evaluations, calibrations, checks, maintenance, adjustments, and any period of non-operation of any continuous emissions monitor.
20. All records required to be maintained by this permit shall be retained by the permittee for a period of five years and shall be made readily available for District inspection upon request.
21. Reporting: The owner/operator shall submit to the District a written report for each calendar quarter, within 30 days of the end of the quarter, which shall include:
- (a) Daily and quarterly fuel use and corresponding heat input rates;
 - (b) Daily and quarterly mass emission rates for all criteria pollutants during normal operations and during other periods (startup/shutdown, breakdowns);
 - (c) Time intervals, date, and magnitude of excess emissions;
 - (d) Nature and cause of the excess emission, and corrective actions taken;
 - (e) Time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments;
 - (f) A negative declaration when no excess emissions occurred;
 - (g) Results of quarterly fuel analyses for HHV and total sulfur/hydrogen sulfide content; and
 - (h) A declaration that the owner/operator is in compliance with Governor's Executive Order D-26-01 and any other applicable Executive Order.

22. Emission Offsets: The owner/operator shall offset the project emissions in the amount and at the ratios outlined in Table 3. Emission offsets obtained through the State emission offset bank shall be valid for three years from the issuance of this permit at which time they shall become null and void. The owner/operator shall either obtain replacement emission offsets from the District or shall cease operations at the end of this 3-year period.

TABLE 3 – EMISSION OFFSETS

Pollutant	Emissions Requiring Offsets (lbs./day)	Offset Ratio	Total ERCs Required (lbs./day)	Source of ERCs
NOx (as NO ₂)	647.3	1.3:1	841	State Bank or purchase
VOC	175.8	1.3:1	229	State Bank or purchase
CO	0		0	
SOx (as SO ₂)	0		0	
PM10	460.6	1.1:1	461	State Bank or purchase, or road paving project

23. Executive Order Compliance: The owner/operator shall comply with the provisions of Governor's Executive Order D-26-01 and any other applicable Executive Order.
24. District Operating Permit: The owner/operator shall apply for and obtain all required operating permits from the District according to the requirements of the District's rules and regulations.