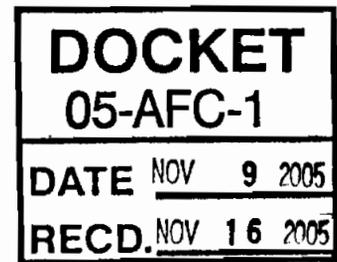




San Joaquin Valley  
Air Pollution Control District



NOV - 9 2005

Mr. Paul Richins, Environmental Protection Office Manager  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814-5512

**Re: Notice of Final Action - Determination of Compliance (DOC) (05-AFC-01):  
Project Number 1052027**

Dear Mr. Richins:

The Air Pollution Control Officer has issued a Determination of Compliance (DOC) to Pastoria Energy Facility for a simple-cycle gas turbine engine generator (Unit #4), for the facility located on the Tejon Ranch, southern Kern County, near Grapevine, CA. Enclosed are copies of the Determination of Compliance, Authority to Construct permit and a copy of the final action to be published approximately three days from the date of this letter.

Notice of the District's decision to issue the Preliminary Determination of Compliance was published in the Bakersfield Californian on September 6, 2005. The District's analysis of the preliminary decision had been mailed to the CEC, CARB, and US EPA on August 31, 2005.

All comments received following the District's preliminary decision on this project were considered. Responses to comments are included in Attachment H of the enclosed Determination of Compliance.

Comments received by the District during the public notice period resulted in the District adding daily emissions limits on the days when the turbine/generator undergoes combustor tuning. This change was minor and did not trigger additional public notification requirements, nor did it have any impact upon the Best Available Control Technology determination or on the amount of offsets required for project approval.

David L. Crow  
Executive Director / Air Pollution Control Officer

Northern Region Office  
4800 Enterprise Way  
Modesto, CA 95356-8718  
(209) 557-6400 • FAX (209) 557-6475

Central Region Office  
1990 East Gettysburg Avenue  
Fresno, CA 93726-0244  
(559) 230-6000 • FAX (559) 230-6061  
[www.valleyair.org](http://www.valleyair.org)

Southern Region Office  
2700 M Street, Suite 275  
Bakersfield, CA 93301-2373  
(661) 326-6900 • FAX (661) 326-6985

Mr. Paul Richins  
California Energy Commission  
Page 2

Thank you for your cooperation in this matter. Should you have any questions, please contact Mr. Thomas Goff at (661) 326-6900.

Sincerely,

A handwritten signature in black ink, appearing to read "David Warner", with a long horizontal line extending to the right.

David Warner  
Director of Permit Services

DW:RWK/lis

Enclosures

BAKERSFIELD CALIFORNIAN

**NOTICE OF DETERMINATION OF COMPLIANCE**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Unified Air Pollution Control District has issued a Determination of Compliance to Pastoria Energy Facility LLC for construction of a 164 MW simple-cycle, gas turbine engine/generator, located on Tejon Ranch, 30 miles south of Bakersfield and 6.5 miles east of Grapevine, CA.

All comments received following the District's preliminary decision on this project were considered.

Comments received by the District during the public notice period resulted in the District adding daily emissions limits on the days when the turbine/generator undergoes combustor tuning. This change was minor and did not trigger additional public notification requirements, nor did it have any impact upon the Best Available Control Technology determination or on the amount of offsets required for project approval.

The application review for Project #S1052027 is available for public inspection at the **SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, 2700 M STREET, SUITE 275, BAKERSFIELD, CALIFORNIA 93301.**



San Joaquin Valley  
Air Pollution Control District

## AUTHORITY TO CONSTRUCT

**PERMIT NO:** S-3636-14-0

**ISSUANCE DATE:** 11/04/2005

**LEGAL OWNER OR OPERATOR:** PASTORIA ENERGY FACILITY, LLC  
**MAILING ADDRESS:** 39789 EDMONSTON PUMPING PLANT RD  
PO BOX 866  
LEBEC, CA 93243-0866

**LOCATION:** TEJON RANCH 30 MILES S OF BAKERSFIELD  
AND 6.5 MILES E OF GRAPEVINE  
RANCHO EL TEJON, CA

**EQUIPMENT DESCRIPTION:**  
164 MW NOMINALLY RATED GENERAL ELECTRIC 7FA NATURAL GAS FIRED GAS TURBINE ENGINE/ELECTRICAL GENERATOR (UNIT #4) WITH DRY LOW NOX COMBUSTORS AND SELECTIVE CATALYTIC REDUCTION

### CONDITIONS

1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. The permittee shall not begin actual onsite construction of the equipment authorized by this Determination of Compliance until the lead agency satisfies the requirements of the California Environmental Quality Act (CEQA). [California Environmental Quality Act]
3. The permittee shall notify the District of the date of initiation of construction no later than 30 days after such date, the date of anticipated startup not more than 60 days nor less than 30 days prior to such date, and the date of actual startup within 15 days after such date. [District Rule 4001]
4. Selective catalytic reduction (SCR) system shall serve the gas turbine engine (GTE). Permittee shall submit SCR catalyst design details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
5. Permittee shall submit continuous emission monitor design, installation, and operational details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
6. Permittee shall minimize the emissions from GTE to the maximum extent possible during the commissioning period. Conditions #6 through #16 shall apply only during the commissioning period as defined below. Unless otherwise indicated, Conditions #17 through #66 shall only apply after the commissioning period has ended. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 326-6900 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

DAVID L. CROW, Executive Director / APCO

  
for DAVID WARNER, Director of Permit Services

S-3636-14-0 Nov 8 2005 2:29PM - SARGENTL : Joint Inspection NOT Required

7. Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the construction contractor to insure safe and reliable steady state operation of the GTE and all ancillary equipment. [District Rule 2201]
8. Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when the GTE is first fired, whichever occurs first. The commissioning period shall terminate when the GTE has successfully completed initial performance testing and is available for commercial operation. [District Rule 2201]
9. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the combustors of this unit shall be tuned to minimize emissions. [District Rule 2201]
10. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the Selective Catalytic Reduction (SCR) system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
11. The permittee shall submit a plan to the District at least four weeks prior to the first firing of this unit, describing the procedures to be followed during the commissioning period. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not limited to, the tuning of the combustors, the installation and operation of the SCR systems, the installation, calibration, and testing of the NOx and CO continuous emissions monitors, and any activities requiring the firing of this unit without abatement by the SCR system. [District Rule 2201]
12. Emission rates from this unit during the commissioning period shall not exceed any of the following limits: NOx (as NO2) 308 lb/hr or 3,200 lb/day; VOC (as methane) 273 lb/hr or 355 lb/day; CO 2527 lb/hr or 10,824 lb/day; PM10 216 lb/day; or SOx (as SO2) 84 lb/day. [District Rule 2201]
13. During the commissioning period, the permittee shall demonstrate compliance with condition #12 through the use of properly operated and maintained continuous emissions monitors and recorders as specified in this permit. The monitored parameters for this unit shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation). [District Rule 2201]
14. The continuous monitors specified in this permit shall be installed, calibrated, and operational prior to the first firing of this unit. After first firing, the detection range of the CEMS shall be adjusted as necessary to accurately measure the resulting range of NOx and CO emission concentrations. [District Rule 2201]
15. Firing of GTE without abatement of emissions by the SCR system shall be minimized to the extent possible. Such operation of this unit without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system catalyst in place. [District Rule 2201]
16. The total mass emissions of NOx, CO, VOC, PM10, and SOx that are emitted during the commissioning period shall accrue towards the consecutive twelve month emission limits specified in condition #39. [District Rule 2201]
17. The permittee shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit during times that the CEMS is not functioning properly. [District Rule 4703]
18. GTE and electrical generator lube oil vents shall be equipped with mist eliminators. Visible emissions from lube oil vents shall not exhibit opacity of 5% or greater, except for up to three minutes in any hour. [District Rules 2201 and 4101]
19. GTE exhaust design shall provide space for additional selective catalytic reduction catalyst if required to meet NOx emission limit. [District Rule 2201]
20. The GTE shall be equipped with a continuous monitoring system to measure and record fuel consumption. [District Rules 2201 and 4001]

CONDITIONS CONTINUE ON NEXT PAGE

21. Exhaust duct downstream of the SCR unit shall be equipped with continuously recording emissions monitors (CEMS) for NO<sub>x</sub>, CO, and O<sub>2</sub>. All CEMS shall be dedicated to this unit. NO<sub>x</sub> and O<sub>2</sub> CEMS shall meet the requirements of 40 CFR Part 75 and CO CEMS shall meet the requirements of 40 CFR Part 60. CEMS shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns. If, as determined by District source test staff, the accuracy of CEMS during startup events is not demonstrated, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained during source testing to determine compliance with emission limits in conditions 36, 38 and 39. [District Rule 2201]
22. Exhaust duct shall be equipped with a continuously recording emission monitor upstream of the SCR unit for measuring the NO<sub>x</sub> concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District Rule 2201]
23. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]
24. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]
25. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]
26. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District Rule 2201]
27. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction catalyst inlet. [District Rule 2201]
28. GTE shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.75 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [District Rule 2201]
29. Startup is defined as the period beginning with GTE initial firing until the unit meets the lb/hr and ppmv emission limits in condition 31. Shutdown is defined the period beginning with initiation of GTE shutdown sequence and ending with cessation of firing of the GTE. Startup and shutdown durations shall not exceed one hour per occurrence. [District Rule 2201 and 4001]
30. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds the minimum operating temperature recommended by the SCR manufacturer. Permittee shall monitor and record catalyst temperature during periods of startup. [District Rule 2201]
31. Emission rates from GTE, except during startup and/or shutdown, shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 16.25 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>; VOC 2.95 lb/hr and 1.3 ppmvd @ 15% O<sub>2</sub>; CO 23.75 lb/hr and 6 ppmvd @ 15% O<sub>2</sub> or ammonia 10 ppmvd @ 15% O<sub>2</sub>. NO<sub>x</sub> (as NO<sub>2</sub>) emission limit is a one-hour average. Ammonia emission limit is a twenty-four hour rolling average. All other emission limits are three-hour rolling averages. [District Rules 2201, 4001, and 4703]
32. Compliance with NO<sub>x</sub> emissions limitations specified in condition #31 shall not be required during short-term excursions limited to a cumulative total of 10 hours per rolling 12-month period. Short-term excursions are defined as 15-minute periods designated by the owner/operator (and approved by the APCO) that are the direct result of transient load conditions, not to exceed four consecutive 15-minute periods, when the 15-minute average NO<sub>x</sub> concentration exceeds 2.5 ppmvd @ 15% O<sub>2</sub>. The maximum 1-hour average NO<sub>x</sub> concentration for periods that include short-term excursions shall not exceed 30 ppmvd @ 15% O<sub>2</sub>. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

33. Examples of transient load conditions include, but are not limited to the following: (1) initiation/shutdown of GTE inlet air cooling and (2) rapid GTE load changes. All emissions during short-term excursions shall accrue towards the hourly, daily, and annual emissions limitations of this permit and shall be included in all calculations of hourly, daily, and annual mass emission rates as required by this permit. [District Rule 2201]
34. Compliance with NO<sub>x</sub>, CO and VOC emissions limitations specified in condition #31 shall not be required during combustor tuning activities. Combustor tuning activities are defined as any testing, adjustment, tuning, or calibration activities necessary to insure safe and reliable steady state operation of the GTE following replacement of the combustor components, during seasonal tuning events, when recommended by the turbine manufacturer, or as necessary to maintain low emissions performance. This includes, but is not limited to, adjusting the amount of fuel distributed between the combustion turbine's staged fuel systems to simultaneously minimize NO<sub>x</sub> and CO production while minimizing combustor dynamics and ensuring combustor stability. The exemption for combustor tuning activities shall be limited to 6 hours per calendar year. [District Rule 2201]
35. Emission rates from GTE during combustor tuning shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 300 lb/hr and 600 lb/period; VOC 48 lb/hr and 96 lb/period; and CO 2514 lb/hr and 2514 lb/period. Hourly emissions are on a one-hour average basis. [District Rules 2201]
36. Emission rates from the GTE shall not exceed either of the following: PM<sub>10</sub> 9.0 lb/hr and SO<sub>x</sub> (as SO<sub>2</sub>) 3.495 lb/hr. Emission limits are three-hour rolling averages. [District Rules 2201 and 4001]
37. During startup or shutdown GTE exhaust emissions shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 80 lb; VOC 16 lb; or CO 902 lb in any one hour. [California Environmental Quality Act and District Rule 4102]
38. On any day when a startup or shutdown occurs, emission rates from GTE shall not exceed any of the following: PM<sub>10</sub> 216 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) 84 lb/day; NO<sub>x</sub> (as NO<sub>2</sub>) 450 lb/day; VOC 96.9 lb/day; or CO 2,113 lb/day. On any day when combustor tuning occurs, emissions from GTE shall not exceed any of the following: PM<sub>10</sub> 216 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) 84 lb/day; NO<sub>x</sub> (as NO<sub>2</sub>) 957.5 lb/day; VOC 160.9 lb/day or CO 3036.5 lb/day. [District Rule 2201]
39. Annual emissions from GTE, calculated on a twelve consecutive month rolling basis, shall not exceed any of the following: PM<sub>10</sub> 78,840 lb/year ; SO<sub>x</sub> (as SO<sub>2</sub>) 30,616 lb/year; NO<sub>x</sub> (as NO<sub>2</sub>) 161,480 lb/year; VOC 29,730 lb/year; or CO 471,492 lb/year. [District Rule 2201]
40. Combined annual emissions of all hazardous air pollutants (HAPs) from GTE, calculated on a twelve consecutive month rolling basis, shall not exceed 6 tons/year. Combined annual emissions of any single HAP from GTE, calculated on a twelve consecutive month rolling basis, shall not exceed 2.5 tons/year. [District Rule 4002]
41. Each one-hour period shall commence on the hour. Each one-hour period in a three-hour rolling average will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. Each one-hour period in a twenty-four-hour average for ammonia slip will commence on the hour. The twenty-four-hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201]
42. Daily emissions will be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each month in the twelve-consecutive-month rolling average emissions shall commence at the beginning of the first day of the month. The twelve-consecutive-month rolling average emissions to determine compliance with annual emissions limitations shall be compiled from the twelve most recent calendar months. [District Rule 2201]
43. Prior to initial operation, permittee shall provide emission reduction credits to offset the calendar quarter emissions increases set forth below, at the distance offset ratio specified in Rule 2201 (4/20/05 version) Table 4.2 and the interpollutant offset ratio specified in this permit, PM<sub>10</sub> - Q1: 19,440 lb, Q2: 19,656 lb, Q3: 19,872 lb and Q4: 19,872 lb; SO<sub>x</sub> (as SO<sub>2</sub>) - Q1: 7,549 lb, Q2: 7,633 lb, Q3: 7,717 lb and Q4: 7,717 lb; NO<sub>x</sub> (as NO<sub>2</sub>) - Q1: 39,817 lb, Q2: 40,260 lb, Q3: 40,702 lb, and Q4: 40,702 lb; and VOC - Q1: 7,331 lb, Q2: 7,412 lb, Q3: 7,494 lb and Q4: 7,494 lb. [District Rule 2201]
44. ERC Certificate Numbers S-1554-2 and S-1543-2 (or certificates split from these certificates) shall be used to supply the required NO<sub>x</sub> and PM<sub>10</sub> offsets, ERC Certificate Number S-444-1 and S-1666-1 (or a certificates split from these certificates) shall be used to supply the required VOC offsets and ERC Certificate Number S-1334-5 (or a certificate split from this certificate) shall be used to supply the required SO<sub>x</sub>, unless a revised offsetting proposal is received and approved by the District, upon which this Determination of Compliance shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Determination of Compliance. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

45. NO<sub>x</sub> ERCs may be used to offset PM<sub>10</sub> emission increases at a ratio of 2.22 lb NO<sub>x</sub> : 1 lb PM<sub>10</sub> for reductions occurring within 15 miles of this facility, and at 2.72 lb NO<sub>x</sub> : 1 lb PM<sub>10</sub> for reductions occurring greater than 15 miles from this facility [District Rule 2201]
46. Compliance with ammonia slip limit shall be demonstrated by using the following calculation procedure: ammonia slip ppmv @ 15% O<sub>2</sub> = ((a-(bxc/1,000,000)) x 1,000,000 / b) x d, where a = ammonia injection rate(lb/hr)/17(lb/lb. mol), b = dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), c = change in measured NO<sub>x</sub> concentration ppmv at 15% O<sub>2</sub> across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH<sub>3</sub> CEM, the permittee must submit a monitoring plan for District review and approval [District Rule 4102]
47. Compliance with NO<sub>x</sub>, CO and VOC short term emission limits (ppmv @ 15% O<sub>2</sub> and lb/hr) shall be demonstrated within 90 days of initial operation of GTE and once every twelve months thereafter by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm at full load conditions. [District Rule 2201]
48. Compliance with PM<sub>10</sub> (lb/hr) and ammonia (ppmvd @ 15% O<sub>2</sub>) emissions rates shall be demonstrated within 90 days of initial operation of GTE and at least once every 12 months thereafter. [District Rule 2201]
49. Source testing to measure startup NO<sub>x</sub>, CO, and VOC mass emission rates for this GTE shall be demonstrated upon initial operation and at least every seven years thereafter by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. CEMS shall be operated during startup source testing. District source test staff shall evaluate CEMS results with source test results to assess the accuracy of CEMS during startups events. If, in the judgement of the District source staff, the reliability of CEMS results has not been demonstrated during startup testing for NO<sub>x</sub> and CO, more frequent source testing to measure startup NO<sub>x</sub> and CO mass emissions rates may be required. [District Rule 1081]
50. Initial and annual compliance with the HAPS emissions limit (6 tpy all HAPS or 2.5 tpy any single HAP) shall be by the VOC emissions rate for GTE determined during initial and annual compliance source testing and the correlation between VOC emissions and HAP(S). [District Rule 4002]
51. The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. If sulfur content is less than 1.0 gr/100 scf for 8 consecutive weeks, then the monitoring frequency shall be every six (6) months. If any six (6) month monitoring shows an exceedance, weekly monitoring shall resume. [District Rules 1081, 2540, and 4001]
52. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081]
53. The following test methods shall be used: PM<sub>10</sub> EPA method 5 (front half and back half); NO<sub>x</sub> EPA Method 7E or 20; CO EPA method 10 or 10B; O<sub>2</sub> EPA Method 3, 3A, or 20; VOC EPA method 18 or 25; ammonia BAAQMD ST-1B; and fuel gas sulfur content ASTM D3246. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081, 4001, and 4703]
54. The permittee shall maintain hourly records of NO<sub>x</sub>, CO, and ammonia emission concentrations (ppmv @ 15% O<sub>2</sub>), and hourly, daily, and twelve month rolling average records of NO<sub>x</sub> and CO mass emissions rates. Using annual and startup VOC source test results, permittee shall maintain hourly, daily and twelve month rolling average records of VOC mass emission rates. [District Rule 2201]
55. The permittee shall maintain records of SO<sub>x</sub> lb/hr, lb/day, and lb/twelve month rolling average emissions. SO<sub>x</sub> emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [District Rule 2201]
56. Permittee shall maintain the following records for the GTE: occurrence, duration, and type of any startup, shutdown, short term excursion, combustor tuning event, or malfunction; performance testing; emission measurements; total daily and rolling twelve month average hours of operation; hourly quantity of fuel used and gross three hour average operating load. [District Rules 2201 & 4703]

CONDITIONS CONTINUE ON NEXT PAGE

57. Permittee shall maintain the following records for the continuous emissions monitoring system (CEMS): performance testing, evaluations, calibrations, checks, maintenance, adjustments, and any period during which a CEMS was inoperative. [District Rules 2201 & 4703]
58. Permittee shall provide notification and record keeping as required under 40 CFR, Part 60, Subpart A, 60.7. [District Rule 4001]
59. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District Rule 2201]
60. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3. 3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]
61. The permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100]
62. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification 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 methods utilized to restore normal operations. [District Rule 1100]
63. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]
64. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]
65. The permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable 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; and a negative declaration when no excess emissions occurred. [District Rule 1080]
66. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 75 Subpart I. [40 CFR Part 75]

# DETERMINATION OF COMPLIANCE EVALUATION

Pastoria Energy Facility, LLC  
California Energy Commission  
Application for Certification Docket #: 05-AFC-01

**Facility Name:** Pastoria Energy Facility, LLC  
**Mailing Address:** PO Box 866  
Lebec, CA 93243-0866

**Contact Name:** Barbara McBride, Director Health, Safety and Environment  
**Telephone:** (925) 570-0849  
Andrew Whittome, Project Manager  
(925) 479-6728  
**Fax:** (925) 479-7307

**Other Contact:** Nancy Matthews  
**Telephone:** (916) 444-6666  
**Fax:** (916) 444-8373  
**E-Mail:** NMatthews@SierraResearch.com

**Engineer:** Richard Karrs, Senior Air Quality Engineer  
**Lead Engineer:** Tom Goff, Permit Services Manager  
**Date:**

**Project #:** S1052027  
**Application #'s:** S-3636-14-0  
**Received:** May 4, 2005

**Preliminary DOC:** September 6, 2005  
**Final DOC:**

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**I. PROPOSAL:**

Pastoria Energy Facility, LLC (PASTORIA) is seeking approval from the San Joaquin Valley Air Pollution Control District (the "District") for an expansion of the existing "merchant" electrical power generation facility, that received California Energy Commission and District approval in 1999 (99-AFC-01). The original facility, which has completed construction and initial commissioning, is rated at 750 MW, and consists of three natural gas-fired gas turbine engine-generators (GTEs) each with a heat recovery steam generator (HRSG) operating in combined cycle mode with two steam turbines. The facility also includes two cooling towers, a diesel engine driven firewater pump and a natural gas-fired emergency IC engine. The Pastoria expansion project proposes the installation of a 164 MW ("F Class") natural gas-fired gas turbine engine-generator operating in simple cycle mode.

The Pastoria expansion will be incorporated into the 31-acre original plant site. Except for the GTE and associated equipment (selective catalytic reduction (SCR) exhaust gas NOx treatment unit, exhaust stack, step up transformer and 230 kV switch gear), no additional equipment is proposed. Existing water and natural gas facilities and supplies are adequate. Additional cooling capacity is not required as the unit operates in simple cycle mode.

The Pastoria Energy Facility expansion is subject to approval by the California Energy Commission (CEC). Pursuant to SJVAPCD Rule 2201, Section 5.8, the Determination of Compliance (DOC) review is functionally equivalent to an Authority to Construct (ATC) review. The Determination of Compliance (DOC) will be issued and submitted to the CEC contingent upon SJVAPCD approval of the project.

The California Energy Commission (CEC) is the lead agency for this project for the requirements of the California Environmental Quality Act (CEQA).

Additionally, the Pastoria Energy Facility is subject to Prevention of Significant Deterioration requirements by EPA Region IX.

Draft permit conditions have been included as Attachment A.

**II. APPLICABLE RULES:**

- Rule 1080** Stack Monitoring (12/17/92)
- Rule 1081** Source Sampling (12/16/93)
- Rule 1100** Equipment Breakdown (12/17/92)
- Rule 2010** Permits Required (12/17/92)
- Rule 2201** New and Modified Stationary Source Review Rule (4/20/05)
- Rule 2520** Federally Mandated Operating Permits (6/21/01)
- Rule 2540** Acid Rain Program (11/13/97)

- Rule 2550** Federally Mandated Preconstruction Review for Major Sources of Air Toxics (6/18/98)
- Rule 4001** NSPS Subpart GG - Standards of Performance for Stationary Gas Turbines (7/08/04)
- Rule 4002** National Emissions Standards for Hazardous Air Pollutants (5/20/04) Subpart YYYY
- Rule 4101** Visible Emissions (11/15/01)
- Rule 4102** Nuisance (12/17/92)
- Rule 4201** Particulate Matter Concentration (12/17/92)
- Rule 4301** Fuel Burning Equipment (12/17/92)
- Rule 4703** Stationary Gas Turbines (4/25/02)
- Rule 4801** Sulfur Compounds (12/17/92)
- Rule 8011** General Requirements (11/15/01)
- Rule 8021** Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities (11/15/01)
- Rule 8031** Bulk Materials (11/15/01)
- Rule 8041** Carryout and Trackout (11/15/01)
- Rule 8051** Open Areas (11/15/01)
- Rule 8061** Paved and Unpaved Roads (11/15/01)
- Rule 8071** Unpaved Vehicle/Equipment Traffic Areas (11/15/01)
- Rule 8081** Agricultural Sources (11/15/01)
- California Environmental Quality Act (CEQA)**
- California Health & Safety Code (CH&S)**, Sections 41700 (Health Risk Analysis), 2301.6 (School Notice), and 44300 (Air Toxic "Hot Spots")

### III. PROJECT LOCATION:

The Pastoria Energy Facility is located on a 31 acre site on the Tejon Ranch, 30 miles south of Bakersfield and 6.5 miles east of Interstate Highway 5, Kern County. The location is part of the historic El Tejon land grant, at Section 18, Township 10N, Range 18W, San Bernardino Base and Meridian (projected).

The proposed location is not within 1,000' of a K-12 school.

### IV. PROCESS DESCRIPTION:

#### **Simple-Cycle Combustion Turbine Generator**

The natural gas-fired General Electric 7FA-Class simple-cycle gas turbine engine-generator (GTE) will be equipped with dry Low NO<sub>x</sub> combustors and a selective catalytic reduction (SCR) system with ammonia injection. The GTE will drive an electrical generator to produce approximately 164 MW of electricity. Dilution air will be added ahead of the SCR unit to cool the exhaust to within the operating temperature range of the SCR unit, approximately 800°F.

Pastoria does not wish to be restricted to a specific number of hours at full load operation or startups/shutdowns per calendar quarter. Actual emissions from the facility will vary depending on electricity demand. A hypothetical operating scenario has been developed for purposes of demonstrating that the project will comply with SJVAPCD emission offset requirements.

<b>S-3636-14-0</b>					
<b>Pastoria Energy Facility – Expansion GTE Hypothetical Operating Scenario</b>					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
Number of Startup/Shutdown Hours	75	75	75	75	300
Number of Full Load Hours	2,085	2,109	2,133	2,133	2,115
Total Hours	2,160	2,184	2,208	2,208	8,760

The GTE will utilize dry low NO<sub>x</sub> (DLN) combustor, SCR with ammonia injection, and good combustion practices to achieve the following emission rates:

- NO<sub>x</sub>: 2.5 ppmvd @ 15% O<sub>2</sub>
- VOC: 1.3 ppmvd @ 15% O<sub>2</sub>
- CO: 6.0 ppmvd @ 15% O<sub>2</sub>
- SO<sub>x</sub>: 0.002 lb/MMBtu
- PM<sub>10</sub>: 9.0 lb/hr

Continuous emissions monitoring systems (CEMs) will sample, analyze, and record NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations in the exhaust gas.

**V. EQUIPMENT LISTING:**

**S-3636-14-0:** 164 MW NOMINALLY RATED GENERAL ELECTRIC 7FA NATURAL GAS FIRED GAS TURBINE ENGINE/ELECTRICAL GENERATOR #4 WITH DRY LOW NOX COMBUSTORS AND SELECTIVE CATALYTIC REDUCTION (SCR)

**VI. EMISSION CONTROL TECHNOLOGY EVALUATION:**

The GTE will be equipped with a dry low NO<sub>x</sub> combustor and will exhaust into a Selective Catalytic Reduction [SCR] system with ammonia injection for the control of NO<sub>x</sub> emissions. The use of dry low NO<sub>x</sub> combustor and a SCR system with ammonia injection can achieve a NO<sub>x</sub> emission rate of 2.5 ppmvd @ 15% O<sub>2</sub>. CO emissions of 6 ppmvd and VOC emissions of 1.3 ppmvd (both @ 15% O<sub>2</sub>) have been demonstrated using good combustion practices for this make and model of gas turbine (See discussion in top-down BACT analysis, Attachment D.)

NO<sub>x</sub> is the major pollutant of concern when combusting natural gas. Virtually all gas turbine NO<sub>x</sub> emissions originate as NO. This NO is further oxidized in the exhaust system or later in the atmosphere to form the more stable NO<sub>2</sub> molecule. There are two mechanisms by which NO<sub>x</sub> is formed in turbine combustors: 1) the oxidation of atmospheric nitrogen found in the combustion air (thermal NO<sub>x</sub> and prompt NO<sub>x</sub>), and 2) the conversion of nitrogen chemically bound in the fuel (fuel NO<sub>x</sub>).

Thermal NO<sub>x</sub> is formed by a series of chemical reactions in which oxygen and nitrogen present in the combustion air dissociate and subsequently react to form oxides of nitrogen. Prompt NO<sub>x</sub>, a form of thermal NO<sub>x</sub>, is formed in the proximity of the flame front as intermediate combustion products such as HCN, H, and NH are oxidized to form NO<sub>x</sub>. Prompt NO<sub>x</sub> is formed in both fuel-rich flame zones and dry low NO<sub>x</sub> (DLN) combustion zones. The contribution of prompt NO<sub>x</sub> to overall NO<sub>x</sub> emissions is relatively small in conventional near-stoichiometric combustors, but this contribution is an increasingly significant percentage of overall thermal NO<sub>x</sub> emissions in DLN combustors. For this reason prompt NO<sub>x</sub> becomes an important consideration for DLN combustor designs, and establishes a minimum NO<sub>x</sub> level attainable in lean mixtures.

Fuel NO<sub>x</sub> is formed when fuels containing nitrogen are burned. Molecular nitrogen, present as N<sub>2</sub> in some natural gas, does not contribute significantly to total NO<sub>x</sub> formation. With excess air, the degree of fuel NO<sub>x</sub> formation is primarily a function of the nitrogen content in the fuel. When compared to thermal NO<sub>x</sub>, fuel NO<sub>x</sub> is not currently a major contributor to overall NO<sub>x</sub> emissions from stationary gas turbines firing natural gas.

The level of NO<sub>x</sub> formation in a gas turbine, and hence the NO<sub>x</sub> emissions, is unique (by design factors) to each gas turbine model and operating mode. The primary factors that determine the amount of NO<sub>x</sub> generated are the combustor design, the types of fuel being burned, ambient conditions, operating cycles, and the power output of the turbine.

The design of the combustor is the most important factor influencing the formation of NO<sub>x</sub>. Design parameters controlling air/fuel ratio and the introduction of cooling air into the combustor strongly influence thermal NO<sub>x</sub> formation. Thermal NO<sub>x</sub> formation is primarily a function of flame temperature and residence time. The extent of fuel/air mixing prior to combustion also affects NO<sub>x</sub> formation. Simultaneous mixing and combustion results in localized fuel-rich zones that yield high flame temperatures in which substantial thermal NO<sub>x</sub> production takes place. Injecting water or steam into a conventional combustor provides a heat sink that effectively reduces peak flame temperature, thereby reducing thermal NO<sub>x</sub> formation. Premixing air and fuel at a lean ratio approaching the lean flammability limit (approximately 50% excess air) significantly reduces peak flame temperature, resulting in minimum NO<sub>x</sub> formation during combustion. This is known as dry low NO<sub>x</sub> (DLN) combustion.

Selective Catalytic Reduction systems selectively reduce NO<sub>x</sub> emissions by injecting ammonia (NH<sub>3</sub>) into the exhaust gas stream upstream of a catalyst. Nitrogen oxides, NH<sub>3</sub>, and O<sub>2</sub> react on the surface of the catalyst to form molecular nitrogen (N<sub>2</sub>) and H<sub>2</sub>O. SCR is capable of over 90 percent NO<sub>x</sub> reduction. Titanium oxide is the SCR catalyst material most commonly used, though vanadium pentoxide, noble metals, or zeolites are also used. The ideal operating temperature for the specific catalyst proposed for the Pastoria Expansion GTE is 800° F. The Pastoria expansion project proposal calls for adding dilution air to reduce the exhaust gas temperature accordingly. Ammonia slip will be limited to 10 ppmvd @ 15% O<sub>2</sub>.

Carbon monoxide is formed during the combustion process due to incomplete oxidation of the carbon contained in the fuel. Carbon monoxide formation can be limited by ensuring complete and efficient combustion of the fuel. High combustion temperatures, adequate excess air and good air/fuel mixing during combustion minimize CO emissions. Therefore, good combustion practices and careful tuning are required with dry low NO<sub>x</sub> combustion to achieve low CO emissions without employing an oxidation catalyst.

Uncontrolled CO emissions from the GE 7FA are expected to be less than 6 ppmv, based on information from the manufacturer and on the performance demonstrated by Pastoria Energy Facility GTE (Unit 3) and two GE 7FA peaker units that operated without oxidation catalysts at the Sunrise Power Facility in Kern County. CO emissions of less than 6.0 ppmv are expected at all operating scenarios.

High combustion temperatures, adequate excess air, good air/fuel mixing during combustion, and the use of high quality fuel and inlet fuel scrubbers are being proposed to minimize VOC emissions. Based on the source test results from Pastoria and Sunrise Facilities referenced above, VOC emissions are expected to be less than 1.3 ppmv.

The GTE will operate with inlet air-cooling. Inlet air temperature and density directly affect turbine performance. The hotter and drier the inlet air temperature, the lower the efficiency and capacity of the turbine. Conversely, colder air improves the efficiency and reduces emissions by reducing the amount of fuel required to achieve the required turbine output. The inlet air cooler will allow the turbine to operate in a more efficient manner than it would without it. The increased efficiency will reduce the amount of fuel necessary to achieve the required power output. The reduction in fuel consumption will result in lower combustion contaminant emissions.

The applicant has requested and been approved for what he has termed “short term excursions” and “combustor tuning activities”. During short term excursions, which are limited to no more than 10 hours per rolling 12 month period, compliance with NO<sub>x</sub> emissions limits (16.25 lb/hr and 2.5 ppmv) is not required. An alternate NO<sub>x</sub> limit

of 30 ppmv on a 1-hour average basis has been established. During combustor tuning activities, which are limited to no more than 6 hours per calendar year, compliance with NO<sub>x</sub> (16.25 lb/hr and 2.5 ppmv), CO (23.75 lb/hr and 6 ppmv) and VOC (2.95 lb/hr and 1.3 ppmv) emissions limits is not required. The following alternate hourly limits, calculated on a 1 hour average basis, are applicable during combustor tuning activities: NO<sub>x</sub> (as NO<sub>2</sub>) 300 lb/hr and 600 lb/period; VOC 48 lb/hr and 96 lbs/period; and CO 2514 lb/hr and 2514 lb/period.

Short term excursions, which are transient events relating to turbine ramping where NO<sub>x</sub> emissions levels exceed established limits, have been observed for F class turbines operating at the ANP Blackstone Facility. Applicant has projected the number of hours per year (10 hr/yr) and maximum NO<sub>x</sub> emissions rate (30 ppmv) needed for Pastoria expansion based on the actual operating data obtained from ANP Blackstone Units 1 and 2 in year 2002.

Combustor tuning activities have been defined by the applicant as any testing, adjustment, tuning, or calibration activities necessary to insure safe and reliable steady state operation of the GTE following replacement of the combustor components, during seasonal tuning events, when recommended by the turbine manufacturer, or as necessary to maintain low emissions performance. This includes, but is not limited to, adjusting the amount of fuel distributed between the combustion turbine's staged fuel systems to simultaneously minimize NO<sub>x</sub> and CO production while minimizing combustor dynamics and ensuring combustor stability. Combustor tuning activities will be limited to 6 hours per calendar year.

Maximum emission rates have been established for combustor tuning and shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 300 lb/hr and 600 lb/period; VOC 48 lb/hr and 96 lbs/period; and CO 2514 lb/hr and 2514 lb/period. Hourly emissions are on a one-hour average basis.

Other than the alternate emissions limits and hours of operation limits that have been established for short term excursions and combustor tuning activities, no equipment, techniques or procedures have been identified for further limiting emissions.

## **VII. GENERAL CALCULATIONS:**

### **A. Assumptions**

- The expansion turbine will undergo initial commissioning, which includes activities defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and construction contractor to insure safe and reliable steady state operation of the gas turbines, CEM and emissions control systems and associated electrical delivery systems.

Initial commissioning is a one-time event, lasting over a period of up to three months.

- For the initial commissioning period, Pastoria has proposed the following maximum hourly and daily emissions for NO<sub>x</sub>, CO and VOC. (Maximum PM<sub>10</sub> and SO<sub>x</sub> emissions rates during the commissioning period are the same as during full load firing at worst case ambient conditions.)

Pollutant	Proposed Limit	Basis
NO <sub>x</sub>	308 lb/hr	Derived from permitted limit for Los Medanos Energy Center (616 lb/hr for two units)
NO <sub>x</sub>	3200 lb/day	Derived from CEM data during commissioning of Moss Landing units 1-4
VOC	273 lb/hr	Based on maximum allowable startup /shutdown emissions for PEF units 1-3
VOC	355 lb/day	Based on maximum allowable daily startup /shutdown emissions for PEF units 1-3
CO	2,527 lb/hr	Derived from permitted limit for Los Medanos Energy Center (5053.8 lb/hr for two units)
CO	10,824 lb/day	Calculated based on 12 hrs of uncontrolled emissions at the maximum allowable emissions rate during startup for the PEF expansion – 902 lb/hr.

- Actual measured emissions during the commissioning period and emissions occurring during short term excursions and combustor tuning activities will accrue towards the annual emissions limits.
- BACT emission concentration limits of 2.5 ppmvd @ 15% O<sub>2</sub>, 1.3 ppmvd @ 15% O<sub>2</sub> and 6.0 ppmvd @ 15% O<sub>2</sub> are proposed for NO<sub>x</sub>, VOC and CO respectively, at all operating loads and all ambient conditions (except during start-ups, shutdowns combustor tuning and short term excursions).
- The applicant proposes NO<sub>x</sub>, CO and VOC mass emission rates of 16.25 lb/hr, 23.75 lb/hr and 2.95 lb/hr, respectively, at 100% load and 35 °F (worst case ambient temperature).
- The applicant proposes a PM<sub>10</sub> mass emission rate of 9.0 lb/hr, at 100% load and 35 °F (worst case ambient temperature), based on the vendor's guarantee for both the filterable and condensable portions of PM<sub>10</sub>.

- The applicant proposed a maximum SO<sub>x</sub> emissions rate of 3.50 lb/hr, the same rate that was approved for the initial Pastoria Energy Facility. As shown below, the hourly emissions limit proposed by the operator is lower than the maximum calculated, worst-case emissions limit at 100% load at 35 °F (1791.1 MMBtu/hr) and the maximum permitted natural gas sulfur content of 0.75 gr S/100 scf.

$$(0.75 \text{ gr S}/100 \text{ scf} \times 1 \text{ lb S}/7000 \text{ gr} \times 64 \text{ lb SO}_x/32 \text{ lb S} \times 1 \text{ scf}/1000 \text{ Btu} \times 10^6 \text{ Btu/MMBtu}) \\ = 0.0021 \text{ lb/MMBtu}$$

$$(0.0021 \text{ lb/MMBtu}) \times (1791.1 \text{ MMBtu/hr}) = 3.76 \text{ lb/hr}$$

Both emissions limits are applicable at all times and under all conditions of operation. Compliance with the more restrictive hourly SO<sub>x</sub> limit must be demonstrated on an hourly basis by mass balance calculation using the fuel sulfur content and the actual quantities of fuel burned.

- The maximum hourly non-commissioning and non-combustor tuning emissions will occur in start-up mode.
- Except for VOC, the applicant has proposed the same maximum daily emissions that were approved for the initial Pastoria Energy Facility, units S-3636-1, '2 and '3: 450 lb/day NO<sub>x</sub>, 84 lb/day SO<sub>x</sub>, 2113 lb/day CO and 216 lb/day PM<sub>10</sub>. The applicant has proposed maximum daily VOC emissions of 96.83 lb/day. The proposed daily emission rates represent two hours of startup and twenty-two (22) hours operating at full load and 35 °F.
- The applicant has proposed maximum annual emissions based on 300 hours per year of operation in startup mode and 8460 hours per year of operation at maximum capacity and a worst-case ambient temperature of 35 °F.

#### **B. Emission Factors**

The maximum air contaminant mass emission rates (lb/hr), concentrations (ppmvd @ 15% O<sub>2</sub>), and startup and shutdown emissions rates (lb/hr) estimated by the manufacturer (see Attachment B for manufacturer's emissions data) for the proposed GTE are summarized below:

<b>Maximum Full Load Emission Rates and Concentrations (@ 100% Load &amp; 35 °F)</b>						
	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>	NH <sub>3</sub>
Mass Emission Rates (lb/hr)	16.25 <sup>1</sup>	23.75 <sup>1</sup>	2.95 <sup>1</sup>	9.0	3.5	24.06
ppmvd @ 15% O <sub>2</sub> limits	2.5 <sup>1</sup>	6.0 <sup>1</sup>	1.3 <sup>1</sup>	--	--	10.0

<b>Maximum Startup and Shutdown Emissions</b>					
	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
Mass Emission Rate (lb/hr)	80	902	16	9.0	3.5

**C. Calculations:**

**1. Pre-Project Potential to Emit (PE1):**

Section 3.26 of Rule 2201 defines the potential to emit (PE) as the maximum capacity of an emissions unit to emit a pollutant under its physical and operational design. The criteria pollutant potentials to emit for each emission unit is presented below:

As this is a new unit, the pre-project potential to emit (PE1) is equal to zero.

**2. Post Project Potential to Emit (PE2):**

**a. Maximum Hourly PE**

The maximum hourly potential to emit for NO<sub>x</sub>, CO, and VOC will occur when the unit is operating under start-up mode. Maximum hourly emissions for PM<sub>10</sub>, SO<sub>x</sub>, and NH<sub>3</sub> will occur when the unit is operating at full load. Start up emissions of PM<sub>10</sub>, SO<sub>x</sub>, and NH<sub>3</sub> are no higher than during full load operation. The maximum hourly emissions are summarized in the table below:

<b>Maximum Hourly Startup Emission Rates (lb/hr)</b>						
	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>	NH <sub>3</sub>
Mass Emission Rates	80	902	16	9.0	3.5	24.06

<sup>1</sup> Compliance with the emission limits will not be required during short-term excursions, limited to a cumulative total of 10 hours per rolling 12-month period (NO<sub>x</sub>) and combustion tuning events, limited to no more than 6 hours per calendar year (NO<sub>x</sub>, CO and VOC).

**b. Maximum Daily PE**

	Startup Emissions (lb/hr)	Full Load Emissions (lb/hr)	Maximum Daily Emissions (lb/day) <sup>a</sup>
NO <sub>x</sub>	80	16.25	450.0
CO	902	23.75	2113.0
VOC	16	2.95	96.9
PM <sub>10</sub>	N/A <sup>b</sup>	9.00	216.0
SO <sub>x</sub>	N/A <sup>b</sup>	3.50	84.0
NH <sub>3</sub>	N/A <sup>b</sup>	24.06	577.4

a. Daily emission limits for VOC, PM10 and SO<sub>x</sub> are based on 2 hours of startup and 22 hours of full load operation per day. NO<sub>x</sub> and CO emissions are identical to the maximum daily limits approved for the initial Pastoria gas turbine engines.

b. Hourly PM10, SO<sub>x</sub> and NH<sub>3</sub> emissions are the same during startup as during full load.

**c. Maximum Annual and Quarterly PE**

The maximum annual PE is the total of 300 hours per year of worst-case hourly startup emissions and 8460 hours per year of full load emissions. Quarterly emissions are the annual totals multiplied by the number of days in the respective quarter, either 90, 91 or 92), and divided by 365 days.

For example, for NO<sub>x</sub>

$$16.25 \text{ lb/hr} \times (8460 \text{ hrs/yr}) + 80 \text{ lb/hr} \times (300 \text{ hrs/yr}) \approx 161,480 \text{ lb/yr}^2$$

The results are summarized in the table below:

Maximum Annual and Quarterly PE						
	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>	NH <sub>3</sub>
Annual PE (lb/yr)	161,480	471,492	29,730	78,840	30,616	210,766
Q1 (lb/qtr)	39,817	116,258	7,331	19,440	7,549	51,970
Q2 (lb/qtr)	40,260	117,550	7,412	19,656	7,633	52,547
Q3 (lb/qtr)	40,702	118,842	7,494	19,872	7,717	53,125
Q4 (lb/qtr)	40,702	118,842	7,494	19,872	7,717	53,125

<sup>2</sup> Proposed by the applicant. Annual emissions totals of NO<sub>x</sub>, CO, SO<sub>x</sub> and VOC are not exact due to rounding.

**3. Quarterly Delta Potential to Emit ( $\Delta$ PE):**

The quarterly delta potential to emit is used to complete the emission profile for each emissions unit and is calculated as follows:

$$\Delta PE \text{ (lb/qtr)} = PE2 \text{ (lb/qtr)} - PE1 \text{ (lb/qtr)}$$

Since the pre-project potential to emit (PE1) is equal to zero,  $\Delta$ PE will be equivalent to the PE2 calculated above in Section VII.C.2.

**4. Pre-Project Stationary Source Potential to Emit (SSPE1)**

Pursuant to Section 4.9 of District Rule 2201, the Pre-project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Pre Project Stationary Source Potential to Emit (SSPE1)					
Permit Unit	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
S-3636-1-3	114,828	406,722	75,873	74,781	28,260
S-3636-2-3	114,828	406,722	75,873	74,781	28,260
S-3636-3-3	114,828	406,722	75,873	74,781	28,260
S-3636-4-3	0	0	0	8,059	0
S-3636-5-3	0	0	0	4,059	0
S-3636-7-2	368	724	46	0	0
S-3636-12-0	889	46	17	11	27
S-3636-13-0	0	0	0	3577	0
Pre-project SSPE (SSPE1)	345,741	1,220,936	227,682	240,049	84,807

**5. Post-Project Stationary Source Potential to Emit (SSPE2)**

Pursuant to Section 4.10 of District Rule 2201, the Post-project Stationary Source Potential to Emit (SSPE2) is the post-project annual PE of all units at the Stationary Source.

Post Project Stationary Source Potential to Emit (SSPE2)					
Permit Unit	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
S-3636-1-3	114,828	406,722	75,873	74,781	28,260
S-3636-2-3	114,828	406,722	75,873	74,781	28,260
S-3636-3-3	114,828	406,722	75,873	74,781	28,260
S-3636-4-3	0	0	0	8,059	0
S-3636-5-3	0	0	0	4,059	0
S-3636-7-2	368	724	46	0	0
S-3636-12-0	889	46	17	11	27
S-3636-13-0	0	0	0	3577	0
S-3636-14-0	161,480	471,492	29,730	78,840	30,616
Post-project SSPE (SSPE2)	507,221	1,692,428	257,412	318,889	115,423

## 6. Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a major source is a stationary source with post-project emissions or a Post-project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. As shown in the table below, Pastoria Energy Facility is a major source for NO<sub>x</sub>, CO, VOC and PM<sub>10</sub>.

Major Source Determination					
Permit Unit	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
Post-project SSPE (SSPE2)	507,221	1,692,428	257,412	318,889	115,423
Major Source Threshold	100,000	200,000	100,000	140,000	140,000
Major Source?	Yes	Yes	Yes	Yes	No

## 7. Baseline Emissions (BE)

The BE calculation (in lbs/year) is performed pollutant-by-pollutant for each unit within the project, to calculate the QNEC and if applicable, to determine the amount of offsets required.

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source, otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.23

As the subject GTE is a new emissions unit, BE = PE1 = 0 for all criteria pollutants.

**8. Contemporaneous Increase in Permitted Emissions (CIPE) for Major Modification Determination**

A Major Modification (Title 1 Modification) occurs if the Post-Project Stationary Source Potential to Emit (SSPE2) exceeds the Major Source Thresholds (as defined in Rule 2201) and the Contemporaneous Increase in Permitted Emissions (CIPE), is equal to or greater than one or more of the following threshold values:

Calculating the CIPE is required for an existing Major Source to determine if the current project has emissions increases above Major Modification thresholds.

**For an existing Major Source:**

Major Modification CIPE Thresholds	
Pollutant	CIPE (lb/year)
NO <sub>x</sub>	50,000
SO <sub>x</sub>	30,000
PM <sub>10</sub>	30,000
VOC	50,000

Based on the PE2 values calculated above, the Pastoria Energy Facility expansion project will have a CIPE exceeding the above listed threshold values for NO<sub>x</sub>, PM<sub>10</sub> and SO<sub>x</sub>, therefore, the project is a Major Modification.

**VIII. COMPLIANCE:**

***Rule 1080 Stack Monitoring (12/17/92)***

This rule grants the APCO the authority to request the installation and use of continuous emissions monitors (CEMs), and specifies performance standards for the equipment and administrative requirements for recordkeeping, reporting, and notification.

The GTE will be equipped with operational CEMs for NO<sub>x</sub>, CO, and O<sub>2</sub>. Provisions included in the operating permit are consistent with the requirements of this Rule. Compliance with the requirements of this Rule is anticipated.

**Proposed Rule 1080 Conditions:**

- The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data

available to the District's automated polling system on a daily basis. [District Rule 1080]

- Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]
- Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]
- Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and compliance source testing are both performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]
- Permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]
- Permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions; nature and cause of excess (averaging period used for data reporting shall correspond to the averaging period for each respective emission standard); corrective actions taken and preventive measures adopted; applicable time and date of each period during a CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080]

**Rule 1081 Source Sampling (12/16/93)**

This rule requires adequate and safe facilities for use in sampling to determine compliance with emissions limits, and specifies methods and procedures for source testing and sample collection.

The requirements of this rule will be included in the operating permits. Compliance with this Rule is anticipated.

**Proposed Rule 1081 Conditions:**

- The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]
- Source testing to measure startup NO<sub>x</sub>, CO, and VOC mass emissions rates has been successfully conducted for unit #3, S-3636-3-3. This testing certified the CEM relative accuracy (RATA) in accordance with 40 CFR 60, Appendix B. RATA testing of the CEMs to certify startup emissions rates for at least one of the four Pastoria Energy Facility turbines is required at least once every seven years. [District Rule 1081]
- Source testing to measure the NO<sub>x</sub>, CO, and VOC emission rates (lb/hr and ppmvd @ 15% O<sub>2</sub>) shall be conducted within 90 days after initial operation and at least once every twelve months thereafter. [District Rules 1081 and 4703]
- Source testing to measure the PM<sub>10</sub> emission rate (lb/hr) and the ammonia emission rate shall be conducted within 90 days after initial operation and at least once every twelve months thereafter. [District Rule 1081]
- Compliance with natural gas sulfur content limit shall be demonstrated within 60 days after the end of the commissioning period and periodically thereafter as required by 40 CFR 60 Subpart GG and 40 and 40 CFR 75. [District Rules 1081, 2540, and 4001]
- Compliance demonstration (source testing) shall be District witnessed, or authorized and samples shall be collected by a California Air Resources Board certified testing laboratory. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
- The following test methods shall be used: PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a, NO<sub>x</sub> - EPA Method 7E or 20, CO - EPA Method 10 or 10B, O<sub>2</sub> - EPA Method 3, 3A, or 20, VOC - EPA Method 18 or 25, ammonia - BAAQMD ST-1B, and fuel gas sulfur content - ASTM D3246. EPA approved alternative test methods as approved by the District may also be used to address

the source testing requirements of this permit. [District Rules 1081, 4001, and 4703]

***Rule 1100 Equipment Breakdown (12/17/92)***

This rule defines a breakdown condition and the procedures to follow if one occurs. The corrective action, the issuance of an emergency variance, and the reporting requirements are also specified.

The requirements of this Rule will be included in the operating permits. Compliance with this rule is anticipated.

**Proposed Rule 1100 Conditions:**

- Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100, 6.1]
- The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification 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 methods utilized to restore normal operations. [District Rule 1100, 7.0]

***Rule 2010 Permits Required (12/17/92)***

This rule requires any person building, altering, or replacing any operation, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants, to first obtain authorization from the District in the form of an application for DOC. By submission of this application for DOC, Pastoria Energy Facility LLC is complying with the requirements of this rule.

***Rule 2201 New and Modified Stationary Source Review Rule (06/21/01)***

**A. BACT:**

**1. BACT Applicability**

Pursuant to Sections 4.1.1 and 4.1.2, BACT shall be applied to a new, relocated, or modified emissions unit if the new or relocated unit has a Potential to Emit (PE) exceeding two pounds in any one day or the modified emissions unit results in an Adjusted Increase in Permitted Emissions (AIPE) exceeding 2 lb/day for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, or SO<sub>x</sub>. For CO emissions, the CO Post-project Stationary Source Potential to Emit (SSPE2) must also exceed 200,000 lb/year to trigger BACT.

As seen in Section VII.C.2.b of this evaluation, the applicant is proposing to install a new gas turbine engine generator with PEs greater than 2 lb/day for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, and SO<sub>x</sub>. BACT is triggered for NO<sub>x</sub>, VOC, PM<sub>10</sub>, and SO<sub>x</sub> criteria pollutants since the PEs are greater than 2 lbs/day. BACT is triggered for CO since the SSPE2 for CO is greater than 200,000 lbs/year, as demonstrated in Section VII.C.5 of this document.

The PE of ammonia is greater than two pounds per day for the GTE. However, the ammonia emissions are required for the operation of the SCR system, which is BACT for NO<sub>x</sub>. The emissions from a control device that is determined by the District to be BACT are not subject to BACT.

BACT Guideline 3.4.7 from the District's BACT Clearinghouse is applicable to the GTE installation [Gas Turbine ≥ to 50 MW, Uniform Load, without Heat Recovery]. A copy of Guideline 3.4.7 is included as Attachment C.

### **3. Top-Down Best Available Control Technology (BACT) Analysis**

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

A top down BACT analysis is included as Attachment D.

### **4. BACT Summary:**

BACT has been satisfied by the following:

NO<sub>x</sub>: 2.5 ppmv @ 15% O<sub>2</sub> (1-hour rolling average, except during startup/shutdown) with Dry Low NO<sub>x</sub> Combustors, SCR with ammonia injection and natural gas fuel

CO: 6.0 ppmv @ 15% O<sub>2</sub> (3-hour rolling average, except during startup/shutdown) with good combustion practices and natural gas fuel

VOC: 1.3 ppmv @ 15% O<sub>2</sub> (3-hour rolling average, except during startup/shutdown) with good combustion practices and natural gas fuel

PM<sub>10</sub>: Air inlet filter cooler, lube oil vent coalescer, and PUC regulated quality natural gas fuel with no more than 0.75 grain S/100 dscf

SO<sub>x</sub>: PUC regulated quality natural gas fuel with no more than 0.75 grain S/100 dscf

**B. Offsets:**

**1. Offset Applicability:**

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post-project Stationary Source Potential to Emit (SSPE2) equals to or exceeds emissions of 20,000 lbs/year for NO<sub>x</sub> and VOC, 200,000 lbs/year for CO, 54,750 lbs/year for SO<sub>x</sub> and 29,200 lbs/year for PM<sub>10</sub>. As seen in the table below, the facility's SSPE2 is greater than the offset thresholds for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub> and SO<sub>x</sub> emissions. Therefore, offset calculations are necessary.

Offset Determination					
	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
Pre-project SSPE (SSPE1)	345,741	1,220,936	227,682	240,049	84,807
Post-project SSPE (SSPE2)	507,221	1,692,428	257,412	318,889	115,423
Offset Threshold	20,000	200,000	20,000	29,200	54,750
Offsets Triggered	Yes	Yes	Yes	Yes	Yes

**2. Quantity of Offsets Required:**

As seen above, the SSPE2 is greater than the offset thresholds for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, and SO<sub>x</sub>; therefore offset calculations will be required for this project.

Per Sections 4.7.1 and 4.7.3, the quantity of offsets in pounds per year for NO<sub>x</sub> is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

$$\text{Offsets Required (lb/year)} = (\sum[\text{PE2} - \text{BE}] + \text{ICCE}) \times \text{DOR}, \text{ for all new or modified emissions units in the project,}$$

Where,

PE2 = Post Project Potential to Emit, (lb/year)

BE = Baseline Emissions, (lb/year)

ICCE = Increase in Cargo Carrier Emissions, (lb/year)

OR = Offset Ratio, determined pursuant to Section 4.8 (Distance Offset Ratio) or (Interpollutant Offset Ratio) pursuant to Section 4.13.3

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE)

The facility is proposing to install a new emissions unit; therefore Baseline Emissions are equal to zero. Also, there is only one emissions unit associated with this project and there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

$$\text{Offsets Required (lb/year)} = \text{PE2} \times \text{OR}$$

For NO<sub>x</sub>, VOC and SO<sub>x</sub>, the applicant is proposing to use emissions reduction credits that were generated at locations greater than 15 miles from the location of the Pastoria Energy Facility; therefore, a distance-offset ratio of 1.5:1.0 is required. For PM<sub>10</sub>, the applicant is proposing the use of NO<sub>x</sub> emission reduction credits to offset PM<sub>10</sub> at an offset ratio of 2.72:1.0. The District has previously approved the use of this ratio for the Pastoria Energy Facility, finding that it satisfied the requirements set forth in Section 4.13.3 for the use of interpollutant offsets. (See discussion below on the use of interpollutant offsets.)

The following tables summarize the offset requirements for the Pastoria Energy Facility expansion, listing the annual and quarterly PE2, the required offset ratio, the amounts of offsets required and the ERC certificates proposed for use in this project.

The CO emissions increase in this project is exempt from offset requirements under the provisions set forth in Section 4.6.1.

<b>NO<sub>x</sub>- Offsets Required and Proposed Credits</b>					
	NO <sub>x</sub>	NO <sub>x</sub>	NO <sub>x</sub>	NO <sub>x</sub>	
	Qtr1	Qtr2	Qtr3	Qtr4	
PE2 (lb/qtr)	39,817	40,260	40,702	40,702	
Offset Ratio	1.5	1.5	1.5	1.5	
Offsets Required (lb/qtr)	59,726	60,389	61,053	61,053	
NO <sub>x</sub> Offsets Required to Offset PM <sub>10</sub> @ 2.72:1.0 (lb/qtr). See the PM10 offset table below.	52,877	53,464	54,052	54,052	
Total Offsets Required (lb/qtr)	112,603	113,853	115,105	115,105	
NO <sub>x</sub> ERC Cert S1554-2	109,935	121,484	127,922	117,272	
NO <sub>x</sub> ERC Cert S1543-2	10,354	8,381	11,018	11,467	
NO <sub>x</sub> Credits Remaining	7,686	16,012	23,835	13,634	

<b>VOC - Offsets Required and Proposed Credits</b>					
		VOC	VOC	VOC	VOC
		Qtr1	Qtr2	Qtr3	Qtr4
PE2 (lb/qtr)		7,331	7,412	7,494	7,494
Offset Ratio		1.5	1.5	1.5	1.5
Offsets Required (lb/qtr)		10,996	11,118	11,241	11,241
VOC ERC Cert S-444-1		47,635	37,534	40,666	32,156
VOC ERC Cert S-1666-1		0	0	0	9
VOC Credits Remaining		36,639	26,416	29,425	20,924

<b>PM - Offsets Required and Proposed Credits</b>					
		PM <sub>10</sub>	PM <sub>10</sub>	PM <sub>10</sub>	PM <sub>10</sub>
		Qtr1	Qtr2	Qtr3	Qtr4
PE2 (lb/qtr)		19,440	19,656	19,872	19,872
Offset Ratio (NOx for PM10)		2.72	2.72	2.72	2.72
NOx Offsets Required to Offset PM <sub>10</sub> @ 2.72:1.0 (lb/qtr)		52,877	53,464	54,052	54,052

<b>SOx - Offsets Required and Proposed Credits</b>					
		SO <sub>x</sub>	SO <sub>x</sub>	SO <sub>x</sub>	SO <sub>x</sub>
		Qtr1	Qtr2	Qtr3	Qtr4
PE2 (lb/qtr)		7,549	7,633	7,717	7,717
Offset Ratio		1.5	1.5	1.5	1.5
Offsets Required (lb/qtr)		11,324	11,450	11,575	11,575
SO <sub>x</sub> ERC Cert S-1344-5		25,521	30,054	14,242	12,127
SO <sub>x</sub> Credits Remaining		14,197	18,604	2,667	552

As seen above, the facility has sufficient ERC's to fully offset the emissions increases from the Pastoria Energy Facility expansions project.

**Section 4.6 Emission Offset Exemptions:**

Pursuant to Section 4.6.1, "Emission offsets shall not be required for increases in carbon monoxide in attainment areas if the applicant demonstrates to the satisfaction of the APCO that the Ambient Air Quality Standards are not violated in the areas to be affected,

and such emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of Ambient Air Quality Standards (AAQS).”

The Technical Services Section of the San Joaquin Valley Unified Air Pollution Control District performed a CO modeling run, using the EPA ISCST3 air dispersion model, to determine if the CO emissions from the new emissions unit would exceed the State and Federal AAQS (Attachment E). Modeling of the worst case 1 hour and 8 hour CO impacts were performed. These values were added to the worst case ambient concentration (background) measured and compared to the ambient air quality standards. Results of the modeling are presented below:

<b>Ambient Modeling Results for CO</b>		
	<b>1 hr std</b>	<b>8 hr std</b>
AAQS (ug/m <sup>3</sup> )	23,000	10,000
Worst case ambient (background) (ug/m <sup>3</sup> )	4,777	3,029
Modeled impact (ug/m <sup>3</sup> )	333	7
Modeled ambient CO (ug/m <sup>3</sup> )	5,109	3,036

This modeling demonstrates that the proposed increase in CO emissions will not cause a violation of the CO ambient air quality standards. Therefore, the increase in CO emissions is exempt from offsets pursuant to Section 6.4.1.

### **Section 4.13.3 – Interpollutant Offsets**

The use of interpollutant offsets may be allowed by the APCO on a case-by-case basis provided the applicant demonstrates that the proposed emissions increase will not cause or contribute to a violation of an Ambient Air Quality Standard. The APCO, in allowing the use of interpollutant offsets, shall base his approval on an air quality analysis and shall impose an offset ratio equal to or greater than that required by this rule. As set forth in Section 4.13.3.2, emissions of PM<sub>10</sub> may be offset by PM<sub>10</sub> precursors. The applicant is proposing the use of the oxides of nitrogen (NO<sub>x</sub>) to offset the PM<sub>10</sub> emissions. As defined in Section 3.29, nitrogen oxides are a precursor to the nitrate fraction of PM<sub>10</sub>.

The District has demonstrated through ambient air quality monitoring that the authorized PM<sub>10</sub> emissions increase from the Pastoria Energy Facility will not cause or contribute to a violation of either the 24-hour or annual ambient air quality standard for PM<sub>10</sub>.

Previously, La Paloma Generating Company in project #980654 and Pastoria Energy Facility in project 99123, established, and the District concurred, that sufficient quantities of PM<sub>10</sub> ERCs were not available at reasonable cost to fully offset project PM<sub>10</sub> emissions. La Paloma Generating and Pastoria Energy Facility were approved to offset the project PM<sub>10</sub> emission increases with NO<sub>x</sub> ERCs. The use of NO<sub>x</sub> to offset PM<sub>10</sub> is

allowed in Rule 2201 section 4.2.5.3, as approved by the APCO. Section 4.2.5.3 specifically allows interpollutant offsets between PM10 and PM10 precursors.

The use of NO<sub>x</sub> ERCs to offset PM10 emission increases has the added air quality benefit of helping to reduce ozone formation in addition to PM10 formation, especially during the summer ozone season (violations of the 24 hour PM10 AAQS typically occur in the winter). In the summer, when particulate levels are low and the levels of ozone are high, the contribution of NO<sub>x</sub> to particulate formation is less important, but contribution of NO<sub>x</sub> to ozone formation is more important.

Project #980654 for La Paloma Generating Company LLC's power plant located near McKittrick, California established an interpollutant offset ratio of 2.22 lbs NO<sub>x</sub> for 1 lb PM10 (2.22 : 1). In the initial permitting of the Pastoria Energy Facility, the District determined that the same 2.22:1.0 interpollutant ratio was appropriate for the Pastoria Energy Facility. The determination was based on the proximity of the Pastoria Energy Facility to La Paloma, approximately 50 miles to the southeast, and that the two facilities were subject to the same general meteorological conditions.

Pastoria has proposed to use the same interpollutant ratio for the expansion project. An updated offset analysis, prepared by Sierra Research and included in Attachment F, arrived at a similar ratio to that originally approved: 2.16:1.0. Thus, the ratio proposed by Pastoria is slightly higher than the ratio arrived at using the updated analysis and appropriate for this project. The updated offset analysis used the Chemical Mass Balance (CMB) model results prepared by the District using inputs from the Bakersfield, Golden State Avenue Monitoring Site for the period February 2000 through January 2001 and the 1999 emissions inventory information. The analysis used the monitoring data available from the nearest monitoring station to the Pastoria site and a methodology consistent with past District practice to arrive at a ratio of tons of NO<sub>x</sub> reductions needed to reduce one ton of particulate matter. From the ambient CMB modeling data, that relationship was given as the organic carbon PM concentration to the ammonia nitrate PM concentration, normalized to the respective inventory values of organic carbon PM10 and NO<sub>x</sub>. The District has reviewed the analysis and found it acceptable.

Based on the original and updated interpollutant offset analyses, a ratio of 2.22 to NO<sub>x</sub> to offset 1.0 ton PM10 is acceptable. As Pastoria is proposing to use banked NO<sub>x</sub> credits that were achieved at a location greater than 15 miles from the location of their proposed use, New Source Review (Section 4.7.3) requires that a distance-offset ratio of 1.5 be applied to the quantity of offsets required.

When both a distance and an interpollutant offset ratio apply, the accepted District practice is to apply the ratios independently. This means that the excess offsets required due to distance and interpollutant trading are determined independently and then added to the emissions increase to be offset. Therefore, to offset PM10 emissions with NO<sub>x</sub> credits generated > 15 miles from the location of their use, the following relationship holds:

$$\text{NOx (lb/yr)} = \text{PM10 emission increase (lb/yr)} + (1.5 - 1.0) \times \text{PM emissions increase (lb/yr)} \\ + (2.22 - 1.0) \times \text{PM10 emissions increase (lb/yr)}$$

$$\text{NOx (lb/yr)} = 2.72 \times \text{PM10 emissions increase (lb/yr)}$$

### **3. Actual Emission Reductions**

There are no actual emissions reductions (AERs) proposed as a result of this application.  
AER = 0.

#### **C. Public Notification:**

##### **1. Applicability**

District Rule 2201, section 5.4, requires a public notification for the affected pollutants from the following types of projects:

- New Major Sources
- Title I modifications
- New emission units with a PE > 100 lb/day of any one pollutant (IPE Notifications)
- Modifications with SSPE1 below an offset threshold and SSPE 2 above an offset threshold on a pollutant by pollutant basis (Existing Facility - Offset Threshold Notification)
- New stationary sources with SSPE2 exceeding offset thresholds (New Facility - Offset Threshold Notification)
- Any permitting action with a SSIPE exceeding 20,000 lb/yr for any one pollutant. (SSIPE Notice)

##### **a. New Major Source Notice Determination:**

New Major Sources are new facilities, which are also Major Sources.

The source is an existing major source and not a new major source. Therefore, public noticing is not required for this project under this provision.

##### **b. Major Modification Determination:**

As discussed above in Section VII. 8, the Pastoria Energy Facility expansion results in increases in emissions exceeding the Major Source thresholds for NOx, SOx, and PM10. Thus, the project results in a Major Modification and public noticing is required.

**c. PE Notification:**

Applications which include a new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. The potential to emit for each unit is summarized in the tables below.

<b>Post-Project Potential to Emit: (S-3636-14-0)</b>						
<b>Permit Unit</b>	<b>NO<sub>x</sub> (lb/day)</b>	<b>CO (lb/day)</b>	<b>VOC (lb/day)</b>	<b>PM<sub>10</sub> (lb/day)</b>	<b>SO<sub>x</sub> (lb/day)</b>	<b>NH<sub>3</sub> (lb/day)</b>
S-3636-1-0	450.0	2113.0	96.9	216.0	84.0	577.4
<b>Threshold (lb/day)</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Notification Required?</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>

According to the tables above, permit unit S-3636-14-0 will have a Potential to Emit greater than 100 lbs/day for NO<sub>x</sub>, CO, PM<sub>10</sub> and NH<sub>3</sub> emissions. Therefore, public noticing will be required for PE > 100 lbs/day purposes.

**d. Existing Facility - Offset Threshold Notification**

The existing Pastoria Energy Facility exceeds the offset thresholds values for all air contaminants; therefore, public noticing under this provision is not possible.

**e. New Facility - Offset Threshold Notification**

The facility is not a new Stationary Source; therefore, public noticing under this provision is not possible.

**f. SSIPE Notification:**

A notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/yr of any affected pollutant. As shown in section VII.C.7 of this document, the PE2 for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, SO<sub>x</sub>, and NH<sub>3</sub> will be more than 20,000 pounds per year. Therefore, a SSIPE notification is required for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, SO<sub>x</sub>, and NH<sub>3</sub>.

**2. Public Notice Requirements**

Section 5.5 details the actions to be taken by the District when public noticing is triggered according to the application types above. The project will be publicly noticed in accordance with the requirements of Section 5.5.

**C. Daily Emission Limits:**

Daily emissions limitations (DELs) and other enforceable conditions are required by Section 3.17 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.17.1 and 3.17.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis.

The DELs for the subject GTE for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, SO<sub>x</sub>, and NH<sub>3</sub> will consist of lb/day limits and/or emission factors.

**Proposed Rule 2201 (DEL) Conditions:**

- Emission rates from GTE, except during startup and shutdown periods, shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 16.25 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>; VOC (as methane) 2.95 lb/hr and 1.3 ppmvd @ 15% O<sub>2</sub>; CO 23.75 lb/hr and 6.0 ppmvd @ 15% O<sub>2</sub>; PM<sub>10</sub> 9.0 lb/hr or SO<sub>x</sub> (as SO<sub>2</sub>) 3.5 lb/hr. NO<sub>x</sub> (as NO<sub>2</sub>) emission limits are one hour rolling averages. All other emission limits are three hour rolling averages. [District Rules 2201, 4001, and 4703]
- Emissions from this unit, on days when a startup and/or shutdown occurs, shall not exceed the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) 450 lb/day; VOC 96.9 lb/day; CO 2113 lb/day; PM<sub>10</sub> 216 lb/day; or SO<sub>x</sub> (as SO<sub>2</sub>) 84 lb/day. [District Rule 2201]
- The ammonia (NH<sub>3</sub>) emissions shall not exceed 10 ppmvd @ 15% O<sub>2</sub> averaged over a 24 hour rolling average. [District Rule 2201]

**D. Compliance Certification**

Section 4.14.3 of this Rule requires the owner of a new major source or a source undergoing a Major modification to demonstrate to the satisfaction of the District that all other major sources owned by such person and operating in California are in compliance with all applicable emission limitations and standards. As discussed in Sections VII. C. 6 and VII.C. 8, this facility is a major source and this project does constitute a Major modification, therefore this requirement is applicable. Included in Attachment G is Calpine Corporation's certification for Pastoria Energy Facility.

**E. Air Quality Impact Analysis:**

Section 4.14.2 of this Rule requires that an air quality impact analysis (AQIA) be conducted for the purpose of determining whether the operation of the proposed equipment will cause or make worse a violation of an air quality standard. The Technical Services Division of the SJVAPCD conducted the required analysis. Refer to Attachment E of this document for the AQIA summary sheet.

The proposed location is in an attainment area for NO<sub>x</sub>, CO, and SO<sub>x</sub>. As shown by the AQIA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO<sub>x</sub>, CO, or SO<sub>x</sub>.

The proposed location is in a non-attainment area for PM<sub>10</sub>. The increase in the ambient PM<sub>10</sub> concentration due to the proposed equipment is shown on the table titled Calculated Contribution. The levels of significance, from 40 CFR Part 51.165 (b)(2), are shown on the table titled Significance Levels.

Significance Levels					
Pollutant	Significance Levels (µg/m <sup>3</sup> ) - 40 CFR Part 51.165 (b)(2)				
	Annual Avg.	24 hr Avg.	8 hr Avg.	3 hr Avg.	1 hr Avg.
PM <sub>10</sub>	1.0	5	N/A	N/A	N/A

Calculated Contribution					
Pollutant	Calculated Contributions (µg/m <sup>3</sup> )				
	Annual Avg.	24 hr Avg.	8 hr Avg.	3 hr Avg.	1 hr Avg.
PM <sub>10</sub>	0.066	0.43	N/A	N/A	N/A

As shown, the calculated contribution of PM<sub>10</sub> will not exceed the EPA significance level. This project is not expected to cause or make worse a violation of an air quality standard.

**F. Compliance Assurance**

**1. Source Testing**

District Rule 4703 requires NO<sub>x</sub> and CO emission testing on an annual basis. The District Source Test Policy (APR 1705 10/09/97) requires annual testing for all pollutants controlled by catalysts. The control equipment will include a SCR system. Ammonia slip is an indicator of how well the SCR system is performing and PM<sub>10</sub> emissions are a good indicator of how well the inlet air cooler/filter are performing.

Therefore, source testing for NO<sub>x</sub>, VOC, CO, PM<sub>10</sub>, and ammonia slip will be required within 90 days of initial operation and at least once every 12 months thereafter.

Also, source testing of NO<sub>x</sub>, CO, and VOC startup emissions is required for one of the four Pastoria Energy Facility GTE's initially and not less than every seven years thereafter. If, in the judgment of source test staff, CEMS data is not reliable to determine compliance with NO<sub>x</sub> and CO startup emission limits, then source testing to measure startup NO<sub>x</sub> and CO mass emission rates shall be conducted at least once every 12 months. This testing will serve two purposes: to validate the startup emission estimates used in the emission calculations and to verify that the CEMs accurately measure startup emissions.

The unit will be equipped with CEMs for NO<sub>x</sub>, CO, and O<sub>2</sub>. Each CEM will have two ranges to allow accurate measurements of NO<sub>x</sub> and CO emissions during startup. The CEMs must meet the installation, performance, relative accuracy, and quality assurance requirements specified in 40 CFR 60.13 and Appendix B (referenced in the CEM requirements of Rule 4703) and the acid rain requirements in 40 CFR Part 75.

40 CFR Part 60 subpart GG requires fuel nitrogen content testing, but only if the owner/operator is claiming an allowance for fuel bound nitrogen. As the owner/operator is not claiming an allowance for fuel bound nitrogen, fuel nitrogen content monitoring will not be required.

40 CFR Part 60 subpart GG requires that fuel sulfur content be monitored. Refer to the monitoring section of this document for a discussion of the fuel sulfur testing requirements.

## **2. Monitoring**

District Rule 4703 requires the monitoring of NO<sub>x</sub> emissions. The applicant has proposed a CEMS for NO<sub>x</sub>.

CO monitoring is not specifically required by any applicable Rule or Regulation. Nevertheless, due to erratic CO emission concentrations during start-up and shutdown periods, it is necessary to limit the CO emissions on a pound per hour basis. Therefore, a CO CEMS is necessary to show compliance with the CO limits of this permit. The applicant has proposed a CO CEMS.

40 CFR Part 60 Subpart GG requires monitoring of the fuel consumption. Fuel consumption monitoring will be required.

40 CFR Part 60 Subpart GG requires monitoring of the fuel nitrogen content, but only if the owner/operator is claiming an allowance for fuel bound nitrogen. As the owner/operator is not claiming such an allowance, monitoring of the nitrogen content of the fuel is not required.

40 CFR Part 60 Subpart GG requires monitoring of the fuel sulfur content. The gas is supplied from a regulated interstate pipeline (Kern River/Mojave) and has a maximum sulfur content of 0.75 gr/scf. Natural gas with fuel sulfur content of 1.0 gr/100 scf or less assures compliance with the 0.8% sulfur by weight limit of New Source Performance Standard, Subpart GG - 40 CFR Subpart 60.333(b). Fuel sulfur (gr/100 scf) can be converted to weight percent of sulfur in the natural gas (ng) as follows:

$$\begin{aligned} \%S(\text{lb/lbNG}) &= \left( \frac{1 \text{ gr}}{100 \text{ scf}} \right) \left( \frac{1 \text{ lb}}{7000 \text{ gr}} \right) \left( \frac{24.5 \text{ L}}{\text{mol NG}} \right) \left( \frac{1 \text{ mol}}{16 \text{ g}} \right) \left( \frac{454 \text{ g}}{1 \text{ lb}} \right) \left( \frac{0.035 \text{ scf}}{1 \text{ L}} \right) (100) \\ &= 0.00348\% \text{ sulfur by weight} \end{aligned}$$

Thus natural gas with fuel sulfur content of 1.0 gr/100 scf or less assures compliance with the 0.8% sulfur by weight limit of New Source Performance Standard, Subpart GG - 40 CFR Subpart 60.333(b).

As allowed for in §60.334 (h)(3), an operator may elect not to monitor the sulfur content of gaseous fuel if such fuel is demonstrated to meet the definition of natural gas in §60.331 (u). The operator has elected to demonstrate that the gaseous fuel supplied to the Pastoria Energy Facility meets the definition of natural gas, by conducting representative fuel sampling to show that the gaseous fuel does not exceed 20 grains/100 scf. The following condition specifies the representative fuel sampling.

Compliance with the fuel sulfur content limit shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. If sulfur content is less than 1.0 gr/100 scf for 8 consecutive weeks, then the Monitoring frequency shall be every six (6) months. If any six (6) month monitoring show an exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3) and District Rule 2520, 9.3.2]

### **3. Recordkeeping**

The applicant will be required to keep records of all of the parameters that are required to be monitored. Refer to section VIII.F.2 of this document for a discussion of the parameters that will be monitored.

### **4. Reporting**

40 CFR Part 60 Subpart GG requires that the facility report the use of fuel with a sulfur content of more than 0.8% by weight. Such reporting will be required.

40 CFR Part 60 Subpart GG requires the reporting of exceedences of the NO<sub>x</sub> emission limit of the permit. Such reporting will be required.

#### **Rule 2520** *Federally Mandated Operating Permits (06/21/01)*

This project will be subject to Rule 2520 (Title V) because it will meet the following criteria specified in section 2.0:

- Section 2.2 states, "Any source that emits or has the potential to emit 100 tons per year of any air contaminant." The facility has the potential to emit greater than 100 tons per year of NO<sub>x</sub>, CO, and PM<sub>10</sub>.

- Section 2.3 states, "Any major source." The facility will be a major source for NO<sub>x</sub>, CO, VOC, and PM<sub>10</sub>.
- Section 2.4 states, "Any emissions unit, including an area source, subject to a standard or other requirement promulgated pursuant to section 111 (NSPS) or 112 (HAPs) of the CAA..." The GTE is subject to NSPS.
- Section 2.5 states "A source with an acid rain unit for which application for an acid rain permit is required pursuant to Title IV (Acid Rain Program) of the CAA." The GTE is subject to the acid rain program.
- Section 2.6 states, "Any source required to have a preconstruction review permit pursuant to the requirements of the prevention of significant deterioration (PSD) program under Title I of the Federal Clean Air Act." This facility is required to obtain a PSD permit from the EPA.

Pursuant to Rule 2520 section 5.3.1, Pastoria Energy Facility must submit a Title V application within 12 months of commencing operations. No action is required at this time.

**Proposed Rule 2520 Condition:**

- Permittee shall submit an application to comply with SJVUAPCD District Rule 2520 - Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]

**Rule 2540 Acid Rain Program (11/13/97)**

The proposed GTE is subject to the acid rain program as phase II units, i.e. it will be installed after 11/15/90 and has a generator nameplate rating greater than 25 MW.

The acid rain program will be implemented through a Title V operating permit. Federal regulations require submission of an acid rain permit application at least 24 months before the later of 1/1/2000 or the date the unit expects to generate electricity. The Pastoria Expansion project anticipates beginning commercial operation in 2006.

The acid rain program requirements for this facility are relatively minimal. Monitoring of the NO<sub>x</sub> and SO<sub>x</sub> emissions and a relatively small quantity of SO<sub>x</sub> allowances (from a national SO<sub>x</sub> allowance bank) will be required as well as the use of a NO<sub>x</sub> CEM.

**Proposed Rule 2540 Condition:**

- Permittee shall submit an application to comply with SJVUAPCD District Rule 2540 - Acid Rain Program. [District Rule 2540]

**Rule 2550** *Federally Mandated Preconstruction Review for Major Sources of Air Toxics (6/18/98)*

Section 2.0 states, "The provisions of this rule shall only apply to applications to construct or reconstruct a major air toxics source with Authority to Construct issued on or after June 28, 1998." The applicant has provided the following analysis for Noncriteria pollutants/HAPs.

Noncriteria pollutants are compounds that have been identified as pollutants that pose a significant health hazard. Nine of these pollutants are regulated under the Federal New Source Review program: lead, asbestos, beryllium, mercury, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds.<sup>3</sup>

In addition to these nine compounds, the federal Clean Air Act lists 189 substances as potential hazardous air pollutants (Clean Air Act Sec. 112(b)(1)). The SJVAPCD has also published a list of compounds it defines as potential toxic air contaminants (Toxics Policy, May 1991; Rule 2-1-316). Any pollutant that may be emitted from the project and is on the federal New Source Review List, the federal Clean Air Act list, and/or the SJVAPCD toxic air contaminant list has been evaluated.

Noncriteria pollutant emission factors for the analysis of emissions from the gas turbines were obtained from AP-42 (Table 3.1-3, 4/00, and Table 3.4-1 of the Background Document for Section 3.1), from the California Air Resources Board's *California Air Toxics Emissions Factors* (CATEF) database for gas turbines, and from source tests on a similar turbine. Specifically, factors for all pollutants except formaldehyde, hexane, propylene, and naphthalene and other PAHs were taken from AP-42. AP-42 did not contain factors for hexane or propylene, and did not include speciated data for PAHs. Factors for these pollutants and for naphthalene were taken from the CATEF database (mean values). The emission factor for formaldehyde reflects the 25 ppbvd MACT limit.

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<sup>3</sup> These pollutants are regulated under federal and state air quality programs; however, they are evaluated as noncriteria pollutants by the California Energy Commission (CEC).

**Hazardous Air Pollutant Emissions  
 Pastoria Energy Facility – Expansion and Total Facility**

Hazardous Air Pollutant	CATEF Emission Factor (lb/MMSCF) <sup>(a)</sup>	Maximum Hourly Emissions per Turbine (lb/hr) <sup>(b)</sup>	Maximum Annual Emissions per Turbine (tpy) <sup>(c)</sup>	Maximum Annual Emissions Four Turbines (tpy) <sup>(d)</sup>
Acetaldehyde	4.08E-02	7.09E-02	0.31	1.240
Acrolein	6.54E-03	1.14E-02	0.0498	0.199
Benzene	1.23E-03	2.14E-02	0.0937	0.375
1,3-Butadiene	4.39E-04	7.63E-04	0.00334	0.013
Ethyl benzene	3.26E-02	5.67E-02	0.25	1.000
Formaldehyde	6.35E-02	0.11	0.48	1.920
Hexane	2.59E-01	0.45	1.97	7.880
Naphthalene	1.33E-03	2.31E-03	0.0101	0.040
Polycyclic aromatic hydrocarbons (PAH)	1.79E-04	3.11E-04	0.00136	0.005
Anthracene				
Benzo(a)anthracene				
Benzo(a)pyrene				
Benzo(b)fluoranthrene				
Benzo(k)fluoranthrene				
Chrysene				
Dibenz(a,h)anthracene				
Indeno(1,2,3-c)pyrene				
Propylene oxide	2.96E-02	4.68E-02	0.20	0.800
Toluene	1.33E-01	0.23	1.01	4.040
Xylenes	6.53E-02	0.11	0.50	2.0
<b>Total</b>			<b>4.89</b>	<b>19.56</b>

- (a) From AP-42 and CATEF databases and formaldehyde MACT standard.
- (b) Based on a maximum hourly turbine fuel use of 1,837 MMBtu/hr and fuel HHV of 1,056.4 Btu/scf. (1.74 MMscf/hr)
- (c) Based on 8760 hour/yr of operation.
- (d) Total HAPS for four GTEs.

As demonstrated above, each individual HAP emission rate is below 10 tons per year and the total HAP emissions rate is below 25 tons per year for the Pastoria Energy Facility. As such, the Pastoria Energy Facility will not be a major air toxics source and the provisions of this rule do not apply.

**Rule 4001 New Source Performance Standards**

**40 CFR 60 – Subpart GG**

40 CFR Part 60 Subpart GG applies to all GTE with a heat input greater than 10.7 gigajoules per hour (10 MMBtu/hr) that commence construction, modification, or reconstruction after 10/03/77. Therefore, this subpart applies to the new GTE installation proposed for Pastoria.

**§60.332: Standards for Nitrogen Oxides**

Paragraph (a) states, NO<sub>x</sub> emissions from the GTE with a minimum heat input rating of 250 MMBtu/hr are limited by the following equation:

$$\text{NO}_x (\% \text{ by vol @ } 15\% \text{ O}_2) \text{ 1 hr avg} = 0.0075(14.4/Y) + F$$

Please note that the most stringent NPSP NO<sub>x</sub> standard occurs at the maximum heat rate (depending on ambient temperature) at full load. ( F represents the allowance given for fuel bound nitrogen, which the applicant is not claiming.)

NSPS NO<sub>x</sub> limit:

$$\begin{aligned} Y = \text{max heat rate @ lhw} &= 9,020 \text{ Btu/kW hr (peak load @ } 63.9 \text{ F)} \\ &= 9.020 \text{ Btu/W hr} * 1.0542 \text{ kJ/Btu} \\ Y &= 9.509 \text{ kJ/W hr (less than } 14.4 \text{ kJ/W hour)} \end{aligned}$$

$$\begin{aligned} \text{NO}_x \% \text{ by vol @ } 15\% \text{ O}_2 &= 0.0075 * 14.4 / 9.509 + 0 \\ &= 0.0114 = 114 \text{ ppmv @ } 15\% \text{ O}_2 \end{aligned}$$

Pastoria Energy Facility is proposing a NO<sub>x</sub> concentration limit of 2.5 ppmv @ 15% O<sub>2</sub> (1 hr average) as required by BACT. Therefore, compliance with the NSPS NO<sub>x</sub> standard is expected.

**§60.333: Standards for Sulfur Dioxide**

Paragraphs (a) and (b) define the applicable SO<sub>x</sub> limits as follows:

$$\begin{aligned} \text{SO}_x &= 0.015\% \text{ by vol @ } 15\% \text{ O}_2 \\ &= 150 \text{ ppmv @ } 15\% \text{ O}_2 \end{aligned}$$

or fuel S ≤ 0.8% by weight.

SO<sub>x</sub> emissions are based on combusting natural gas with a fuel sulfur content of 0.75 gr/100 scf, which is equivalent to in a SO<sub>x</sub> emission concentration of approximately 0.38 ppmv @ 15% O<sub>2</sub>. The percent sulfur by weight of natural gas of 0.75 gr-S/100 scf natural gas is 0.002527%, determined as follows (assuming a 100 scf sample comprised of methane at 60 °F):

$$\left( \frac{0.75 \text{ gr-S}}{100 \text{ ft}^3 - \text{NG}} \right) \times \left( \frac{\text{lb-S}}{7000 \text{ gr-S}} \right) \times \left( \frac{\text{ft}^3 - \text{NG}}{0.0424 \text{ lb-NG}} \right) = 2.527 \times 10^{-5} \frac{\text{lb-S}}{\text{lb-NG}}$$

Both SO<sub>x</sub> emissions and fuel sulfur content are less than that required by Subpart GG. Recordkeeping and reporting of the fuel sulfur content is required as specified in section

60.334 (h)(1). Reporting will be performed using an alternative custom reporting schedule.

Reporting and notifications, and initial compliance testing will be required as specified in 40 CFR, Subpart A. Compliance is expected.

**§60.334: Monitoring of Operations**

Paragraph (h)(1) states, *“The owner or operator of any stationary gas turbine subject to the provisions of this subpart shall monitor the total sulfur content of the fuel being fired in the turbine, except as provided for in paragraph (h) (3).”* As discussed Section VIII.F.1 and VIII.F.2 of this FDOC, compliance is expected.

Paragraph (j) states, in part, *“For each affected unit required to continuously monitor parameters or emissions, or to periodically determine fuel sulfur content or fuel nitrogen content under the subpart, the owner shall submit reports of excess emissions and monitor downtime, in accordance with §60.7(c).”* The operator will submit the reports required under §60.7(c) on a quarterly basis. As discussed Section VIII.F.4 of this PDOC such reporting will be required, and compliance is expected.

**Rule 4002 National Emissions Standards for Hazardous Air Pollutants (NESHAP)  
(5/20/04)**

Pursuant to Section 2.0, *“All sources of hazardous air pollution shall comply with the standards, criteria, and requirements set forth therein;”* therefore, the requirements of this rule applies to the Pastoria Energy Facility. But there are no applicable requirements for a non-major HAPs source; therefore no actions are necessary to show compliance with this rule.

**Rule 4101 Visible Emissions (11/15/02)**

Per Section 5.0, no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity).

The GTE lube oil vents will be limited by permit condition to not have visible emissions, except for three minutes in any hour, greater than 5% opacity as a BACT requirement and the exhaust stack emissions will be limited by permit condition to no greater than 20% opacity except for three minutes in any hour. Therefore compliance is expected.

**Proposed Rule 4101 Conditions:**

- 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 as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
- Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators. Visible emissions from lube oil vents shall not exhibit opacity of 5% or greater, except for up to three minutes in any hour. [District Rules 2201 and 4101]

**Rule 4102 Nuisance (12/17/92)**

Section 4.0 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained as required by permit conditions. Therefore, compliance with this rule is expected.

**A. California Health & Safety Code 41700 (Health Risk Analysis)**

A Health Risk Assessment (HRA) is required for any increase in hourly or annual emissions of hazardous air pollutants (HAPs). HAPs are limited to substances included on the list in CH&SC 44321 and that have an OEHHA approved health risk value. The installation of the GTE S-3636-14 at the Pastoria Energy Facility results in increases in emissions of HAPs.

A health risk screening assessment was performed for the proposed project and is included in Attachment E. The acute and chronic hazard indices were less than 1.0 and the cancer risk was less than one in a million. Under the District's risk management policy, Policy TOX 1, TBACT is not required for the proposed GTE. The project risk parameters are summarized below:

<b>Screen HRA Summary</b>				
	<b>Acute Hazard Index</b>	<b>Chronic Hazard Index</b>	<b>70 yr Cancer Risk</b>	<b>T-BACT Required?</b>
<b>S-3636-14 (Unit #4)</b>	0.03	0.16	$0.8 \times 10^{-6}$	<b>NO</b>

- No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
- During startup or shutdown, GTE exhaust emissions shall not exceed any of the following limits: NOx (as NO<sub>2</sub>) - 80 lb/hr, VOC - 16 lb/hr, or CO - 902 lb/hr, based on three hour averages. [District Rules 2201 and 4102]

**Rule 4201 Particulate Matter Concentration (12/17/92)**

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

PM Emissions = 9 lb/hr

Heat Input at 60% load and 110 °F = 1083.4 MMBtu/hr

EPA F-Factor for natural gas combustion = 8710 dscf/MMBtu

Assume 12.55% O<sub>2</sub> in exhaust

Exhaust Gas Flow, dscfm = 1083.4 MMBtu/hr x 8710 dscf/MMBtu x (20.9%/20.9%-12.55%) x 1 hr/60 min = 393,655 dscfm

Grain Loading =  $\frac{9 \text{ lb/hr} \times 1 \text{ hour/60 min} \times 7000 \text{ grains/lb}}{393,655 \text{ dscf/min}}$  = 0.0027 gr/dscf

As shown above, PM emissions for the proposed GTE will be less than 0.1 gr/dscf. Compliance is expected.

**Proposed Rule 4201 Condition:**

- Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

**Rule 4301 Fuel Burning Equipment (12/17/92)**

The GTE produces power mechanically, i.e. the products of combustion pass across the power turbine blades that cause the turbine shaft to rotate. The turbine shaft is coupled to an electrical generator shaft which is rotated to produce electricity. Because the GTE produces power by mechanical means, it does not meet the definition of fuel burning equipment. Rule 4301 does not apply to the GTE proposed in this project.

**Rule 4703 Stationary Gas Turbines (4/25/02)**

Sections 5.1.1 and 5.2 set forth the Tier II emission requirements of this rule. NO<sub>x</sub> emissions from stationary GTE systems greater than 10 MW operating in simple cycle mode with more than 877 hrs/yr of operation must not exceed 3 ppmv NO<sub>x</sub> at 15% O<sub>2</sub> and 25 ppmv CO @ 15% O<sub>2</sub>. (As the final compliance date for the standard option for this class of turbine was April 30, 2005, new GTE constructed after that date must meet the more stringent enhanced NO<sub>x</sub> emissions option.)

During normal operation the GTE will have emissions not exceeding 2.5 ppmv NO<sub>x</sub> @ 15% O<sub>2</sub> and 6.0 ppmv CO @ 15% O<sub>2</sub>. These limits are less than the emissions allowed by Rule 4703.

Monitoring and recordkeeping:

Sections 6.2 and 6.3 contain the following monitoring, recordkeeping, and source testing requirements.

- 6.2.1 Except for units subject to Section 6.2.3, for GTE without exhaust-gas NO<sub>x</sub> control devices; install, operate, and maintain continuous emissions monitoring equipment for NO<sub>x</sub> and oxygen or install and maintain an APCO-approved alternate monitoring scheme.
- 6.2.4 Maintain records for inspection at any time for a period of five years.
- 6.2.5 Correlate control system operating parameters with NO<sub>x</sub> emissions. This requirement applies to the selective catalytic reduction system. This information may be used by the APCO to determine compliance when the continuous emissions monitoring system not operating properly.
- 6.2.6 Maintain an operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation, type and quantity of fuel used (liquid/gas).
- 6.3.1 Provide source test information annually regarding the exhaust gas NO<sub>x</sub> and CO concentrations, and, if used as a basis for Tier 1 emission limit calculations, the demonstrated percent efficiency (EFF) of the GTE.

The facility must demonstrate compliance annually with the NO<sub>x</sub> and CO emission limits using the following test methods:

- Oxides of nitrogen emissions for compliance tests shall be determined by using EPA Method 7E or EPA Method 20.
- Carbon monoxide emissions for compliance tests shall be determined by using EPA Test Methods 10 or 10B.
- Oxygen content of the exhaust gas shall be determined by using EPA Methods 3, 3A, or 20.
- HHV and LHV of gaseous fuels shall be determined by using ASTM D3588-91, ASTM 1826-88, or ASTM 1945-81.

These requirements will be included as permit conditions. Therefore, compliance with this rule is expected.

**Proposed Rule 4703 Conditions:**

- Emission rates from this unit, except during startup and shutdown periods, shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 16.25 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>; VOC (as methane) 2.95 lb/hr and 1.3 ppmvd @ 15% O<sub>2</sub>; CO 23.75 lb/hr and 6.0 ppmvd @ 15% O<sub>2</sub>; PM<sub>10</sub> 9.0 lb/hr; or SO<sub>x</sub> (as SO<sub>2</sub>) 3.495 lb/hr. NO<sub>x</sub> (as NO<sub>2</sub>) emission limits are one hour rolling averages. All other emission limits are three hour rolling averages. [District Rules 2201, 4001, and 4703]
- The permittee shall submit to the District information correlating the NO<sub>x</sub> control system operating parameters to the associated measured NO<sub>x</sub> output. The information must be sufficient to allow the District to determine compliance with the NO<sub>x</sub> emission limits of this permit during times that the CEMS is not functioning properly. [District Rule 4703]
- The GTE exhaust shall be equipped with continuous emission monitors (CEMS) for NO<sub>x</sub>, CO, and O<sub>2</sub>. Continuous emissions monitor(s) shall meet the requirements of 40 CFR part 60, Appendices B and F (for CO), and 40 CFR part 75 (for NO<sub>x</sub> and O<sub>2</sub>), and of the District-approved monitoring protocol, and shall be capable of monitoring emissions during normal operating conditions, and during startups and shutdowns provided the CEM(s) pass the relative accuracy requirement for startups and shutdowns specified herein. If, in the judgment of source test staff, CEMS data is not reliable to determine compliance with NO<sub>x</sub> and CO startup emission limits, then source testing to measure startup NO<sub>x</sub> and CO mass emission rates shall be conducted at least once every 12 months. [District Rules 2201, 4001, and 4703]
- Source testing to measure the NO<sub>x</sub>, CO, and VOC emission rates (lb/hr and ppmvd @ 15% O<sub>2</sub>) shall be conducted within 90 days after initial operation and at least once every twelve months thereafter. [District Rules 1081 and 4703]
- The following test methods shall be used: PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a, NO<sub>x</sub> - EPA Method 7E or 20, CO - EPA Method 10 or 10B, O<sub>2</sub> - EPA Method 3, 3A, or 20, VOC - EPA Method 18 or 25, ammonia - BAAQMD ST-1B, and fuel gas sulfur content - ASTM D3246. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081, 4001, and 4703]

- The permittee shall maintain the following records: date and time, duration, and type of any startup, shutdown, or malfunction; performance testing, evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, and maintenance of any continuous emission monitor. [District Rules 2201 and 4703]
- The permittee shall maintain the following records: hours of operation, fuel consumption (scf/hr and scf/rolling twelve month period), continuous emission monitor measurements, calculated ammonia slip, and calculated NO<sub>x</sub> mass emission rates (lb/hr and lb/twelve month rolling period). [District Rules 2201 and 4703]

**Rule 4801 Sulfur Compounds (12/17/92)**

Per Section 3.1, a person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 % by volume calculated as SO<sub>2</sub> on a dry basis averaged over 15 consecutive minutes:

The sulfur of the natural gas fuel is 0.75 gr/100 dscf.

This fuel sulfur content results in a SO<sub>x</sub> emission concentration of approximately 0.38 ppmv @ 15% O<sub>2</sub>. Therefore, SO<sub>x</sub> emissions are not expected to exceed 2000 ppmvd, and compliance is expected.

**Rule 8011 General Requirements (11/15/01)**

The definitions, exemptions, requirements, administrative requirements, recordkeeping requirements, and test methods set forth in this rule are applicable to all rules under Regulation VIII (Fugitive PM<sub>10</sub> Prohibitions) of the Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District.

**Rule 8021 Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities (11/15/01)**

The purpose of this rule is to limit fugitive dust emissions from construction, demolition, excavation, and other earthmoving activities. It requires the use of control measures to maintain visible dust emissions (VDE) under the 20% opacity requirement.

The major earth moving work at the Pastoria Energy Facility has been completed and the installation of the S-3636-14 (unit #4) is not expected to cause any significant dust. Through the use of dust control measures (e.g., water, approved chemical stabilizers, etc.) during installation of unit #4, opacity will be maintained below 20% per Rule 8021 requirements. Compliance with the requirements of this rule is anticipated.

**Rule 8031 Bulk Materials (11/15/01)**

Pursuant to Section 2.0, this rule is applicable to the outdoor handling, storage, and transport of any bulk material. The major earth moving work and site preparation at the Pastoria Energy Facility has been completed and the storage of bulk materials onsite is not expected. Compliance with this rule is expected.

**Rule 8041 Carryout and Trackout (11/15/01)**

Pursuant to Section 2.0, this rule is applicable to all sites that are subject to Rule 8021 (Construction, Demolition, Excavation, Extraction, and other Earthmoving Activities), Rule 8031 (Bulk Materials), and Rule 8071 (Unpaved Vehicle and Equipment Traffic Areas) where carryout or trackout has occurred or may occur. The road into the Pastoria Energy Facility is paved, as are all major traffic areas on the site. Significant carryout and trackout are not expected for the Pastoria expansion and compliance is expected with the requirements of the rule.

**Rule 8051 Open Areas (11/15/01)**

Pursuant to Section 2.0, this rule is applicable to any open area having 3.0 acres or more of disturbed surface area, that has remained undeveloped, unoccupied, unused or vacant for more than seven days. An disturbed open area of 3.0 acres or greater is not expected for the Pastoria expansion. Compliance with this rule is expected.

**Rule 8061 Paved and Unpaved Roads (11/15/01)**

Pursuant to Section 2.0, this rule applies to any new or existing public or private paved or unpaved road, road construction project, or road modification project. There is no road construction expected for the Pastoria expansion. Compliance with this rule is expected.

**Rule 8071 Unpaved Vehicle/Equipment Traffic Areas (11/15/01)**

Pursuant to Section 2.0, this rule applies to any unpaved vehicle/equipment traffic area of 1.0 acre or larger. There are no new unpaved vehicle/equipment traffic areas expected for the Pastoria expansion project. Compliance with the requirements of the rule is expected.

**Rule 8081 Agricultural Sources (11/15/01)**

Pursuant to Section 2.0, this rule applies to off-field agricultural sources. Pastoria has no associated off-field agricultural sources. Compliance with the requirements of the rule is expected.

**California Environmental Quality Act (CEQA)**

The California Energy Commission (CEC) is the lead Agency for CEQA. Generally, the District cannot make its final decision on its Determination of Compliance until CEQA has been satisfied. For power generating projects that qualify for expedited processing (per District policy), the Determination of Compliance will be issued if the District's analysis and public notice is completed prior to CEQA approval. If the Determination of Compliance is issued prior to CEQA approval, the ATCs will include the following condition:

- The permittee shall not begin actual onsite construction of the equipment authorized by this Determination of Compliance until the lead agency satisfies the requirements of the California Environmental Quality Act (CEQA). [California Environmental Quality Act]

**California Health & Safety Code, Section 42301.6 (School Notice)**

As discussed in Section III of this evaluation, this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

**California Health & Safety Code, Section 44300 (Air Toxic "Hot Spots")**

Section 44300 of the California Health and Safety Code requires submittal of an air toxics "Hot Spot" information and assessment report for sources with criteria pollutant emissions greater than 10 tons per year. However, Section 44344.5 (b) states that a new facility shall not be required to submit such a report if all of the following conditions are met:

1. The facility is subject to a district permit program established pursuant to Section 42300.
2. The district conducts an assessment of the potential emissions or their associated risks, and finds that the emissions will not result in a significant risk.
3. The district issues a permit authorizing construction or operation of the new facility.

A health risk screening assessment was performed for the proposed project. A copy of that assessment is included in Attachment E. The acute and chronic hazard indices are less than 1.0 and the cancer risk is less than one in a million, which are the thresholds of significance for toxic air contaminants. This project qualifies for exemption by satisfying the criteria listed above.

**IX. RECOMMENDATION:**

Compliance with all applicable rules and regulations is expected. Issue the Preliminary Determination of Compliance for the Pastoria Energy Facility expansion subject to the conditions presented in Attachment A.

**X. BILLING INFORMATION:**

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-3636-14	3020-08B-I	164,000 kW	\$11,323.00

**ATTACHMENT A**  
***FDOC CONDITIONS***

**Pastoria Energy Facility (01-AFC-22)**  
**SJVACPD Determination of Compliance, S1052027**

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1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102] N
2. The permittee shall not begin actual onsite construction of the equipment authorized by this Determination of Compliance until the lead agency satisfies the requirements of the California Environmental Quality Act (CEQA). [California Environmental Quality Act] N
3. The permittee shall notify the District of the date of initiation of construction no later than 30 days after such date, the date of anticipated startup not more than 60 days nor less than 30 days prior to such date, and the date of actual startup within 15 days after such date. [District Rule 4001] N
4. Selective catalytic reduction (SCR) system shall serve the gas turbine engine (GTE). Permittee shall submit SCR catalyst design details to the District at least 30 days prior to commencement of construction. [District Rule 2201] N
5. Permittee shall submit continuous emission monitor design, installation, and operational details to the District at least 30 days prior to commencement of construction. [District Rule 2201] N
6. Permittee shall minimize the emissions from GTE to the maximum extent possible during the commissioning period. Conditions #6 through #16 shall apply only during the commissioning period as defined below. Unless otherwise indicated, Conditions #17 through #66 shall only apply after the commissioning period has ended. [District Rule 2201] N
7. Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the construction contractor to insure safe and reliable steady state operation of the GTE and all ancillary equipment. [District Rule 2201] N
8. Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when the GTE is first fired, whichever occurs first. The commissioning period shall terminate when the GTE has successfully completed initial performance testing and is available for commercial operation. [District Rule 2201] N
9. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the combustors of this unit shall be tuned to minimize emissions. [District Rule 2201] N
10. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the Selective Catalytic Reduction (SCR) system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201] N

11. The permittee shall submit a plan to the District at least four weeks prior to the first firing of this unit, describing the procedures to be followed during the commissioning period. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not limited to, the tuning of the combustors, the installation and operation of the SCR systems, the installation, calibration, and testing of the NO<sub>x</sub> and CO continuous emissions monitors, and any activities requiring the firing of this unit without abatement by the SCR system. [District Rule 2201] N
12. Emission rates from this unit during the commissioning period shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) 308 lb/hr or 3,200 lb/day; VOC (as methane) 273 lb/hr or 355 lb/day; CO 2527 lb/hr or 10,824 lb/day; PM<sub>10</sub> 216 lb/day; or SO<sub>x</sub> (as SO<sub>2</sub>) 84 lb/day. [District Rule 2201] N
13. During the commissioning period, the permittee shall demonstrate compliance with condition #12 through the use of properly operated and maintained continuous emissions monitors and recorders as specified in this permit. The monitored parameters for this unit shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation). [District Rule 2201] N
14. The continuous monitors specified in this permit shall be installed, calibrated, and operational prior to the first firing of this unit. After first firing, the detection range of the CEMS shall be adjusted as necessary to accurately measure the resulting range of NO<sub>x</sub> and CO emission concentrations. [District Rule 2201] N
15. Firing of GTE without abatement of emissions by the SCR system shall be minimized to the extent possible. Such operation of this unit without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system catalyst in place. [District Rule 2201] N
16. The total mass emissions of NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, and SO<sub>x</sub> that are emitted during the commissioning period shall accrue towards the consecutive twelve month emission limits specified in condition #39. [District Rule 2201] N
17. The permittee shall submit to the District information correlating the NO<sub>x</sub> control system operating parameters to the associated measured NO<sub>x</sub> output. The information must be sufficient to allow the District to determine compliance with the NO<sub>x</sub> emission limits of this permit during times that the CEMS is not functioning properly. [District Rule 4703] N
18. GTE and electrical generator lube oil vents shall be equipped with mist eliminators. Visible emissions from lube oil vents shall not exhibit opacity of 5% or greater, except for up to three minutes in any hour. [District Rules 2201 and 4101] N
19. GTE exhaust design shall provide space for additional selective catalytic reduction catalyst if required to meet NO<sub>x</sub> emission limit. [District Rule 2201] N

20. The GTE shall be equipped with a continuous monitoring system to measure and record fuel consumption. [District Rules 2201 and 4001] N

21. Exhaust duct downstream of the SCR unit shall be equipped with continuously recording emissions monitors (CEMS) for NO<sub>x</sub>, CO, and O<sub>2</sub>. All CEMS shall be dedicated to this unit. NO<sub>x</sub> and O<sub>2</sub> CEMS shall meet the requirements of 40 CFR Part 75 and CO CEMS shall meet the requirements of 40 CFR Part 60. CEMS shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns. If, as determined by District source test staff, the accuracy of CEMS during startup events is not demonstrated, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained during source testing to determine compliance with emission limits in conditions 36, 38 and 39. [District Rule 2201] N

22. Exhaust duct shall be equipped with a continuously recording emission monitor upstream of the SCR unit for measuring the NO<sub>x</sub> concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District Rule 2201] N

23. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] N

24. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] N

25. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081] N

26. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District Rule 2201] N

27. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction catalyst inlet. [District Rule 2201] N

28. GTE shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.75 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [District Rule 2201] N

29. Startup is defined as the period beginning with GTE initial firing until the unit meets the lb/hr and ppmv emission limits in condition 31. Shutdown is defined the period beginning with initiation of GTE shutdown sequence and ending with cessation of firing of the GTE. Startup and shutdown durations shall not exceed one hour per occurrence. [District Rule 2201 and 4001] N

30. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds the minimum operating temperature recommended by the SCR manufacturer. Permittee shall monitor and record catalyst temperature during periods of startup. [District Rule 2201] N

31. Emission rates from GTE, except during startup and/or shutdown, shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 16.25 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>; VOC 2.95 lb/hr and 1.3 ppmvd @ 15% O<sub>2</sub>; CO 23.75 lb/hr and 6 ppmvd @ 15% O<sub>2</sub> or ammonia 10 ppmvd @ 15% O<sub>2</sub>. NO<sub>x</sub> (as NO<sub>2</sub>) emission limit is a one-hour average. Ammonia emission limit is a twenty-four hour rolling average. All other emission limits are three-hour rolling averages. [District Rules 2201, 4001, and 4703] N

32. Compliance with NO<sub>x</sub> emissions limitations specified in condition #31 shall not be required during short-term excursions limited to a cumulative total of 10 hours per rolling 12-month period. Short-term excursions are defined as 15-minute periods designated by the owner/operator (and approved by the APCO) that are the direct result of transient load conditions, not to exceed four consecutive 15-minute periods, when the 15-minute average NO<sub>x</sub> concentration exceeds 2.5 ppmvd @ 15% O<sub>2</sub>. The maximum 1-hour average NO<sub>x</sub> concentration for periods that include short-term excursions shall not exceed 30 ppmvd @ 15% O<sub>2</sub>. [District Rule 2201] N

33. Examples of transient load conditions include, but are not limited to the following: (1) initiation/shutdown of GTE inlet air cooling and (2) rapid GTE load changes. All emissions during short-term excursions shall accrue towards the hourly, daily, and annual emissions limitations of this permit and shall be included in all calculations of hourly, daily, and annual mass emission rates as required by this permit. [District Rule 2201] N

34. Compliance with NO<sub>x</sub>, CO and VOC emissions limitations specified in condition #31 shall not be required during combustor tuning activities. Combustor tuning activities are defined as any testing, adjustment, tuning, or calibration activities necessary to insure safe and reliable steady state operation of the GTE following replacement of the combustor components, during seasonal tuning events, when recommended by the turbine manufacturer, or as necessary to maintain low emissions performance. This includes, but is not limited to, adjusting the amount of fuel distributed between the combustion turbine's staged fuel systems to simultaneously minimize NO<sub>x</sub> and CO production while minimizing combustor dynamics and ensuring combustor stability. The exemption for combustor tuning activities shall be limited to 6 hours per calendar year. [District Rule 2201] N

35. Emission rates from GTE during combustor tuning shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 300 lb/hr and 600 lb/period; VOC 48 lb/hr and 96 lb/period; and CO 2514 lb/hr and 2514 lb/period. Hourly emissions are on a one-hour average basis. [District Rules 2201] N
36. Emission rates from the GTE shall not exceed either of the following: PM<sub>10</sub> 9.0 lb/hr and SO<sub>x</sub> (as SO<sub>2</sub>) 3.495 lb/hr. Emission limits are three-hour rolling averages. [District Rules 2201 and 4001] N
37. During startup or shutdown GTE exhaust emissions shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 80 lb; VOC 16 lb; or CO 902 lb in any one hour. [California Environmental Quality Act and District Rule 4102] N
38. On any day when a startup or shutdown occurs, emission rates from GTE shall not exceed any of the following: PM<sub>10</sub> 216 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) 84 lb/day; NO<sub>x</sub> (as NO<sub>2</sub>) 450 lb/day; VOC 96.9 lb/day; or CO 2,113 lb/day. On any day when combustor tuning occurs, emissions from GTE shall not exceed any of the following: PM<sub>10</sub> 216 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) 84 lb/day; NO<sub>x</sub> (as NO<sub>2</sub>) 957.5 lb/day; VOC 160.9 lb/day or CO 3036.5 lb/day. [District Rule 2201] N
39. Annual emissions from GTE, calculated on a twelve consecutive month rolling basis, shall not exceed any of the following: PM<sub>10</sub> 78,840 lb/year ; SO<sub>x</sub> (as SO<sub>2</sub>) 30,616 lb/year; NO<sub>x</sub> (as NO<sub>2</sub>) 161,480 lb/year; VOC 29,730 lb/year; or CO 471,492 lb/year. [District Rule 2201] N
40. Combined annual emissions of all hazardous air pollutants (HAPs) from GTE, calculated on a twelve consecutive month rolling basis, shall not exceed 6 tons/year. Combined annual emissions of any single HAP from GTE, calculated on a twelve consecutive month rolling basis, shall not exceed 2.5 tons/year. [District Rule 4002] N
41. Each one-hour period shall commence on the hour. Each one-hour period in a three-hour rolling average will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. Each one-hour period in a twenty-four-hour average for ammonia slip will commence on the hour. The twenty-four-hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201] N
42. Daily emissions will be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each month in the twelve-consecutive-month rolling average emissions shall commence at the beginning of the first day of the month. The twelve-consecutive-month rolling average emissions to determine compliance with annual emissions limitations shall be compiled from the twelve most recent calendar months. [District Rule 2201] N

43. Prior to initial operation, permittee shall provide emission reduction credits to offset the calendar quarter emissions increases set forth below, at the distance offset ratio specified in Rule 2201 (4/20/05 version) Table 4.2 and the interpollutant offset ratio specified in this permit, PM10 - Q1: 19,440 lb, Q2: 19,656 lb, Q3: 19,872 lb and Q4: 19,872 lb; SOx (as SO2) - Q1: 7,549 lb, Q2: 7,633 lb, Q3: 7,717 lb and Q4: 7,717 lb; NOx (as NO2) - Q1: 39,817 lb, Q2: 40,260 lb, Q3: 40,702 lb, and Q4: 40,702 lb; and VOC - Q1: 7,331 lb, Q2: 7,412 lb, Q3: 7,494 lb and Q4: 7,494 lb. [District Rule 2201] N

44. ERC Certificate Numbers S-1554-2 and S-1543-2 (or certificates split from these certificates) shall be used to supply the required NOx and PM10 offsets, ERC Certificate Number S-444-1 and S-1666-1 (or a certificates split from these certificates) shall be used to supply the required VOC offsets and ERC Certificate Number S-1334-5 (or a certificate split from this certificate) shall be used to supply the required SOx, unless a revised offsetting proposal is received and approved by the District, upon which this Determination of Compliance shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Determination of Compliance. [District Rule 2201] N

45. NOx ERCs may be used to offset PM10 emission increases at a ratio of 2.22 lb NOx : 1 lb PM10 for reductions occurring within 15 miles of this facility, and at 2.72 lb NOx : 1 lb PM10 for reductions occurring greater than 15 miles from this facility [District Rule 2201] N

46. Compliance with ammonia slip limit shall be demonstrated by using the following calculation procedure: ammonia slip ppmv @ 15% O2 =  $((a - (b \times c / 1,000,000)) \times 1,000,000 / b) \times d$ , where a = ammonia injection rate (lb/hr) / 17 (lb/lb. mol), b = dry exhaust gas flow rate (lb/hr) / (29 (lb/lb. mol)), c = change in measured NOx concentration ppmv at 15% O2 across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH3 CEM, the permittee must submit a monitoring plan for District review and approval [District Rule 4102] N

47. Compliance with NOx, CO and VOC short term emission limits (ppmv @ 15% O2 and lb/hr) shall be demonstrated within 90 days of initial operation of GTE and once every twelve months thereafter by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm at full load conditions. [District Rule 2201] N

48. Compliance with PM10 (lb/hr) and ammonia (ppmvd @ 15% O2) emissions rates shall be demonstrated within 90 days of initial operation of GTE and at least once every 12 months thereafter. [District Rule 2201] N

49. Source testing to measure startup NOx, CO, and VOC mass emission rates for this GTE shall be demonstrated upon initial operation and at least every seven years thereafter by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. CEMS shall be operated during startup source testing. District source test staff shall evaluate CEMS results with source test results to assess the accuracy of CEMS during startups events. If, in the judgement of the District source staff, the reliability of CEMS results has not been demonstrated during startup testing for NOx and CO, more frequent source testing to measure startup NOx and CO mass emissions rates may be required. [District Rule 1081] N

50. Initial and annual compliance with the HAPS emissions limit (6 tpy all HAPS or 2.5 tpy any single HAP) shall be by the VOC emissions rate for GTE determined during initial and annual compliance source testing and the correlation between VOC emissions and HAP(S). [District Rule 4002] N

51. The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. If sulfur content is less than 1.0 gr/100 scf for 8 consecutive weeks, then the monitoring frequency shall be every six (6) months. If any six (6) month monitoring shows an exceedance, weekly monitoring shall resume. [District Rules 1081, 2540, and 4001] N

52. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081] N

53. The following test methods shall be used: PM10 EPA method 5 (front half and back half); NOx EPA Method 7E or 20; CO EPA method 10 or 10B; O2 EPA Method 3, 3A, or 20; VOC EPA method 18 or 25; ammonia BAAQMD ST-1B; and fuel gas sulfur content ASTM D3246. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081, 4001, and 4703] N

54. The permittee shall maintain hourly records of NOx, CO, and ammonia emission concentrations (ppmv @ 15% O2), and hourly, daily, and twelve month rolling average records of NOx and CO mass emissions rates. Using annual and startup VOC source test results, permittee shall maintain hourly, daily and twelve month rolling average records of VOC mass emission rates. [District Rule 2201] N

55. The permittee shall maintain records of SOx lb/hr, lb/day, and lb/twelve month rolling average emissions. SOx emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [District Rule 2201] N

56. Permittee shall maintain the following records for the GTE: occurrence, duration, and type of any startup, shutdown, short term excursion, combustor tuning event, or malfunction; performance testing; emission measurements; total daily and rolling twelve month average hours of operation; hourly quantity of fuel used and gross three hour average operating load. [District Rules 2201 & 4703] N

57. Permittee shall maintain the following records for the continuous emissions monitoring system (CEMS): performance testing, evaluations, calibrations, checks, maintenance, adjustments, and any period during which a CEMS was inoperative. [District Rules 2201 & 4703] N

58. Permittee shall provide notification and record keeping as required under 40 CFR, Part 60, Subpart A, 60.7. [District Rule 4001] N
59. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District Rule 2201] N
60. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3. 3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080] N
61. The permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the Districts satisfaction that the longer reporting period was necessary. [District Rule 1100] N
62. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification 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 methods utilized to restore normal operations. [District Rule 1100] N
63. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] N
64. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F . [District Rule 1080] N
65. The permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable 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; and a negative declaration when no excess emissions occurred . [District Rule 1080] N
66. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 75 Subpart. [District Rule 2540 and 40 CFR Part 75] N

**ATTACHMENT B**

***GTE Emissions Data***

Table A-1  
PEF Expansion Project  
Emissions and Operating Parameters for Expansion CTG  
Rev. July 05

Case	1) Hot Base	2) Hot Low	3) Avg. Base	4) Avg. Low	5) Cold Base	6) Cold Low
Ambient Temp. F	102	102	66	66	35	35
GT Load	100	50	100	50	100	50
GT heat input, MMBtu/hr (HHV)	1642.0	1,067.20	1719.5	1116.7	1791.1	1159.2
Stack flow, lb/hr (no dilution air)	3,325,000	2,295,000	3,484,000	2,325,000	3,635,000	2,369,000
Stack flow, lb/hr (w/ dilution air)	5,133,507	4,083,507	5,398,809	4,239,809	6,673,770	3,278,938
Stack flow, acfm (w/ dilution air)	2,933,650	2,249,983	3,009,083	2,276,233	3,072,833	2,300,917
Stack temp, F	830	784	798	755	766	723
Stack exhaust, vol %						
O2 (dry)	13.65%	14.24%	13.80%	14.02%	13.86%	13.91%
CO2 (dry)	4.18%	3.85%	4.09%	3.97%	4.06%	4.03%
H2O	9.55%	8.28%	8.42%	7.93%	7.64%	7.59%
<b>Emissions</b>						
NOx, ppmvd @ 15% O2	2.5	2.5	2.5	2.5	2.5	2.5
NOx, lb/hr	14.90	9.88	15.60	10.13	16.25	10.52
NOx, lb/MMBtu	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091
SO2, ppmvd @ 15% O2	0.402	0.402	0.402	0.402	0.402	0.402
SO2, lb/hr	3.33	2.17	3.49	2.27	3.50	2.35
SO2, lb/MMBtu	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
CO, ppmvd @ 15% O2	6.00	6.00	6.00	6.00	6.00	6.00
CO, lb/hr	21.77	14.15	22.80	14.81	23.75	15.37
CO, lb/MMBtu	0.0133	0.0133	0.0133	0.0133	0.0133	0.0133
VOC, ppmvd @ 15% O2	1.3	1.3	1.3	1.3	1.3	1.3
VOC, lb/hr	2.70	1.76	2.83	1.84	2.95	1.91
VOC, lb/MMBtu	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
PM10, lb/hr	9.0	9.0	9.0	9.0	9.0	9.0
PM10, lb/MMBtu	0.0055	0.0084	0.0052	0.0081	0.0050	0.0078
PM10, grids/cf	0.00157	0.00222	0.00147	0.00219	0.00140	0.00215
NH3, ppmvd @ 15% O2	10.0	10.0	10.0	10.0	10.0	10.0
NH3, lb/hr	22.06	14.34	23.10	15.00	24.06	15.58

added →

**Table A-2**  
**PEF Expansion Project**  
**Detailed Calculations for Maximum Hourly, Daily, and Annual Criteria Pollutant Emissions for Expansion CTG**  
**VOC Emission Rates Revised 8/05, Annual NOx Emissions Corrected 8/05**

Equipment	Base Load		Startup hrs/day	max. hour hrs/day	hrs/yr	NOx		SOx (1)		CO		VOC		PM10	
	max. hour lb/hr	hrs/day lb/day				Base Load lb/hr	Startup lb/hr								
Expansion CTG, base/cold	0	22	0	0	8460	18.28	0.00	3.495	0.00	23.75	0.00	2.95	0.00	8.00	0.00
Expansion CTG, startups	0	0	2	300	0	0.00	80.00	0.00	3.495	0.00	902.00	0.00	18.00	0.00	9.00
<b>Expansion CTG, base/cold</b>	<b>0.00</b>	<b>357.51</b>	<b>76.89</b>	<b>29,588</b>	<b>137,480</b>	<b>0.00</b>	<b>522.41</b>	<b>200,892</b>	<b>0.00</b>	<b>64.83</b>	<b>24,930</b>	<b>0.00</b>	<b>198.00</b>	<b>78,140</b>	<b>0.00</b>
<b>Expansion CTG, startups</b>	<b>80.00</b>	<b>82.48</b>	<b>5.99</b>	<b>1,048</b>	<b>24,000</b>	<b>902.00</b>	<b>1590.59</b>	<b>270,800</b>	<b>18.00</b>	<b>32.00</b>	<b>4,800</b>	<b>9.00</b>	<b>18.00</b>	<b>2,700</b>	<b>9.00</b>
<b>Total</b>	<b>80.00</b>	<b>450.00</b>	<b>84.00</b>	<b>30,616</b>	<b>167,480</b>	<b>902.00</b>	<b>2113.00</b>	<b>471,492</b>	<b>16.00</b>	<b>96.83</b>	<b>29,730</b>	<b>9.00</b>	<b>216.00</b>	<b>78,840</b>	<b>9.00</b>

Notes:  
1. Startup emission rates for the simple cycle turbine are identical to those for the previously permitted combined cycle turbines.  
2. Hourly SOx emission rate for the simple cycle turbine is identical to the emission limit for the existing combined cycle turbines.

**ATTACHMENT C**

***Referenced District BACT Guidance Document - 3.4.7***

**San Joaquin Valley  
Unified Air Pollution Control District**

**Best Available Control Technology (BACT) Guideline 3.4.7\***

Last Update: October 1, 2002

**Emission Unit: Gas Turbine -  $\geq$  50 MW , Uniform Load, without Heat Recovery**

Pollutant	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
NOx	5.0 ppmvd** @ 15% O <sub>2</sub> , based on a three-hour average (high temp SCR, or equal).	<ol style="list-style-type: none"> <li>2.5 ppmvd** @ 15% O<sub>2</sub>, based on a one-hour average (high temperature Selective Catalytic Reduction (SCR), or equal).</li> <li>3.0 ppmvd** @ 15% O<sub>2</sub>, based on a three-hour average (high temp SCR, or equal).</li> </ol>	
CO	6.0 ppmvd** @ 15% O <sub>2</sub> , based on a three-hour average (Oxidation catalyst, or equal).		
VOC	2.0 ppmvd** @ 15% O <sub>2</sub> , based on a three-hour average (Oxidation catalyst, or equal).	<ol style="list-style-type: none"> <li>0.6 ppmvd** @ 15% O<sub>2</sub>, based on a three-hour average (Oxidation catalyst).</li> <li>1.3 ppmvd** @ 15% O<sub>2</sub>, based on a three-hour average (Oxidation catalyst, or equal).</li> </ol>	
PM10	Air inlet cooler/filter, lube oil vent coalescer (or equal) and either PUC-regulated natural gas, LPG, or non-PUC-regulated gas with $\leq$ 0.75 grams S/100 dscf.		
SOx	PUC-regulated natural gas, LPG, or Non-PUC-regulated gas with $\leq$ 0.75 grams S/100 dscf.		

\*\* Except during startup and shutdown

This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)

**ATTACHMENT D**  
***TOP DOWN BACT ANALYSIS***

**1. BACT Applicability:**

Pursuant to Sections 4.1.1 and 4.1.2, BACT shall be applied to a new, relocated, or modified emissions unit if the new or relocated unit has a Potential to Emit (PE) exceeding two pounds in any one day or the modified emissions unit results in an Adjusted Increase in Permitted Emissions (AIPE) exceeding 2 lb/day for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, or SO<sub>x</sub>. For CO emissions, the CO Post-project Stationary Source Potential to Emit (SSPE2) must also exceed 200,000 lb/year to trigger BACT.

As seen in Section VIII.A.1 of this evaluation, the applicant is proposing to install a new emissions unit with PEs greater than 2 lb/day for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, and SO<sub>x</sub>. BACT is triggered for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, and SO<sub>x</sub> criteria pollutants since the PEs are greater than 2 lbs/day, and since the SSPE2 for CO is greater than 200,000 lbs/year, as demonstrated in Section VII.C.5 of this document.

**2. BACT Guidance:**

Per Permit Services Policies and Procedures for BACT, a top-down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule. The District BACT Clearinghouse includes BACT Guideline (3.4.7), which is applicable to the GTE installation [Gas Fired Turbine ≥ 50 MW, Uniform Load, without Heat Recovery]. (See Attachment C)

**3. Top-Down BACT Analysis:**

**A. NO<sub>x</sub> Top-Down BACT Analysis for Permits**

According to BACT guideline 3.4.7 (Gas Fired Turbine ≥ 50 MW, Uniform Load, without Heat Recovery), the following are possible controls for NO<sub>x</sub> emissions from similar operations.

**Step 1 - Identify All Possible Control Technologies**

Based on the previously cited BACT Guideline, general control for NO<sub>x</sub> emissions from turbines include the following options:

1. 2.5 ppmv @ 15% O<sub>2</sub> (One hour Average) - High temperature SCR catalyst. Zeolite based high temperature catalyst must be used when the SCR system needs to be placed upstream of the Heat Recovery Steam Generators (HRSG) or on a simple cycle GTE without heat recovery.

**3. Top-Down BACT Analysis (Continued):**

2. 3.0 ppmv @ 15% O<sub>2</sub> (One hour Average) - High temperature SCR catalyst or equivalent. Zeolite based high temperature catalyst must be used when the SCR system needs to be placed upstream of the Heat Recovery Steam Generators (HRSG) or on a simple cycle GTE without heat recovery.

**Step 2 - Eliminate Technologically Infeasible Options**

All control options listed in step 1 are technologically feasible.

**Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

The following options are ranked based on their emission factor:

1. Selective Catalytic Reduction - ≤ 2.5 ppmv @ 15% O<sub>2</sub> (1-hour average)
2. Selective Catalytic Reduction - ≤ 3.0 ppmv @ 15% O<sub>2</sub> (1-hour average)

**Step 4 - Cost Effective Analysis**

A cost effective analysis must be performed for all control options in the list from step 3 in the order of their ranking to determine the cost effective option with the lowest emissions.

The applicant is proposing the use of a selective catalytic reduction system with NO<sub>x</sub> emissions of 2.5 ppmv @ 15% O<sub>2</sub> (1-hour average). This is the highest ranking technologically feasible option, therefore a cost effective analysis will not be necessary.

**Step 5 - Select BACT**

BACT for the emission unit is determined to be the use of a Selective Catalytic Reduction system with emissions of less than or equal to 2.5 ppmv @ 15% O<sub>2</sub> (1-hour average). The facility has proposed to use dry low NO<sub>x</sub> combustors and a Selective Catalytic Reduction system with emissions of less than or equal to 2.5 ppmv @ 15% O<sub>2</sub> (1-hour average); therefore, BACT is satisfied.

**B. CO Top-Down BACT Analysis**

According to BACT 3.4.7 (Gas Fired Turbine ≥ 50 MW, Uniform Load, without Heat Recovery), the following are possible controls for CO emissions from similar operations.

**Step 1 - Identify All Possible Control Technologies**

Based on the previously cited BACT Guideline, general control for CO emissions from turbines include the following option:

Achieved-in-practice BACT as 6.0 ppmv @ 15% O<sub>2</sub> with an oxidation catalyst (or equivalent)

Through the use of good combustion practices and without an oxidation catalyst, CO emissions of less than 6.0 have been achieved in practice.

The Sunrise Power Company combustion turbine generators (S-3746-1 and '2) operating in a simple cycle mode and without a oxidation catalysts achieved during initial source testing CO emissions rates < 1 ppmvd @ 15% O<sub>2</sub>.

Pastoria Energy Facility GTE S-3636-3 operating in a combined cycle mode and without a oxidation catalysts achieved during initial source testing CO emissions rates < 1 ppmvd @ 15% O<sub>2</sub>.

### **Step 2 - Eliminate Technologically Infeasible Options**

The control option listed in step 1 is technologically feasible.

### **Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

The following options are ranked based on their emission factor:

1. 6.0 ppmv @ 15% O<sub>2</sub> with an oxidation catalyst (or equivalent)

### **Step 4 - Cost Effective Analysis**

A cost effective analysis must be performed for all control options in the list from step 3 in the order of their ranking to determine the cost effective option with the lowest emissions.

The applicant is proposing CO emissions of 6.0 ppmv @ 15% O<sub>2</sub>, achieved through good combustion practices. This is the highest ranking option listed in the guideline, therefore a cost effective analysis will not be necessary.

### **Step 5 - Select BACT**

BACT for the emission unit is an emissions limit of less than or equal to 6.0 ppmv @ 15% O<sub>2</sub>. The facility has proposed a limit of less than or equal to 4.0 ppmv @ 15% O<sub>2</sub>; therefore, BACT is satisfied.

## **C. VOC Top-Down BACT Analysis**

According to BACT guideline 3.4.7 (Gas Fired Turbine ≥ 50 MW, Uniform Load, without Heat Recovery), the following are possible controls for VOC emissions from similar operations.

**Step 1 - Identify All Possible Control Technologies**

General control for VOC emissions include the following options:

1. 0.6 ppmvd @ 15% O<sub>2</sub>, (oxidation catalyst or equivalent and natural gas fuel)
2. 1.3 ppmvd @ 15% O<sub>2</sub> (oxidation catalyst or equivalent and natural gas fuel)
3. 2.0 ppmvd @ 15% O<sub>2</sub> (oxidation catalyst or equivalent and natural gas fuel)

**Step 2 - Eliminate Technologically Infeasible Options**

1. 0.6 ppmvd @ 15% O<sub>2</sub>, (oxidation catalyst or equivalent and natural gas fuel)

The 0.6 ppmvd @ 15% O<sub>2</sub> level listed in the District BACT guideline 3.4.7 (Gas Fired Turbine ≥ 50 MW, Uniform Load, is not considered “feasible” at this time, based on the following information and discussion:

The District has not permitted any gas turbine engine (combined or simple cycle) with a VOC emissions limit of less than 1.4 ppmvd @ 15% O<sub>2</sub> (San Joaquin Valley Energy, S3959-1, '2 and '3, 180 MW combined cycle, Siemens-Westinghouse were permitted at 1.4 ppmvd @ 15% O<sub>2</sub> VOC.)

The Sunrise Power Company combustion turbine generators (S-3746-1 and '2) operating in a simple cycle mode and without a oxidation catalysts achieved during initial source testing VOC emissions rates below the detection limit, 0.84 ppmvd @ 15%.

Pastoria Energy Facility combustion turbine generator (S-3636-3) operating in a combined cycle mode and without a oxidation catalysts during initial source testing achieved VOC emissions rates below the detection limit, 0.17 ppmvd @ 15% O<sub>2</sub>. The remaining two combustion turbine generators (S-3636-1 and 2) have not yet been source tested.

From the CARB document “*Guidance for Power Plant Siting and Best Available Control Technology*”, July 1999, a BACT emission level on 2.0 ppmv @ 15% O<sub>2</sub> is specified as BACT. The document references emissions levels achieved in practice for combustion gas turbines from the Carson Energy Group, 0.64 to 1.98 ppmvd 15% O<sub>2</sub> for a GE LM 5000 simple cycle unit with oxidation catalyst, and from Crockett Cogeneration, characterized by the BAAQMD as less than 1.0 ppmvd @ 15% O<sub>2</sub>, for a GE F7A combined cycle unit with oxidation catalyst.

## **Conclusion**

VOC emission from the Pastoria Energy Facility expansion combustion gas turbine (S-3636-14) are expected to be consistently < 1 ppmvd @ 15% O<sub>2</sub>, but, as there exists relatively few source test results for simple cycle machines operating without oxidation catalysts and a sufficient degree of variability in these test results, the most stringent VOC emissions limit listed in BACT guideline 3.4.7, 0.64 ppmvd @ 15%, will not be required as BACT.

It should be noted that, based on the results of the testing done on those units operating without oxidation catalysts, it can be concluded that VOC emissions of < 1.0 ppmv @ 15% O<sub>2</sub> can be achieved without the use of an oxidation catalyst. The level of VOC emissions control achieved with an oxidation catalyst is not well documented, but, as stated in the above referenced guidance document from CARB, oxidation catalysts can be designed to achieve control efficiencies of 40 to 50% for VOC and 80 to 90% for CO. However, given the very low levels of uncontrolled emissions of VOC and CO (less than 1.0 ppmvd @ 15% O<sub>2</sub>) and the limitations inherent in the source test method(s) specified to test these pollutants, it may not be possible to determine through measurement the reduction achieved with an oxidation catalyst.

## **Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

- 1 1.3 ppmvd @ 15% O<sub>2</sub> (oxidation catalyst or equivalent and natural gas fuel)
- 2 2.0 ppmvd @ 15% O<sub>2</sub> (oxidation catalyst or equivalent and natural gas fuel)

## **Step 4 - Cost Effectiveness Analysis**

A cost effective analysis must be performed for all control options in the list from step 3 in the order of their ranking to determine the cost effective option with the lowest emissions.

The applicant is proposing the use of an natural gas fuel and good combustion practices with VOC emissions of 1.3 ppmv @ 15% O<sub>2</sub>. This is the highest ranking option listed above, therefore a cost effective analysis will not be necessary.

## **Step 5 - Select BACT**

BACT for the emission unit is determined to be the use of natural gas fuel with emissions of less than or equal to 1.3 ppmv @ 15% O<sub>2</sub>. The facility has proposed to use natural gas fuel and good combustion practices with emissions of less than or equal to 1.3 ppmv @ 15% O<sub>2</sub>; therefore, BACT is satisfied.

**D. PM<sub>10</sub> Top-Down BACT Analysis**

According to BACT guideline 3.4.7 (Gas Fired Turbine  $\geq$  50 MW, Uniform Load, without Heat Recovery), the following are possible controls for PM<sub>10</sub> emissions from similar operations.

**Step 1 - Identify All Possible Control Technologies**

General control for PM<sub>10</sub> emissions include the following options:

1. Air inlet filter, lube oil vent coalescer, and PUC quality natural gas with a sulfur content not exceeding of 0.75 grain/100 scf

**Step 2 - Eliminate Technologically Infeasible Options**

The control option listed above is considered technologically feasible for this application.

**Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. Air inlet filter, lube oil vent coalescer, and PUC quality natural gas with a sulfur content not exceeding of 0.75 grain/100 scf

**Step 4 - Cost Effectiveness Analysis**

A cost effective analysis must be performed for all control options in the list from step 3 in the order of their ranking to determine the cost effective option with the lowest emissions.

The applicant is proposing to use an air inlet cooler/filter, lube oil vent coalescer and PUC quality natural gas fuel with sulfur not exceeding 0.75 grain/100 scf. This is the highest ranking option listed above, therefore a cost effective analysis will not be necessary.

**Step 5 - Select BACT**

BACT for the emission unit is determined to be the use of an air inlet cooler/filter, lube oil vent coalescer and natural gas fuel with sulfur not exceeding 0.75 grain/100 scf. The facility has proposed to use an air inlet cooler/filter, lube oil vent coalescer, natural gas fuel with sulfur not exceeding 0.75 grain/100 scf; therefore, BACT is satisfied.

**E. SO<sub>x</sub> Top-Down BACT Analysis**

According to BACT guideline 3.4.7 (Gas Fired Turbine  $\geq$  50 MW, Uniform Load, without Heat Recovery), the following are possible controls for SO<sub>x</sub> emissions from similar operations.

**Step 1 - Identify All Possible Control Technologies**

General control for SO<sub>x</sub> emissions include the following options:

1. PUC regulated natural gas fuel.
2. Non-PUC regulated natural gas fuel or LPG ( $\leq$  0.75 gr-S/100 scf).

**Step 2 - Eliminate Technologically Infeasible Options**

All of the listed controls are considered technologically feasible for this application.

**Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. PUC regulated natural gas fuel.
2. Non-PUC regulated natural gas fuel or LPG ( $\leq$  0.75 gr-S/100 scf).

**Step 4 - Cost Effectiveness Analysis**

The facility has proposed to use utility grade natural gas with a sulfur content of less than or equal to 0.25 grains per 100 scf. Since this is the most effective control option, a cost effectiveness analysis is not required.

**Step 5 - Select BACT**

The applicant has proposed to use PUC quality natural gas with a sulfur content of less than or equal to 0.75 grains per 100 scf as the SO<sub>x</sub> control technology. Therefore, BACT for this class of source is satisfied.

## **ATTACHMENT E**

### ***Health Risk/Ambient Air Quality Analysis***

## San Joaquin Valley Air Pollution Control District Risk Management Review

To: Richard Kars, AQE – Permit Services  
From: Glenn Reed, SrAQS – Technical Services  
Date: May 31, 2005  
Facility Name: Pastoria Energy Facility  
Location: Lebec  
Application #(s): S-3636-14-0  
Project #: S-1050207

---

### A. RMR SUMMARY

RMR Summary			
Categories	160 MW Gas Turbine (Unit 14-0)	Project Totals	Facility Totals
Prioritization Score	NA <sup>1</sup>	NA <sup>1</sup>	>1
Acute Hazard Index	0.03	0.03	0.05
Chronic Hazard Index	0.16	0.16	0.18
Maximum Individual Cancer Risk (10 <sup>-6</sup> )	0.8	0.8	4.51
T-BACT Required?	No		
Special Permit Conditions?	No		

<sup>1</sup>No prioritization score was calculated because previous prioritization scores for the facility exceeded 1.0.

### Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

#### Unit # 14-0

No special conditions are required.

### B. RMR REPORT

#### I. Project Description

Technical Services received a request on May 31, 2005, to perform an Ambient Air Quality Analysis and a Risk Management Review for a General Electric 7FA gas turbine generator rated at 568 bhp operating in simple cycle mode with selective catalytic reduction (SCR) for control of emissions of oxides of nitrogen.

## II. Analysis

Since the previous total facility prioritization score was greater than one, this proposed unit was not prioritized. Technical Services performed a refined health risk assessment. Emissions calculated using Ventura County Emission Factors for Turbines fired with natural gas were input into the HARP model. Ammonia slip emissions from the SCR unit were added to the emissions from the combustion of natural gas in the turbine. ISCST3 was used, with the parameters outlined below and meteorological data for 1963 from Bakersfield to determine the maximum dispersion factor at a comprehensive array of receptors. These dispersion factors were input into the HARP model to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameters Unit 14-0			
Source Type	Point	Location Type	Rural
Stack Height (m)	39.93	Closest Receptor (m)	NA
Stack Diameter (m)	6.93	Type of Receptor	NA
Stack Exit Velocity (m/s)	38.4	Max Hours per Year	8,760
Stack Exit Temp. (°K)	680.78	Fuel Type	Natural Gas
Burner Rating (MMBtu/hr)	1,791		

The applicant provided a full range of receptors for modeling. Although none of these were residential or business receptors, they were used for the modeling. Thus, the predicted risks are for the point of maximum impact rather than the maximum exposed individual.

Technical Services also performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub> and PM<sub>10</sub>; as well as a RMR. The emission rates used for criteria pollutant modeling were 902 lb/hr CO, 80 lb/hr NO<sub>x</sub>, 3.5 lb/hr SO<sub>x</sub>, and 9.0 lb/hr PM<sub>10</sub>. The engineer supplied the maximum fuel rate for the IC engine used during the analysis.

The results from the Criteria Pollutant Modeling are as follows:

### Criteria Pollutant Modeling Results\*

Values are in  $\mu\text{g}/\text{m}^3$

Diesel ICE	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO <sub>x</sub>	Pass	X	X	X	Pass
SO <sub>x</sub>	Pass	Pass	X	Pass	Pass
PM <sub>10</sub>	X	X	X	Pass	Pass

\*Results were taken from the attached PSD spreadsheet.

†The maximum predicted concentration for emissions of these criteria pollutants from the proposed unit are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

### III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk factor associated with the gas-fired turbine is less than 1.0 in a million. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

#### Attachments:

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Summary of highest cancer, chronic, and acute risks (PMI/MEI report from HARP)
- D. AAQA spreadsheet

AAQA for Pastoria Energy Facility ( S-3636 )  
All Values are in ug/m<sup>3</sup>

	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
SRCGP1	2.211E+01	1.037E-01	3.326E+02	7.349E+00	1.291E+00	9.617E-01	1.683E-01	2.576E-02	4.329E-01	6.635E-02
Background	1.588E+02	4.017E+01	4.777E+03	3.029E+03	5.062E+01	2.398E+01	1.066E+01	5.330E+00	9.500E+01	4.400E+01
<b>Facility Totals</b>	1.809E+02	4.027E+01	5.109E+03	3.036E+03	5.191E+01	2.494E+01	1.083E+01	5.356E+00	9.543E+01	4.407E+01
<b>AAQS</b>	470	100	23000	10000	655	1300	105	80	50	30
	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail	Fail

EPA's Significance Level (ug/m<sup>3</sup>)

	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
	0.0	1.0	2000.0	500.0	0.0	25.0	5.0	1.0	5.0	1.0

*AAQA Emission (g/sec)*

Device	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
SRCGP1	1.01E+01	2.36E+00	1.14E+02	6.78E+00	4.41E-01	4.41E-01	4.41E-01	4.40E-01	1.13E+00	1.13E+00

## **ATTACHMENT F**

### ***PM10/NOx Interpollutant Offset Analysis***

## Attachment AQ-29

**PM10 Interpollutant Offset Ratio Analysis  
Pastoria Energy Facility Expansion Project**

**PM10**

	Notes	Units	Estimate	Uncertainty
"Vegetative Burning" Total	1	$\mu\text{g}/\text{m}^3$	6.31	2.28
Industry Component (30%)	2	$\mu\text{g}/\text{m}^3$	1.89	
Regional Background (20%)	3	$\mu\text{g}/\text{m}^3$	0.38	
Industry minus Background		$\mu\text{g}/\text{m}^3$	1.51	
County Contribution	4	$\mu\text{g}/\text{m}^3$	0.76	
Organic Carbon PM10 Inventory - Kern County	5	ton/day	7.90	
County Impact		$\mu\text{g}/\text{m}^3$ per ton	0.10	0.13

**Nitrate**

Ammonium Nitrate	6	$\mu\text{g}/\text{m}^3$	14.90	1.30
Regional Background	7	$\mu\text{g}/\text{m}^3$	1.00	
Ammonium Nitrate minus Background		$\mu\text{g}/\text{m}^3$	13.90	
County Contribution	8	$\mu\text{g}/\text{m}^3$	6.95	
NOx Inventory - Kern County	9	ton/day	156.45	
County Impact		$\mu\text{g}/\text{m}^3$ per ton	0.04	0.05
Tons of NOx to Equal Effect of 1 ton PM10	10		2.16	2.70

- Per SJVUAPCD and CARB, PM10 emissions from stationary industrial combustion sources are included in the Vegetative Burning category from Chemical Mass Balance modeling performed for the SJVUAPCD 2003 PM10 Attainment Plan (Bakersfield - Golden State monitoring station).
- Per SJVUAPCD, 30% of this category is attributed to stationary industrial combustion sources.
- Per SJVUAPCD, regional background is estimated to be 20% of net concentration after previous adjustment to Vegetative Burning category.
- Contribution from sources within Kern County is 50% of net concentration after previous adjustments to Vegetative Burning category.
- Organic carbon PM10 inventory for Kern County that contributes to this monitoring location; from SIP inventory with updates and adjustments based on CCOS study.
- Ammonium nitrate category from Chemical Mass Balance modeling performed for the SJVUAPCD 2003 PM10 Attainment Plan (Bakersfield - Golden State monitoring station).
- Per SJVUAPCD, regional background of ammonium nitrate is estimated to be  $1 \mu\text{g}/\text{m}^3$ .
- Contribution from sources within Kern County is 50% of net concentration after previous adjustment to Vegetative Burning category.
- 1999 NOx inventory for Kern County that contributes to this monitoring location; from SIP inventory with updates and adjustments based on CCOS study.
- PM10 County Impact divided by Ammonium Nitrate County Impact.

**ATTACHMENT G**  
***Compliance Certification***



**CALPINE**

DUBLIN OFFICE  
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DUBLIN, CALIFORNIA 94568-3139  
925.479.6600  
925.479.7300 (fax)

## Certification Pastoria Expansion Project

I, Barbara McBride, on behalf of Calpine Corporation, hereby certify under penalty of perjury as follows:

1. I am authorized to make this certification on behalf of Calpine Corporation.
2. This certification is made pursuant to the Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District.
3. To the best of the undersigned's knowledge, all major stationary sources owned or operated by Calpine Corporation in the State of California are either in compliance or on a schedule of compliance with all applicable state and federal emission limitations and standards.

Delta Energy Center  
Los Medanos Energy Center  
Los Esteros Critical Energy Facility  
Metcalf Energy Center  
Pastoria Energy Facility  
Sutter Power Plant  
Gilroy Power Plant  
King City Power Plant  
Pittsburg Power Plant (at Dow Chemical)  
Greenleaf 1  
Greenleaf 2  
Agnews Power Plant  
Watsonville Power Plant  
Aidin Geothermal Power Plant  
Bear Canyon Geothermal Power Plant  
Sonoma Geothermal Power Plant  
West Ford Flat Geothermal Power Plant  
McCabe Geothermal Power Plant  
Ridgeline Geothermal Power Plant  
Fumarole Geothermal Power Plant  
Eagle Rock Geothermal Power Plant

Cobb Creek Geothermal Power Plant  
Big Geysers Geothermal Power Plant  
Sulphur Springs Geothermal Power Plant  
Quicksilver Geothermal Power Plant  
Lake View Geothermal Power Plant  
Socrates Geothermal Power Plant  
Calistoga Geothermal Power Plant  
Grant Geothermal Power Plant  
And supporting Steam Fields  
Gilroy Energy Center  
King City Energy Center  
Lambie Energy Center  
Goosehaven Energy Center  
Creed energy Center  
Wolfskill Energy Center  
Yuba City Energy Center  
Feather River Energy Center  
Riverview Energy Center

Each of the statements herein is made in good faith. Accordingly, it is Calpine Corporation's understanding in submitting this certification that the SJVUAPCD shall take no action against Calpine Corporation or any of its employees based on any statement made in this certification.

Barbara McBride  
Director Safety, Health and Environment  
Calpine Corporation

Dated: 5/3/05

**ATTACHMENT H**  
*Response to Comments*

## **Comments by US EPA**

### **Comment - Interpollutant Trading**

Pastoria has proposed a trading ratio based on an analysis of currently available information on the formation of particulate matter in the San Joaquin Valley. Two methods were proposed to calculate the appropriate ratio for nitrate-to-PM<sub>10</sub> precursor trading. The ambient ratio method used the ambient air quality data in the vicinity of the project to determine the conversion of NO<sub>x</sub> to particulate matter, and to convert this ratio to mass equivalents. The second method used air quality modeling to establish wintertime conversion rates of NO<sub>x</sub> to ammonia nitrate. Simulations for the regional conditions were made using chemistry based on the Regional Atmospheric Chemistry Mechanism. The method used to determine the ratio is not identical to the method used for modeling in the District's SIP attainment plan, but the ratio is consistent with the ratio used in the plan.

EPA believes that this process was appropriate for this application because it is based on a supportable methodology, and because it used area-specific data. Future permit applicants proposing interpollutant trading should provide similar justification for the trade, which incorporates any new technical information as well as information specific to the area where the trade will occur. In addition, any future interpollutant justifications must use data consistent with the data used to update the District's SIP attainment plan.

### **Response**

We note your concurrence on the appropriateness of the methodologies used to arrive at the NO<sub>x</sub> / PM<sub>10</sub> offset ratio proposed by PEF. Interpollutant offsets are approved by the APCO, at his discretion on a case-by-case basis using the latest available monitoring data and modeling protocols that are consistent with our approved attainment plan.

### **Comment - Offsets Ratio for PM<sub>10</sub>**

EPA believes that the method the District proposed to combine the distance and interpollutant trading offset ratios for PM<sub>10</sub> is inappropriate. SJVUAPCD Rule 2201 states that a distance ratio of 1:1.5 is applied for offsets used by a facility more than 15 miles from the facility which generated the reductions. Pastoria then proposed an interpollutant trading ratio of 1 ton PM<sub>10</sub> to 2.22 tons NO<sub>x</sub>. To combine these values, the District has taken the portion of both ratios considered to be "excess" and then added these to a base 1:1 ratio. In the PDOC, the combined ratio for PM<sub>10</sub> is determined by adding  $1 + 0.5 + 1.22 = 2.72$ .

EPA believes that this additive method is inappropriate, and that a multiplicative method should be used instead. Interpollutant and distance ratios are usually calculated by determining the level of emissions reductions which should be considered equivalent to providing reductions and the same pollutant from a nearby source. For example, it was

determined in this case that reductions of 2.22 lbs of NO<sub>x</sub> are required to provide an equivalent reduction of 1 lb of PM<sub>10</sub>. Thus, for a hypothetical source with 100 tpy of PM<sub>10</sub> emissions and located farther than 15 miles from the source of the offsets would be required to surrender 150 tpy of PM<sub>10</sub> offsets after applying a distance ratio of 1:1.5. Using the interpollutant ratio of 1:2.22, for every 1 tpy of PM<sub>10</sub> required to be offset under the District's rules, it will take 2.22 tpy of NO<sub>x</sub> to provide an equivalent reduction in PM<sub>10</sub> emissions. Thus the total number of NO<sub>x</sub> offsets required would be 150 tpy x 2.22 = 333 tpy of NO<sub>x</sub>. When this methodology is applied to this project, the necessary NO<sub>x</sub> emissions reduction credits required to offset the 39.42 tons of increased PM<sub>10</sub> emissions is: 39.42 x 1.5 x 2.22 = 131.3 tpy of NO<sub>x</sub> ERC's, rather than the 107.2 tpy of NO<sub>x</sub> ERC's determined in the District's evaluation. EPA recommends correcting the interpollutant offset calculations in the PDOC and requiring the applicant to surrender an additional 24.1 tpy of NO<sub>x</sub> offsets to fully meet the PM<sub>10</sub> offset requirements.

## **Response**

The District has been consistent in the manner in which it combines the distance and interpollutant offset ratios, determining the ratios independently and then combining them in an additive manner. From your comment, we note that EPA's suggested method of combining ratios is to multiply them rather than add them, the result of which is a higher overall offset requirement. This difference in approach has been discussed with EPA before, in the permitting actions taken for the approval of the La Paloma Facility and initial phase of the Pastoria Energy Facility.

The District has determined that, for projects that are subject to both distance and interpollutant offset ratios, an additive combination of these ratios is appropriate. In applying the distance offset ratio, the new source review rule specifies offsets be provided at a 1.5 to 1 ratio if the reductions occurred more than 15 miles from the new emissions. Fifty percent more reductions than increases must be provided to mitigate the air quality impact of the new emissions. Thus, 100% of the new emissions are balanced by reductions plus the additional 50% more reductions counter-balance the fact that the reductions occurred physically away from the increases. The new emissions are thus fully offset. If interpollutant offsets from the same stationary source are utilized, the appropriately ascertained interpollutant offset ratio is applied to mitigate the air quality impact of the new emissions. The first 100% is to mitigate the new emissions and the additional percentage required is to ensure the air quality impact of reducing a precursor air contaminant counter-balances the air quality impact of the new secondary air contaminant emissions. The new emissions are thus fully offset.

In both cases described, the total air quality impact of the new emissions is mitigated. When interpollutant offsets which occur more than 15 miles from the source are utilized, 100% of the quantity of new emissions are offset plus an additional quantity for the fact that the reductions are at a distance from the new emissions and an additional amount because of the use of a precursor air contaminant. It is unnecessarily punitive, and unprecedented in the Valley District, to require offsetting of the 100% portion of the new emissions twice as EPA's comment suggests.

Our determination satisfies the requirements of Section 4.13.3, in that we require a case-by-case approval based on a supportable air quality analysis, satisfaction that the approved emissions increases will not violate an Ambient Air Quality Standard and the imposition of offset ratios greater than that required by the rule. The additive approach historically used by the District satisfies the requirement for a combined ratio of magnitude greater than what the rule requires.

### **Comment - Permit Conditions Concerning Offsets**

Condition 45 in the permit states that NO<sub>x</sub> ERCs may be used to offset PM<sub>10</sub> increases using a ratio of 2.42:1 within a 15 mile radius and 2.72 outside of a 15 mile radius. EPA has two comments on this condition. First, according to page 21 of the evaluation, the NO<sub>x</sub>/PM<sub>10</sub> offset ratio was determined to be 2.22:1, not 2.42:1. Second, as stated above in comment 2, EPA believes that the calculation methodology for offsets in the evaluation is incorrect. When the indicated correction is made to the evaluation, please revise this condition accordingly.

Condition 43 specifies the emission increases for each pollutant for which emission reduction credits will be required. The condition goes on to state that they are to be provided at the distance offset ratio specified in Rule 2201 and the interpollutant offset ratio specified in the permit. Since each of the ratios is known, EPA suggests specifying the total number of ERC offsets to be surrendered by the applicant prior to issuance of the Final Determination of Compliance.

### **Response**

The District has corrected draft condition 45 to read " NO<sub>x</sub> ERC may be used to offset PM<sub>10</sub> at a ratio of 2.22 lb NO<sub>x</sub> : 1 lb PM<sub>10</sub> ...". The correction of this typographical error makes the draft condition consistent with the interpollutant ratio identified on page 21 of the evaluation.

Offset requirements are presented in Condition 43 in a format that the District utilizes to minimize errors and which is the easiest to enforce. In verifying compliance with offset requirements, District staff begins with the project's emissions increases subject to offset requirements and then applies the appropriate ratios based on which certificates are actually surrendered.

### **Comment - Emission Reduction Credit Analysis**

The PDOC lacks a detailed discussion of the source of the ERCs the applicant has secured as emissions offsets for this project. While the District did provide copies of the ERC certificates, they are not sufficient to determine if the credits met all of the federal requirements for ERCs. Pursuant to the requirements of District Rule 2201 Section 7.1.1 and 7.1.3, please provide a copy of the required analyses regarding the amount of offsets otherwise required under Federal NSR and the amount of the actual ERCs that would be considered surplus under federal requirements.

The amounts of NO<sub>x</sub> offsets required, as indicated on the line labeled "PE2" on page 18, are not the same as the number of offsets required by Condition 42 of the PDOC. EPA believes the values on page 18 are the ones in need of correction, since they are not consistent with the post-project Stationary Source Potential to Emit shown on Page 10. Please review and revise as necessary.

### **Response**

Applicant has proposed and identified valid ERC certificates to use as offsets for the project. The ERCs identified represent banked credits that have been evaluated by the District and found to conform to NSR and the District's ERC banking rule requirements at the time they were banked. The credits represent actual emissions reductions and were found to be real, quantifiable, enforceable and surplus. The banking actions were publicly noticed and available for comment from the oversight agencies. Any and all comments were addressed prior to issuance of the certificates.

The conformance of credits used from the District's bank with Federal requirements (Federal NSR, and CAA) is accomplished using the "Annual Offset Equivalency Demonstration and Pre-baseline ERC Cap Tracking System (NSR, Section 7.0). The District is required, as part of the offset tracking system, to determine the surplus value of all ERCs used as offsets by stationary sources at the time of permit issuance. The permit has not yet been issued. The determination of the surplus value of ERCs will be done by the District for the expansion project, as was done for the ERCs used for the original Pastoria facility.

Finding that an ERC or a portion of an ERC is not surplus of Federal requirements does not mean that ERC or partial ERC cannot be used for the project for which it has been proposed. Rather, it means that the non-surplus credits must be accounted for in the tracking system. The tracking system is used to determine the overall effectiveness of District's offset requirements relative to Federal requirements, the finding of which is published annually. If equivalency is not shown and there is an identified shortfall in the amount of credits surrendered for the period, then the District is required to retire additional credits to make up the difference and major sources and major modifications must provide Federally surplus offsets for ATC's issued in the reporting period.

**Comment - Short Term Excursions**

On Page 7 of the evaluation, the District notes in a footnote that the NO<sub>x</sub> BACT limits are not applicable during short-term excursions limited to a total of 10 hrs/yr and combustor tuning events limited to no more than 6 hrs/yr. The evaluation contains no further discussion as to why these short-term excursions from BACT limits are necessary. The requirement to apply BACT applies all times, although a different level of BACT may be permissible under various operating conditions. EPA notes that Condition 32 does set a 1 hour NO<sub>x</sub> emissions limit of 30 ppmvd @ 15% O<sub>2</sub> during an excursion, but the evaluation does not contain a justification for this limit. Please provide a justification for allowing these alternative emissions limits in the PDOC.

**Response**

Additional information has been received from the applicant supporting the allowances made for short-term excursions and combustor tuning events. The District has added a discussion to the application review to address these events.

The amount of time allowed for combustion tuning remains at 6 hour per year, but PDOC condition 34 has been revised so as to not limit that time to a single continuous 6 hour period. Condition 31 has been revised to add daily emissions limits that apply on days when there are one or more periods of combustor tuning.

**Comment - Startup, Shutdowns and Operating Hours**

Condition 49 specifies the source test requirements for measuring NO<sub>x</sub>, CO and VOC emissions during startup operations. The condition currently specifies a source test frequency of once every 7 years. Since this facility is already a subject to Title V and this emissions unit will need to be incorporated into their Title V permit, please revise the testing frequency to no less than once every 5 years, consistent with Title V source test requirements.

Condition 29 currently limits the duration of a startup or shutdown to one hour per occurrence, but there is no limit in the permit as to the number of occurrences allowed. EPA notes on page 9 of the evaluation that the District assumed a worst case startup rate of 300 hours per year. Since these numbers were used in estimating the project's emissions and, hence, the offsets required, the permit must contain a condition limiting the total hours of startup operations to 300 hours per year.

**Response**

Emissions source testing to shown compliance with startup emissions limits for NO<sub>x</sub>, CO and VOC is required once every seven years. The District has established the seven-year interval for startup emissions for all major gas turbine engine power plant projects that have

been approved and constructed: La Paloma (S-3412), Sunrise (S-3746), Elk Hill Power (S-3523) and Pastoria Energy Facility (S-3636). These plants have successfully demonstrated compliance with their startup emissions limits. The seven year interval for startup testing has been incorporated into the Title V permit for La Paloma, and Sunrise and is pending for Elk Hills Power.

More frequent startup emissions testing, such as the five year interval suggested by EPA, is not warranted. Startup testing at the existing facilities has shown that the permitted startup emissions limits are representative, if not conservative, of actual startup emissions.

Annual emission limits and offset requirements have been established for the Pastoria Energy Facility expansion turbine based on an operating scenario proposed by the applicant: 300 hours per year of startup operation and 8460 hour per year of full load operation at worst case ambient conditions. The applicant is required to demonstrate compliance with annual NOx and CO emission limits by maintaining CEMs for these pollutants that record cumulative annual emissions. Compliance with SOx, PM10 and VOC annual emissions limits are demonstrated by maintaining the cumulative hours of operation and fuel use, and by annual stack emissions testing (PM10 and VOC) and fuel sulfur analysis (SOx). SOx and PM10 emissions rates are expected to be the same whether in startup mode or full load operation.

Based on the information above, it is not necessary to establish a limitation on the annual hours of operation in startup mode. If the hours of operation in startup exceed 300 hour per year, the operator may be required to curtail the operation of the turbine to meet annual emissions limits. Whether or not a curtailment would be required would depend primarily on the actual utilization and actual emission rates observed.

#### **Comment - 40 CFR Subpart GG**

The Subpart GG analysis which starts on page 30 uses an outdated version of the rule for the evaluation. Please revise this section using the current version of Subpart GG, last revised on July 7, 2004, as the basis for the evaluation.

On page 26, the paragraphs which discuss 40 CFR Part 60 requirements is outdated. Since these provisions are not longer applicable requirements, please remove them from this section. Likewise, the 2<sup>nd</sup> and 3<sup>rd</sup> paragraphs of page 27 are also outdated and should be removed or updated.

#### **Response**

The District has revised the Compliance section dealing with Subpart GG requirements such that the July 8, 2004 version is referenced.

### **Comment - Sulfur Content of Fuel**

On page 7, the worst case SO<sub>x</sub> emission rate is calculated assuming natural gas with a sulfur content of 0.75 grain/100 scf. The calculated SO<sub>x</sub> emissions rate is 3.76 lb/hr, which is higher than the 3.50 lb/hr value used for modeling. The permit must be limited to the same emissions rate used for modeling and determining offset requirements. EPA suggests calculating the allowable sulfur content for natural gas that results in an emissions rate of 3.50 lbs/hr or less of sulfur, or if the 3.76 lb/hr rate is used, revise the SO<sub>x</sub> modeling to reflect this value.

### **Response**

The Pastoria expansion turbine is subject to a fuel sulfur limit of 0.75 grain/100 scf and an hourly SO<sub>x</sub> emissions limit of 3.5 lb/hr. As EPA has pointed out, burning gas with the maximum allowable fuel sulfur content under worst-case full load operating conditions would result in emissions exceeding the hourly SO<sub>x</sub> limit.

However, it is not necessary to make the fuel sulfur content and hourly SO<sub>x</sub> limits “match up”, as both are applicable at all times and under all conditions of operation. Compliance with the more restrictive hourly SO<sub>x</sub> limit must be demonstrated on an hourly basis by mass balance calculation using the fuel sulfur content and the actual quantities of fuel burned.

The gas delivered from the Kern/Mojave pipeline meets the definition of natural gas in Subpart GG §60.331 (u). To demonstrate compliance with the fuel sulfur content limit, the gas will be routinely sampled for fuel sulfur as allowed and specified in Subpart GG §60.334 (3) (ii). The following condition will replace current PDOC condition #51:

The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. If sulfur content is less than 1.0 gr/100 scf for 8 consecutive weeks, then the monitoring frequency shall be every six (6) months. If any six (6) month monitoring show an exceedance, weekly monitoring shall resume. 40 CFR 60.334(h)(3) and District Rule 2520, 9.3.2

Based on the initial testing of the fuel at the Pastoria Energy Facility, the fuel sulfur content is less than 0.1 gr/100 scf and hourly SO<sub>x</sub> emissions for the operating units are significantly less than 3.5 pounds per hour. Compliance with the hourly SO<sub>x</sub> emission requirement is being demonstrated by calculation on an hourly basis.

### **Comment - Acid Rain Provisions**

Condition 66 requires the applicant to submit an Acid Rain application 24 months prior to commencing operation. Since the source is currently obtaining the necessary construction permits for this project, it appears the source is currently within the specified 24 month period.

The source must submit an Acid Rain application as soon as possible, and prior to issuance of the PDOC. The Acid Rain regulations state that a source must comply with their Acid Rain application until these requirements are incorporated into their Title V permit. Accordingly, please revise condition 66 to require compliance with applicant's Acid Rain application.

**Response**

On October 6, 2005, the District received from Pastoria Energy Facility a revision to their application for an Acid Rain Permit, which added the proposed simple cycle gas turbine engine. The District will revise PDOC condition 66, requiring Pastoria to submit the reports and compliance certifications to fulfill Acid Rain Permit requirements.

**Comment - Other Minor Comments**

On Page 20, please revise the last sentence of the page to state, "nitrogen oxides are a precursor to the nitrate fraction of PM<sub>10</sub>", rather than the sulfate fraction of PM<sub>10</sub>.

**Response**

The inaccurate statement on Page 20 has been corrected.

**Comments by the California Energy Commission (CEC)**

**Comment - Combustor Tuning Emissions - Daily Emissions Compliance**

While District PDOC conditions 34 and 35 define and list allowable combustor tuning event emissions, condition 34 only exempts combustor tuning emissions from compliance with condition 31 (normal hourly emission limits). That creates the potential for non-compliance with the NO<sub>x</sub>, CO, and VOC daily emission limits specified in PDOC condition 38 (maximum daily emission limits). We recommend either that condition 34 specify both conditions 31 and 38 in its first sentence, or that a separate condition be developed to define maximum daily NO<sub>x</sub>, CO, and VOC emissions for days with combustor tuning events.

**Response**

The District has added the following requirement to PDOC condition 38 to enforce maximum daily emissions during combustor tuning events: On any day when combustor tuning occurs, emissions from GTE shall not exceed any of the following: PM<sub>10</sub> 216 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) 84 lb/day; NO<sub>x</sub> (as NO<sub>2</sub>) 957.5 lb/day; VOC 160.9 lb/day or CO 3036.5 lb/day.

### **Comment - Combustor Tuning Events – Single Event Limitation**

It is CEC staff's understanding (CEC data response 33, Attachment AQ-33) that the applicant has asked for 6 hours per year for combustor tuning, but did not specify that a maximum of one event would occur each year. If the applicant comments on the event limitation in PDOC Condition 34, CEC staff would not object if the District modifies the last sentence in Condition 34 to remove the once per year limitation, as long as the 6 hours per year limitation remains.

### **Response**

Condition 34 has been revised to delete the requirement that combustor tuning be done in one continuous period. Combustor tuning will continue to be limited to 6 hours per year. At the applicant's request, a revised and expanded definition of combustor tuning has been added to condition 34. Revised condition 34 is shown below:

34. Compliance with NO<sub>x</sub>, CO and VOC emissions limitations specified in condition #31 shall not be required during combustor tuning activities. Combustor tuning activities are defined as any testing, adjustment, tuning, or calibration activities necessary to insure safe and reliable steady state operation of the GTE following replacement of the combustor components, during seasonal tuning events, when recommended by the turbine manufacturer, or as necessary to maintain low emissions performance. This includes, but is not limited to, adjusting the amount of fuel distributed between the combustion turbine's staged fuel systems to simultaneously minimize NO<sub>x</sub> and CO production while minimizing combustor dynamics and ensuring combustor stability. The exemption for combustor tuning activities shall be limited to 6 hours per calendar year. [District Rule 2201]

### **Comment - Interpollutant Offset Ratio Calculations**

The applicant used an older calculation methodology, first performed for the La Paloma siting case, and the current District-accepted Chemical Mass Balance (CMB) method to verify the proposed NO<sub>x</sub> for PM<sub>10</sub> interpollutant offset ratio. However, staff is concerned that the CMB method interpollutant offset ratio calculation only addresses a single worst-case event and does not address an average or annual case to determine the amount of NO<sub>x</sub> emission reductions that may be needed to offset the PM<sub>10</sub> emissions on a regular and long-term basis. Additionally, the CMB method uses both daily event data (worst-case PM<sub>10</sub> event data) and annual or annual average data for other inputs (regional ammonium nitrate background, other PM<sub>10</sub> source contribution, emission inventory values) to the calculation, which creates an "apples and oranges" calculation approach.

Staff believes that the offset ratio should be designed to offset all of the emissions as required under District rules, not to just mitigate emission impacts during a single worst-case event. Therefore, staff recommends that the District provide a CMB method calculation based on the annual average input values for all CMB method parameters to justify that the proposed NO<sub>x</sub> for PM<sub>10</sub> interpollutant offset ratio of 2.22:1 is reasonable to offset the project's PM<sub>10</sub> emissions on an annual basis.

## **Response**

As CEC has noted, the chemical mass balance (CMB) modeling methodology used to determine and approve an interpollutant offset ratio (NO<sub>x</sub>/PM<sub>10</sub>) for the Pastoria expansion project is based on a single worst-case episodic event. The District exceeded the particulate matter ambient air quality standard for one or more monitoring stations during this event. Using ambient conditions during a single event, rather than basing the characterization on average ambient conditions, is more useful for planning and for implementing a successful PM<sub>10</sub> attainment plan strategy. In our efforts to bring about attainment with the applicable standards, we have adopted regulations and other strategies that focus on reducing emission levels during episodic events, as it is during these events that violations occur and where the impact to public health is the greatest. In fact, in 1990 the District exceeded the federal daily PM<sub>10</sub> ambient air quality standard (aaqs) on more than 55 days. That dropped to 12 days by 2001 and no exceedances have been recorded since 2002.

Compliance with all new source review (NSR) rule requirements, including the requirements set forth for the use of interpollutant offsets, are essential to meeting our attainment goals. The interpollutant ratio approved for Pastoria satisfies the requirements of NSR, Section 4.13.3, in that it is based on a supportable air quality analysis made specifically for the Pastoria facility, demonstrates that the approved emissions increases are not expected to cause or contribute to a violation of an aaqs, and imposes offset ratios greater than that required by the rule. CMB modeling identifies NO<sub>x</sub> as a significant PM<sub>10</sub> precursor on days on which PM<sub>10</sub> levels exceed the standard and identifies the amount of NO<sub>x</sub> reductions that will bring about a reduction in atmospheric PM<sub>10</sub> corresponding to the authorized PM<sub>10</sub> emissions for a worst-case day. Thus, the CMB modeling approach used by the District satisfies all NSR requirements and is in keeping with our PM<sub>10</sub> attainment plan goals.

## **Comments by Pastoria Energy Facility LLC**

### **Comment**

The table on Page 3 showing hypothetical operating scenario should list number of hours per quarter based on the number of days per quarter (90, 90, 91 and 92), not by dividing the annual hours by four.

### **Response**

The table on Page 3 has been revised.

### **Comment**

On Page 6, initial commissioning is identified as a one-time event lasting up to three weeks. Please revise, as initial commissioning is expected to last up to 6 months.

**Response**

The reference to initial commissioning on Page 6 has been revised.

**Comment**

The table on Page 9 incorrectly describes how daily emissions were calculated on days were a start-up occurred. Daily NOx and CO emissions were not calculated directly from hourly emissions, but are the same as the maximum daily NOx and CO limits for the existing Pastoria gas turbine engines. Daily VOC, PM10 and SOx are based directly on maximum hourly emissions, 2 hours/day in startup mode and 22 hours/day at full load operation. Please revise the table.

**Response**

The table referencing maximum daily emissions has been revised.

**Comment**

The PE2 quarterly amounts for the 3<sup>rd</sup> and 4<sup>th</sup> quarters shown in the NOx offset table on page 18 are incorrect.

**Response**

The PE2 amounts for the 3<sup>rd</sup> and 4<sup>th</sup> quarters shown in the NOx offset table on page 18 have been corrected to 40,702 lb/qtr.

**Comment**

The language on pages 26 and 36 relating to the reliability of CEMS results during startup testing should be revised to be consistent with PDOC condition #49. The reference text should read, "If, in the judgment of source test staff, CEMS data is not ~~certifiable~~ reliable to determine compliance with NOx and CO startup emissions limits..."

**Response**

The language on pages 26 and 36 relating to the reliability of CEMS results during startup testing has been revised to be consistent with PDOC condition #49.

**Comment**

The July 8, 2004, amendments to Subpart GG (49 FR 41363) revised the fuel nitrogen and sulfur testing requirements (§60.334), so references to these requirements should be revised to make them consistent with the amended version of Subpart GG.

**Response**

Changes have been made to the nitrogen and sulfur fuel monitoring requirements to make them consistent with the July 8, 2004 amended version of Subpart GG.

**Comment**

Please correct the typographical error in condition 35 as shown below:

35. Emission rates from GTE during combustor tuning shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) 300 lb/hr and 600 lb/period; VOC 48 lb/hr and 96 hours lb/period; and CO 2514 lb/hr and 2514 lb/period. Hourly emissions are on a one-hour average basis. [District Rules 2201]

**Response**

The typographical error in Condition 35 has been corrected.