

Bay Area Air Quality Management District

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**Permit Evaluation
and
Statement of Basis
for
MAJOR FACILITY REVIEW PERMIT**

**for
Los Esteros Critical Energy Facility
Facility #B3289**

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TABLE OF CONTENTS

A.	Background.....	1
B.	Facility Description.....	2
C.	Permit Content	2
I.	Standard Conditions	2
II.	Equipment	2
III.	Generally Applicable Requirements	3
IV.	Source-Specific Applicable Requirements.....	3
V.	Schedule of Compliance.....	5
VI.	Permit Conditions.....	5
VII.	Applicable Limits and Compliance Monitoring Requirements	6
VIII.	Test Methods	9
IX.	Permit Shield:.....	9
D.	Alternate Operating Scenarios:.....	10
E.	Compliance Status:	10
F.	Differences between the Application and the Proposed Permit:	10

Title V Permit Evaluation/Statement of Basis

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Volume 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a Phase II Acid Rain facility as defined by BAAQMD Regulation 2-6-217 and because it is a “major facility” as defined by BAAQMD Regulation 2-6-212 due to its potential to emit for ammonia. It is an Acid Rain facility because it burns fossil fuel, serves a generator that is over 25 MW that is used to generate electricity for sale, and will be built after November 15, 1990.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In addition, Phase II Acid Rain facilities must meet the requirements of Title IV of the federal Clean Air Act, Acid Rain, and the Acid Rain regulations in Parts 72 through 78 of Volume 40 of the Code of Federal Regulations. These regulations were adopted and incorporated by reference by BAAQMD Regulation 2, Rule 7, Acid Rain. The main provisions of the regulations for natural gas fired acid rain sources, such as the ones at this facility, are the requirement to obtain one SO₂ allowance for each ton of SO₂ that is emitted, stringent monitoring requirements for NO_x, CO, CO₂, and SO₂, and stringent recordkeeping and reporting.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is B3289.

This facility is a new facility that received an Authority to Construct on July 3, 2002, pursuant to Application #3213, submitted on August 8, 2001. An extensive evaluation of the requirements, including much background information, was prepared before issuance of the Authority to Construct. Because this facility can generate more than 50 MW, it is subject to CEQA. The California Energy Commission (CEC) is the lead agency. The CEC designation for the evaluation done by the BAAQMD is “Final Determination of Compliance” (FDOC). The FDOC is contained in Appendix A and is considered part of this Major Facility Review permit evaluation/statement of basis.

The cooling tower is exempt from a District permit because the PM emissions are less than 5 tons per year.

B. Facility Description

An extensive facility description is contained in Appendix A in the FDOC for Application #3213. The Los Esteros Critical Energy Facility is 180 MW, natural gas-fired, simple cycle peaking power plant operated by Calpine. The power plant is located in northern edge of the city of San Jose in Santa Clara County.

C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit.

I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities. If the Title IV (Acid Rain) requirements for fossil fuel fired electrical generating facilities or the accidental release (40 CFR § 68) programs apply, the section will contain a standard condition pertaining to these programs. Many of these conditions derive from 40 CFR § 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

The standard conditions also contain references to BAAQMD Regulation 1 and Regulation 2. These are the District's General Provisions and Permitting rules.

Condition I.J has been added to clarify that the capacity limits shown in Table II-A are enforceable limits.

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified with an S and a number (e.g., S24).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302.

Significant sources are those sources that have a potential to emit of more than 2 tons of a "regulated air pollutant," as defined in BAAQMD Rule 2-6-222, per year or 400 pounds of a "hazardous air pollutant," as defined in BAAQMD Rule 2-6-210, per year. This facility has no significance sources that are not permitted.

All abatement (control) devices that control permitted or significant sources are listed. Each abatement device whose primary function is to reduce emissions is identified with an A and a number (e.g., A-24). An abatement device may also be a source of secondary emissions (such as selective catalytic reduction, which has secondary ammonia emissions).

The equipment section is considered to be part of the facility description. It contains information that is necessary for applicability determinations, such as fuel types, contents or sizes of tanks, etc. This information is part of the factual basis of the permit.

Each of the permitted sources has previously been issued an authority to construct or a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with state law and the District's regulations. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403.

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will appear in Sections IV and VII of the permit. Parts of this section apply to all facilities (e.g., particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Title V permit if they are considered significant sources pursuant to the definition in BAAQMD Rule 2-6-239.

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) are listed following the corresponding District rules. SIP rules are District rules that have been approved by EPA for inclusion in the California State Implementation Plan. SIP rules are "federally enforceable" and a "Y" (yes) indication will appear in the "Federally Enforceable" column. If the SIP rule is the current District rule, separate citation of the SIP rule is not necessary and the "Federally Enforceable" column will have a "Y" for "yes". If the SIP rule is not the current District rule, the SIP rule or the necessary portion of the SIP rule is cited separately after the District rule. The SIP portion will be federally enforceable; the non-SIP version will not be federally enforceable, unless EPA has approved it through another program.
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all of the applicable requirements for particular sources. The text of the requirements is found in the regulations, which are readily available on the District or EPA websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements. A discussion of monitoring is included in Section C.VII of this permit evaluation/statement of basis.

Complex Applicability Determinations

An analysis of the effect of the following complex requirements is contained in the original FDOC in Appendix A.

- Best Available Control Technology
- Offsets
- PSD
- CEQA
- Toxic Risk Management Policy

Case-by-case MACT

The facility is not subject to a case-by-case MACT determination pursuant to 112(g)(2)(B) of the Clean Air Act because it is not a major source of hazardous air pollutants (HAP). MACT is the maximum achievable control technology emission limitation that has not yet been promulgated by US EPA.

The maximum facility toxic air contaminant emissions are found on page 9 of the FDOC. All of these air contaminants are defined as HAPs except for ammonia, diesel PM, and propylene.

Accidental Release

Ammonia storage at this facility is not subject to 40 CFR 68, Accidental Release, because the ammonia that is stored at this location has a maximum concentration of 19%. The standard applies to storage of 20,000 pounds of aqueous ammonia that is 20% ammonia or higher.

112(j)

The facility is not subject to the case-by- case MACT determination requirement in 112(j) of the Clean Air Act because it is not a major facility for hazardous air pollutants (HAPs). The potential to emit for HAPs can be found in Table 3 of the FDOC. Note that ammonia and propylene are not HAPs pursuant to 112(b) of the Clean Air Act.

Monitoring for 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines Condition 19610, part 29, has been amended because the monitoring in sections 60.334(a) and 60.334(c)(1) has been subsumed using the permit shield. The details are in the permit shield section of the permit evaluation/statement of basis.

V. Schedule of Compliance

A schedule of compliance is required in all Title V permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

“409.10 A schedule of compliance containing the following elements:

- 10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;
- 10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and
- 10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.”

The schedule of compliance for this permit contains only sections 2-6-409.10.1 and 2-6-409.10.2, since section 2-6-409.10.3 applies to facilities that are out of compliance.

VI. Permit Conditions

The permit conditions that were developed during the FDOC evaluation for Application #3213 have been transferred to Section VI of the Title V permit. The permit condition is identified with a unique numerical identifier, up to five digits. Each part of the condition is also identified by a part number and each subpart is identified by a letter (for example, Condition 789, part 1a).

When necessary to meet Title V requirements, additional monitoring, recordkeeping, or reporting has been added to the permit.

Any changes to existing permit conditions are clearly shown in “strike-out/underline” format in the proposed permit. When the permit is issued, all ‘strikeout’ language will be deleted; all “underline” language will be retained, subject to consideration of comments received.

Permit conditions may also be imposed or revised as part of the annual review of the facility by the District pursuant to California Health and Safety Code (H&SC) § 42301(e), through a variance pursuant to H&SC § 42350 et seq., an order of abatement pursuant to H&SC § 42450 et seq., or as an administrative revision initiated by District staff. After issuance of the Title V permit, permit conditions will be revised using the procedures in Regulation 2, Rule 6, Major Facility Review.

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.

- **Cumulative Increase:** This term is used for a condition imposed by the APCO that limits a source's operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.
- **Offsets:** This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- **PSD:** This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- **TRMP:** This term is used for a condition imposed by the APCO to ensure compliance with limits that arise from the District's Toxic Risk Management Policy.

Additional monitoring has been added, where appropriate, to assure compliance with the applicable requirements.

Several changes to the Authority to Construct conditions should be noted.

Clock Hour. In the Definitions section, the term "Clock Hour" was revised to "Hour" to avoid confusion. Hour means any continuous 60-minute period beginning on the hour.

Records on unabated operation. In Part 8 of the Conditions, the owner/operator must maintain records of unabated operation. This will document compliance with the 200-hour limitation of unabated operation.

Commissioning period conditions. Clarification is made in the beginning of the commissioning period conditions. Parts 12 through 49 do not apply during the commissioning period unless otherwise noted.

Monitoring for 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines Condition 19610, part 29, has been amended because the monitoring in sections 60.334(a), 60.334(b)(2), and 60.334(c)(1) has been subsumed using the permit shield. The details are in the permit shield section of the permit evaluation/statement of basis.

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

The tables below contain only the limits for which there is no monitoring or inadequate monitoring in the applicable requirements. The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided in the discussion when no monitoring is proposed due to the size of a source.

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator

monitoring, 5) the economic feasibility of indicator monitoring, and 6) whether there is some other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

SO₂ Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-2, S-3, & S-4 Combustion Gas Turbines S-6, Engine	BAAQMD 9-1-301	Ground level concentrations of SO ₂ shall not exceed: 0.5 ppm for 3 consecutive minutes AND 0.25 ppm averaged over 60 consecutive minutes AND 0.05 ppm averaged over 24 hours	None
S-1, S-2, S-3, & S-4 Combustion Gas Turbines S-6, Engine	BAAQMD 9-1-302	300 ppm (dry)	Annual Source Test
S-5, Engine	BAAQMD 9-1-304	0.5% sulfur content of fuel	Fuel certification

SO₂ Discussion:

BAAQMD Regulation 9-1-301

Area monitoring to demonstrate compliance with the ground level SO₂ concentration requirements of Regulation 9-1-301 is at the discretion of the APCO (per BAAQMD Regulation 9-1-501). This facility does not have equipment that emits large amounts of SO₂ and therefore is not required to have ground level monitoring by the APCO.

All facility combustion sources are subject to the SO₂ or fuel sulfur limitations in District Regulation 9, Rule 1. In EPA's June 24, 1999 agreement with CAPCOA and ARB, "Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", EPA has agreed that natural-gas-fired combustion sources do not need additional monitoring to verify compliance with Regulation 9, Rule 1, since violations of the regulation are unlikely. However, the facility will test the turbines for SO₂ during the annual source test.

The diesel engine is subject to the fuel sulfur standard and has a fuel sulfur certification requirement. This is standard monitoring for sulfur in fuel oil.

PM Sources

# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-2, S-3, & S-4 Combustion Gas Turbines	BAAQMD Regulation 6-301	Ringelmann 1.0	None
S-5 and S-6, Engines	BAAQMD Regulation 6-303	Ringelmann 2.0	None
S-1, S-2, S-3, & S-4 Combustion Gas Turbines	BAAQMD Regulation 6-310	0.15 gr/dscf	None
S-5 and S-6, Engines	BAAQMD Regulation 6-310	0.15 gr/dscf	None
S-1, S-2, S-3, & S-4 Combustion Gas Turbines	BAAQMD Condition 19610, part 18	> Ringelmann No. 1 for no more than 3 minutes in any hour or equivalent 20% opacity	None

PM Discussion:

BAAQMD Regulation 6 “Particulate Matter and Visible Emissions”

Visible Emissions

BAAQMD Regulation 6-301 limits visible emissions to no darker than 1.0 on the Ringelmann Chart (except for periods or aggregate periods less than 3 minutes in any hour). Visible emissions are normally not associated with combustion of gaseous fuels, such as natural gas. Sources 1, 2, 3, and 4 Combustion Gas Turbines, burn natural gas exclusively; therefore, per the EPA's June 24, 1999 agreement with CAPCOA and ARB titled "Summary of Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", no monitoring is required to assure compliance with this limit for these sources. The limit in BAAQMD Condition 19610, part 18 is a similar requirement and also needs no additional monitoring.

BAAQMD Regulation 6-303 limits visible emissions to no darker than 2.0 on the Ringelmann Chart (except for periods or aggregate periods less than 3 minutes in any hour). S-5 and S-6 are engines used solely as a standby source of motive power, and therefore, are subject to this less stringent opacity standard. Additional monitoring is not warranted for these engines because they operate infrequently and they are expected to comply with the standard.

Particulate Weight Limitation

BAAQMD Regulation 6-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. This is a “grain loading” standard.

Exceedances of the grain loading standards are normally not associated with combustion of gaseous fuels, such as natural gas. Sources 1, 2, 3, and 4 Combustion Gas Turbines, burn natural gas exclusively, therefore, per the EPA's July 2001 agreement with CAPCOA and ARB entitled "CAPCOA/CARB/EPA Region IX Recommended Periodic Monitoring for Generally Applicable Grain Loading Standards in the SIP: Combustion Sources: Summary of Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", no monitoring is required to assure compliance with this limit for these sources.

Additional monitoring for the grain-loading requirement has not been imposed on S-5 or S-6, Engines, because they are operated infrequently.

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not applicable requirements.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

IX. Permit Shield:

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit that identifies and justifies specific federally enforceable regulations and standards are not applicable to a source or group of sources, or (2) A provision in a major facility review permit that identifies and justifies specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting which are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA's White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program. The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Title V permits. The District's program does not allow other types of streamlining in Title V permits.

This facility has the second type of permit shield.

Following is the detail of the permit shields that were requested by the applicant.

1. The following requested permit shields are disallowed:

None

2. The following permit shields are allowed:

**Table VII-A
S-1, S-2, S-3, & S-4 Combustion Gas Turbines**

Citation	Title or Description (Reason not applicable)
40 CFR 60.334(b)(2)	Fuel Nitrogen Content monitoring (natural gas) (NOx Limit of 2.5 ppmvd @ 15% O ₂ , verified by CEM)
40 CFR 60.334(c)(1)	Periods of excess emissions, NOx (CEM for NOx)

D. Alternate Operating Scenarios:

No alternate operating scenarios have been requested for this facility.

E. Compliance Status:

The Compliance and Enforcement Division completed a review of compliance at this facility, summarized in an Office Memorandum dated February 4, 2004. The report is included in Appendix C to this statement of basis. Based on the District's review, it can be concluded that ongoing compliance for this facility can be reasonably assured.

F. Differences between the Application and the Proposed Permit:

The Title V permit application was originally submitted on March 6, 2003. This version is the basis for constructing the proposed Title V permit. There are no differences between the application and the proposed permit.

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APPENDIX A TO STATEMENT OF BASIS
FDOC EVALUATION FOR
AUTHORITY TO CONSTRUCT
for
APPLICATION 3213

Final Determination of Compliance

Los Esteros Critical Energy Facility
Plant No. 13289

Bay Area Air Quality Management District
Application 3213

February 1, 2002

Dick Wocasek, P.E.
Air Quality Engineer

**FINAL DETERMINATION OF COMPLIANCE
ENGINEERING EVALUATION Application no. 3213
LOS ESTEROS CRITICAL ENERGY FACILITY
PLANT NO. 13289**

Background

This is the Final Determination of Compliance (FDOC) for the first phase of a natural gas-fueled energy generation facility that Calpine Corporation is proposing to develop. The facility is to be located on Alviso-Milpitas Road in San Jose. The proposed Los Esteros Critical Energy Facility (LECEF) project will consist of four natural gas-fired LM6000PC simple cycle turbines with auxiliary equipment. The Los Esteros Project is currently undergoing review by the California Energy Commission (CEC) for certification pursuant to the Warren-Alquist Act (PRC 25500 et seq.).

The proposed new LECEF facility will be capable of generating a nominal output of 180 megawatts (MW). In accordance with BAAQMD Rules and Regulations, Best Available Control Technology will be employed for all regulated pollutants. Offsets will be provided for emission increases of oxides of nitrogen and precursor organic compounds. Emissions of all criteria pollutants will be below 100 tons per year, so the facility will not be subject to Prevention of Significant Deterioration (PSD) review.

Pursuant to BAAQMD Regulation 2, Rule 3, Section 405, this document serves as the Final Determination of Compliance (FDOC) document for the Los Esteros Project. It will also serve as the evaluation report for the BAAQMD Authority to Construct application #3213. The Authority to Construct will not be issued until after the CEC issues its final certification for the Los Esteros Project in accordance with Regulation 2-3-405.

The FDOC describes how the proposed facility will comply with applicable federal, state and BAAQMD regulations, including the Best Available Control Technology and emission offsets requirements of the District New Source Review Regulation 2, Rule 2. Conditions necessary to insure compliance with applicable rules and regulations and air pollutant emission calculations are also included.

In accordance with BAAQMD Regulation 2, Rule 3, Section 405 & 406 the Preliminary Determination of Compliance (PDOC) has fulfilled the public notice, public inspection, and 30-day public comment period requirements of District Regulation 2, Rule 2, Sections 406 and 407.

Project Description:

The Los Esteros Critical Energy Facility will consist of the following equipment proposed for installation/operation:

- S-1 Combustion Gas Turbine with Water Injection, General Electric LM6000PC Sprint, natural gas fired, 45 MW nominal, net simple-cycle, 472.6 MMBtu/hr maximum heat input rating; abated by A-1 Oxidation Catalyst, and A-2 Selective Catalytic Reduction System.**
- S-2 Combustion Gas Turbine with Water Injection, General Electric LM6000PC Sprint, natural gas fired, 45 MW nominal, net simple-cycle, 472.6 MMBtu/hr maximum heat input rating; abated by A-3 Oxidation Catalyst, and A-4 Selective Catalytic Reduction System.**
- S-3 Combustion Gas Turbine with Water Injection, General Electric LM6000PC Sprint, natural gas fired, 45 MW nominal, net simple-cycle, 472.6 MMBtu/hr maximum heat input rating; abated by A-5 Oxidation Catalyst, and A-6 Selective Catalytic Reduction System.**
- S-4 Combustion Gas Turbine with Water Injection, General Electric LM6000PC Sprint, natural gas fired, 45 MW nominal, net simple-cycle, 472.6 MMBtu/hr maximum heat input rating; abated by A-7 Oxidation Catalyst, and A-8 Selective Catalytic Reduction System.**
- S-5 Fire Pump Engine, Fairbanks Morse JD FP-06WR, diesel fired, 300 HP, 2.0 MMBtu/hr maximum heat input rating.**
- S-6 Emergency Generator Engine, Caterpillar G3512 90 LE or equivalent, natural gas-fired, 804 HP (600 kW), 6.44 MMBtu/hr maximum heat input rating.**

A small cooling tower for turbine inlet and oil cooling will be installed as part of this project. PM10 emissions from this tower are calculated to be 2.2 lbs./day. This source is thus exempt from District permit requirements, under regulation 2-1-103, because the emissions are less than 10 lbs./day.

The following projected operating scenarios for S-1, S-2, S-3 and S-4 were utilized to estimate maximum annual air pollutant emissions from the new gas turbines.

- 8760 hours of baseload (based on 100% load & 2.5 ppmvd @15% O₂) operation per year @ 29°F or
- 4380 hours of baseload (based on 100% load & 5.0 ppmvd @15% O₂) operation per year @ 29°F.

These scenarios were used for the analysis and are considered conservative because they assume 24-hour operation at a low temperature. Actual operation will include: reduced load, down time and a higher average ambient temperature, all of which will reduce the actual emissions. The conservative analysis will be partially offset by start/stop emissions, which are expected to be only slightly higher and, in some cases lower, than

steady state emissions. In any case, the plant emissions will be limited by permit conditions and monitored with a Continuous Emission Monitor (CEM).

Emissions Control Strategy:

The proposed project triggers the Best Available Control Technology (BACT) requirement of New Source Review (District Regulation 2, Rule 2, NSR) for emissions of nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POCs), sulfur dioxide (SO₂), and particulate matter of less than 10 microns in diameter (PM₁₀). The applicant has proposed the following controls:

Selective Catalytic Reduction with Ammonia Injection for the Control of NO_x

The S-1, S-2, S-3 and S-4 gas turbines will be equipped with water injection to minimize NO_x emissions. NO_x emissions will be further reduced through the use of a selective catalytic reduction (SCR) system with ammonia injection. Each gas turbine will achieve a BACT-level NO_x emission limit of 5.0 ppmvd @ 15 % O₂ (three hour average) with an annual cap of 74.9 tons/yr. (equivalent to an annual average of 2.5 ppmvd @ 15 % O₂ and 8760 hours or 5.0 ppmvd @ 15 % O₂ for 4380 hours). Selective catalytic reduction can typically achieve NO_x emission reductions in the range of about 80 to 95 percent without exceeding the ammonia limit. Ammonia is limited to 10 ppmvd @ 15 % O₂ and 110.7 tons/year.

The efficiency of catalytic NO_x controls is limited by temperature. Catalytic control efficiencies may be reduced at hot or cold temperatures. Hot temperatures associated with uncooled exhaust may cause sintering of a catalyst. Conversely, low temperatures can result in higher NO_x emissions and unreacted ammonia due to the fact that catalysts normally require a minimum temperature before they become chemically active.

Flue gas temperatures associated with simple-cycle gas turbines are generally higher than those of gas turbines used in combined-cycle. Simple-cycle gas turbine can have exhaust temperatures ranging up to 1100 °F, which vary only slightly from the gas to the stack. With combined-cycle gas turbines, exhaust heat is removed with a Heat Recovery Steam Generator (HRSG), resulting in a decrease in flue temperatures from the gas turbine to the stack. Catalysts used for selective catalytic reduction are not as efficient in controlling NO_x at the higher temperatures associated with uncooled exhaust of simple cycle gas turbines. As a result, gas turbine emissions from combined-cycle operations can be controlled with more efficiency. Recognizing that catalysts must be restructured to deal with high temperatures, more operational problems may be encountered in consistently achieving the required emissions levels due to the deactivation of the catalyst.

Oxidation Catalyst to Minimize CO and POC Emissions

The S-1, S-2, S-3 and S-4 gas turbines trigger BACT for CO and POC emissions. A CO catalyst designed to catalytically oxidize the CO and POC to achieve a BACT-level CO

emission limit of 4.0 ppmvd @ 15 % O₂ (three hour average) and an annual facility cap of 72.9 tons/yr. The POC level will be limited to 2.0 ppmvd @ 15 % O₂.

Exclusive Use of Clean-burning Natural gas to Minimize SO₂ and PM₁₀ Emissions

The S-1, S-2, S-3 and S-4 gas turbine will utilize, exclusively, natural gas as a fuel to minimize SO₂ and PM₁₀ emissions. Because the emission rate of SO₂ depends on the sulfur content of the fuel burned and is not dependent upon the burner type or other combustion characteristics; the use of natural gas will result in the lowest possible emission of SO₂. PM₁₀ emissions are minimized through the use of best combustion practices and "clean burning" natural gas.

Emissions Calculations

Hourly Emission Estimates:

NO_x, CO, POC, and ammonia are all limited by BACT and enforceable permit conditions to not exceed certain exhaust concentrations. BACT for SO₂ and PM₁₀ is the exclusive use of clean-burning natural gas. The exhaust concentration, in ppmv, is not specifically limited for SO₂ and PM₁₀, so the hourly emission rate will be taken to be those values provided by natural gas composition and the turbine manufacturer (General Electric), respectively.

NO_x emissions. The applicant has proposed a NO_x emission limit of 5.0 ppmv (averaged over three hours), which complies with BACT requirements for this gas turbine. The NO_x emissions from the turbine will be limited by permit condition to 5.0 ppmv, dry @ 15% O₂. This concentration is converted to a mass emission factor as follows:

$$(5.0 \text{ ppmvd})(20.95-0)/(20.95 - 15) = 17.61 \text{ ppmv NO}_x, \text{ dry @ } 0\% \text{ O}_2$$

$$(17.61/1,000,000)(1 \text{ lbmol}/385.3 \text{ dscf})(46.01 \text{ LB NO}_x \text{ (as NO}_2\text{)})/\text{lbmol})(8600 \text{ dscf/MMBtu}) = 0.0181 \text{ LB NO}_2/\text{MMBtu}$$

The hourly NO₂ mass emission rate based on the maximum firing rate of the turbine is calculated as follows:

$$(0.0181 \text{ LB NO}_x/\text{MMBtu})(472.6 \text{ MMBtu/hr}) = \mathbf{8.55 \text{ LB NO}_2/\text{hr}}$$

CO emissions. The hourly CO emissions from each turbine will be limited by permit condition to 4.0 ppmv, dry @ 15% O₂. The hourly CO mass emission rate based on the maximum firing rate of the turbine is calculated as follows based on 4.0 ppmvd @ 15% O₂:

$$(0.0088 \text{ LB CO/MMBtu})(472.6 \text{ MMBtu/hr}) = \mathbf{4.16 \text{ LB CO/hr}}$$

POC emissions. The POC emission from the turbine will be limited by permit condition to 2.0 ppmv, dry @ 15% O2. The hourly POC mass emission rate based on the maximum firing rate of the turbine is calculated as follows based on 2.0 ppmvd @ 15% O2:

$$(0.0025 \text{ LB POC/MMBtu})(472.6 \text{ MMBtu/hr}) = \mathbf{1.18 \text{ LB POC/hr}}$$

Ammonia emissions. The ammonia (NH₃) mass emission rate from the turbine will be limited by permit condition to 10.0 ppmv, dry @ 15% O2. The hourly NH₃ mass emission rate based on the maximum firing rate of the turbine is calculated as follows based on 10.0 ppmv @ 15% O2:

$$(0.0133 \text{ LB NH}_3\text{/MMBtu})(472.6 \text{ MMBtu/hr}) = \mathbf{6.32 \text{ LB NH}_3\text{/hr}}$$

SO₂ emissions. The SO₂ emission factor is based upon an expected average natural gas sulfur content that will not exceed 0.25 grains per 100 scf and a higher heating value of 1022 Btu/scf.

The sulfur emission factor is calculated as follows:

$$(0.25 \text{ gr./100scf})(10^6 \text{ Btu/MM Btu})(2 \text{ LB SO}_2\text{/LB S})/[(7000 \text{ gr./LB})(1022 \text{ Btu/scf})(100 \text{ scf})] = 0.000699 \text{ SO}_2 \text{ lb. /MM Btu}$$

The corresponding hourly mass SO₂ emission rate is:

$$(0.000699 \text{ LB SO}_2\text{/MM Btu})(472.6 \text{ MM Btu/hr}) = \mathbf{0.33 \text{ LB/hr}}$$

PM₁₀ emissions. The PM₁₀ emission factor is based upon the manufacturer's guarantees of 2.5 LB/hr for similar installations.

(i)

(ii)

(iii) *Baseload Hourly Emissions Estimates, LB/hour-turbine*

NO₂	POC	PM₁₀	CO	SO₂	NH₃
8.55	1.18	2.5	4.16	0.33	6.32

The start-up/shutdown (non-baseload) emissions data for NO_x, POC and CO were provided by the turbine manufacturer, General Electric, for the United Golden Gate Project (Bay Area AQMD Permit Application #1889). Both the United Golden Gate Project and the Gilroy Energy Center (Bay Area AQMD Permit Application #2686), which use the same make and model gas turbine, used the factors below to estimate start-up and shutdown emissions. A start-up is anticipated to take an average of ten minutes

for a simple cycle turbine whereas shutdowns are practically instantaneous. The SCR catalyst will require approximately 30 minutes to reach optimal operating temperature and the oxidation catalyst, about 10 minutes. The emission rates for PM₁₀ and SO₂ have been taken to be equal to the full load, steady state figure and are lower than for the United Golden Gate Project because the steady state figures have been reduced.

(iv) *General Electric Start-up/Stop Emissions, LB-turbine/hour-start/stop*

NO ₂	POC	PM ₁₀	CO	SO ₂
7.7	0.68	2.5	7.7	0.33

Maximum Daily Emissions, LB/day:

Maximum daily emissions are estimated based on 24 hours of worst-case emission rates. The worst-case daily emission rate is either: a day, which includes a startup/shutdown, with the balance of the daily operations based on 100% load (29°F ambient temperature) or 100% load for 24 hours. The baseload hourly emission estimates are based on allowable BACT concentration emission limits at 100% load. The start/stop hourly emission estimates are based on the emission estimates provided by the turbine vendor for the United Golden Gate Project which used the same make and model gas turbine. In those cases in which the start/stop emissions are less than the baseline, the baseline number was used for the entire 24 hours.

$$\text{NO}_2 = (7.7 \text{ LB/hr-start/stop})(1 \text{ start}) + (8.55 \text{ LB/hr-baseload})(23 \text{ hr}) = 204.4 \text{ LB/day NO}_2$$

$$\text{or } (8.55 \text{ LB/hr-baseload})(24 \text{ hr}) = 205.2 \text{ LB/day NO}_2$$

$$\text{CO} = (7.7 \text{ LB/hr-start/stop})(1 \text{ start}) + (4.16 \text{ LB/hr-baseload})(23 \text{ hr}) = 103.4 \text{ LB/day CO}$$

$$\text{POC} = (0.68 \text{ LB/hr-start/stop})(1 \text{ start}) + (1.18 \text{ LB/hr-baseload})(23 \text{ hr}) = 27.8 \text{ LB/day POC}$$

$$\text{or } (1.18 \text{ LB/hr-baseload})(24 \text{ hr}) = 28.3 \text{ LB/day POC}$$

$$\text{PM}_{10} = (2.5 \text{ LB/hr-start/stop})(1 \text{ start}) + (2.5 \text{ LB/hr-baseload})(23 \text{ hr}) = 60.0 \text{ LB/day PM}_{10}$$

$$\text{SO}_2 = (0.33 \text{ LB/hr-start/stop})(1 \text{ start}) + (0.33 \text{ LB/hr-baseload})(23 \text{ hr}) = 7.9 \text{ LB/day SO}_2$$

(v)

(vi) *Annual Emissions, tons/year:*

The applicant has requested emission limits based on nominal operation of 24 hours/day, 365 days/year and fuel use equivalent to 8760 hours/year of baseload operation per turbine. The NO₂ emissions from the turbines have been capped at 74.9 tons/yr. and the CO emissions are capped at 72.9 tons/year. This will necessitate actual concentrations being lower than the 3-hour average levels or reduction of the operating time to less than the assumed 8760 hrs/yr. and/or average firing rates less than maximum. The accumulated mass emission totals for NO_x and CO will be monitored by the Continuous Emission Monitor (CEM) system. The other pollutants will be monitored by source test and parametric correlation. If any part of the CEM, involved in the mass emission calculations, is inoperative for more than three hours of plant operation, the mass data shall be calculated using a District approved Alternate Calculation.

NO₂ emissions calculation at 2.5 ppmvd average (3-hour Ave. is 5.0 ppmvd):
 $[(4.23 \text{ LB/hr})(8760 \text{ hours/yr.})(2.5 \text{ ppm}/5.0 \text{ ppm})(4 \text{ turbines})](1 \text{ ton}/2000 \text{ LB}) = 74.9 \text{ tons NO}_2 \text{ /yr.}$

POC emissions calculation:
 $[(1.18 \text{ LB/hr})(8760 \text{ hours/yr.})(4 \text{ turbines})](1 \text{ ton}/2000 \text{ LB}) = 20.8 \text{ tons POC /yr.}$

PM₁₀ emissions calculation:
 $[(2.5 \text{ LB/hr})(8760 \text{ hours/yr.})(4 \text{ turbines})](1 \text{ ton}/2000 \text{ LB}) = 43.8 \text{ tons PM}_{10}\text{/yr.}$

CO emissions calculation at 4.0 ppmvd average:
 $[(4.16 \text{ LB/hr})(8760 \text{ hours/yr.})(4 \text{ turbines})](1 \text{ ton}/2000 \text{ LB}) = 72.9 \text{ tons CO /yr.}$

SO₂ emissions calculation:
 $[(0.33 \text{ LB/hr})(8760 \text{ hours/yr.})(4 \text{ turbines})](1 \text{ ton}/2000 \text{ LB}) = 5.8 \text{ tons/yr. SO}_2$

(vii)

(viii) *Emergency Generator & Diesel Fire Pump Emissions*

	NO ₂	POC	PM ₁₀	CO	SO ₂
Emergency Generator					
gm/bhp-hr	1.00	0.8	3.5E-4	1.7	N/A
LB/hr (as NO ₂)	1.77	1.4	0.28	3.0	4.5E-3
tpy (as NO ₂)	0.09	0.7	0.014	0.15	2.3E-4
Diesel Fire Pump					
gm/bhp-hr	5.2	0.15	0.09	0.27	0.15
LB/hr (as NO ₂)	3.44	0.10	0.06	0.18	0.10
tpy (as NO ₂)	0.17	0.01	0.003	0.01	0.01

(ix) **Emergency Generator emissions are based on 100 hrs/yr. of operation on natural gas with 0.25 gr./100scf of sulfur content. Diesel Fire Pump emissions are based on 100 hrs/yr. of operation on fuel with 0.05 % sulfur content.**

Cooling Tower

This facility has a small, two-cell cooling tower for cooling of the gas turbine inlet on hot days. Although the towers will only be used on hot days the emissions have been calculated assuming 24 hrs/day and 8760 hrs/yr. PM₁₀ emissions are estimated to be 0.09 lbs./hr and 0.4 tons/yr.

(x) *Permitted Maximum Annual Emissions, tons/yr.*

	NO₂	POC	PM₁₀	CO	SO₂	NH₃
<u>Turbines</u>	74.9	20.8	43.8	72.9	5.8	110.7
Emergency Generator	0.09	0.07	0.014	0.15	2.3E-4	0
Diesel Fire Pump	0.17	0.01	0.01	0.01	0.01	0
Cooling Tower	-	-	0.4	-	-	-
Total	75.2	20.8	44.2	73.1	5.8	110.7

In the above table turbine NO_x (as NO₂) has been capped at 74.9 tons/yr. and CO has been capped at 72.9 tons/yr. The CEM and process computer will monitor the NO_x and CO limits.

The table below is a summary of the maximum facility toxic air contaminant (TAC) emissions from the new sources. These emissions are used as input data for air pollutant dispersion models used to assess the health risk to the public resulting from air emissions from the project. The ammonia emissions shown are based upon a worst-case ammonia emission concentration of 10 ppmvd @ 15% O₂ due to ammonia slip from the four SCR Systems. The detailed input calculations are presented in Appendix A.

Maximum Facility Toxic Air Contaminant (TAC) Emissions

Toxic Air Contaminant	Pounds/year	Risk Screening Trigger Level^a (lb./yr.-source)
S-1, S-2, S-3, S-4, S-5, S-6 and Cooling Tower Combined		
1,3-Butadiene ^b	7.61E+00	1.10E+00
Acetaldehyde ^b	2.92E+03	7.20E+01
Acrolein	5.99E+01	3.90E+00
Ammonia ^c	2.22E+05	1.93E+04
Arsenic	4.91E-04	2.50E-02
Benzene ^b	5.42E+01	6.70E+00
Cadmium	1.01E-03	4.60E-02
Copper	4.31E-03	4.60E+02
Diesel PM ^b	1.19E+01	6.40E-01
Ethylbenzene	5.31E+02	1.93E+05
Formaldehyde ^b	5.97E+03	3.30E+01
Hexane	4.20E+03	8.30E+04
Lead	1.12E-03	1.60E+01
Mercury	9.10E-05	5.80E+01
Naphthalene	2.69E+01	2.70E+02
Nickel ^b	7.90E-03	7.30E-01
PAHs ^b	1.71E+00	4.40E-02
Propylene	1.25E+04	N/A
Propylene Oxide ^b	4.72E+01	5.20E+01
Toluene	2.22E+03	3.86E+04
Xylene	1.05E+03	5.79E+04
Zinc	5.04E-02	6.80E+03

^apursuant to BAAQMD Toxic Risk Management Policy

^bcarcinogenic compound

^cbased upon the worst-case ammonia slip of 10 ppmvd @ 15% O₂ from the A-2, A-4, A-6 and A-8 SCR systems with ammonia injection

See the Toxic Risk Screen section of this report for the Risk Assessment of the TAC emissions.

Compliance Determination

This Section summarizes the applicable District Rules and Regulations and describes how the proposed project will comply with those requirements

Regulation 2, Rule 2; New Source Review

The primary requirements of New Source Review that apply to the proposed Los Esteros Critical Energy Facility are Section 2-2-301; (Best Available Control Technology Requirement), Section 2-2-302; (Offset Requirements, Precursor Organic Compounds and Nitrogen Oxides, NSR), and Section 2-2-303; (Offset Requirement, PM₁₀ and Sulfur Dioxide, NSR) and Section 2-2-304, (PSD Requirements).

(xi) Best Available Control Technology (BACT) Determinations

Pursuant to Regulation 2-2-206, BACT is defined as the more stringent of:

- (a) "The most effective control device or technique which has been successfully utilized for the type of equipment comprising such a source; or
- (b) The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or
- (c) Any emission control device or technique determined to be technologically feasible and cost-effective by the APCO; or
- (d) The most effective emission control limitation for the type of equipment comprising such a source which the EPA states, prior to or during the public comment period, is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitations are not achievable. Under no circumstances shall the emission control required be less stringent than the emission control required by any applicable provision of federal, state or District laws, rules or regulations."

The type of BACT described in definitions (a) and (b) must have been demonstrated in practice and approved by a local Air Pollution Control District, CARB, or the EPA and is referred to as "BACT 2". This type of BACT is termed "achieved in practice". The BACT category described in definition (c) is referred to as "technologically feasible/cost-effective" and must have been demonstrated to be effective and reliable on a full-scale unit and shown to be cost-effective on the basis of dollars per ton of pollutant abated. This is referred to as "BACT 1". BACT specifications (for both the "achieved in practice" and "technologically feasible/cost-effective" categories) for various source categories have been compiled in the BAAQMD BACT Guideline.

The following section includes BACT determinations by pollutant for the permitted sources of the proposed project.

Air Pollution Control Strategies and Equipment

The proposed facility includes sources that trigger the Best Available Control Technology (BACT) requirement of New Source Review (District Regulation 2, Rule 2, NSR) for emissions of nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POC), sulfur dioxide (SO₂), and particulate matter of less than 10 microns in diameter (PM₁₀).

The NO_x, CO and oxygen concentrations will be monitored continuously using a continuous emissions monitor (CEM). Therefore, emission concentrations of NO_x and CO will be limited to parts per million (ppm) emissions concentrations in the permit conditions. Source testing will verify compliance for POC, SO₂ and PM₁₀. POC has a concentration limit and SO₂ and PM₁₀ have mass limits.

BACT for S-1 through S-4, Turbines

Nitrogen Oxides (NO_x)

The most stringent NO_x BACT for a simple-cycle gas turbine of which the Bay Area AQMD is aware was required in the preconstruction permit for Carson Energy Group in Sacramento County, California. That preconstruction permit set BACT at 5 ppmvd NO_x @15% averaged over 3 hours. That determination was made for a nominally rated 42 MW power plant consisting of a 450 MMBtu/hr., General Electric LM-6000 simple-cycle gas turbine equipped with oxidation catalyst. The gas turbine has been in operation since 1995. Since startup, the gas turbine has demonstrated compliance with the NO_x emission limit in three consecutive years of source testing. NO_x emissions varied from 3.96 to 4.70 ppmvd NO_x @ 15%O₂. Considering that Carson Energy Group represents the most stringent NO_x BACT which has been achieved in practice, staff recommends a BACT level for NO_x emission from simple-cycle gas turbines of 5 ppmvd @15% O₂ averaged over 3 hours.

District BACT Guideline 89.1.2, dated 8/28/00, specifies BACT1 (technologically feasible/cost-effective) for NO_x for a simple-cycle gas turbine with a power rating ≤ 50 MW as NO_x emissions < 5.0 ppmvd @ 15% O₂, achieved through the use of Selective Catalytic Reduction (SCR) with ammonia injection in conjunction with combustion modifications and water injection. BACT2 (achieved in practice) is ≤ 5.0 ppmvd @15% O₂. Calpine has elected to design the SCR NO_x abatement system for an annual average NO_x concentration of 2.5 ppmvd and a properly designed system should be capable of this level of performance. SCR has been widely and successfully used in combustion turbine applications nationwide since the 1980's. All of the recent gas turbine power projects issued permits by the BAAQMD, use SCR technology.

Two relatively new technologies are capable of controlling NO_x emissions from a gas turbine to 2 ppmv or below. These are SCONOX, manufactured by Goal Line Environmental Technologies, and XONON, manufactured by Catalytica, Inc. The District has reviewed these technologies to determine if they are appropriate for this

application. SCONOx is the more established of the two technologies. This system uses a potassium carbonate coated catalyst to remove both NOx and CO, without the use of a reagent such as ammonia. There is one system in commercial operation on a gas turbine of comparable size to this project. Although these technologies have been demonstrated for this source category, only SCONOx is sufficiently developed to allow the District to approve an application using it.

However, SCONOx is installed on a combined-cycle electrical generation system, which typically has outlet temperatures below 400 degrees F. This project will be a simple-cycle system, with outlet temperatures exceeding 850 degrees F. We are not aware of any SCONOx applications on turbines with outlet temperatures that high, and Goal Line's Technical Paper describing the system lists acceptable temperature range as 300 to 700 degrees F. This problem may be solved by the use of dilution air to lower the temperature. Based on this information, we believe that SCONOx may represent a technologically feasible control option for this project. The District will not require an applicant to use an undemonstrated technology. SCONOx is sufficiently developed to allow the District to approve an application proposing its use. At this time, however, SCONOx is not sufficiently developed that the District can impose it as BACT in the absence of an application proposing its use.

XONON, developed by Catalytica, Inc., is another promising new technology for NOx emissions control. This technology uses a flameless catalyst located inside the combustion chamber itself, which allows for the combustion reaction to proceed at a lower temperature than in conventional turbines, thus preventing the formation of NOx.

At the present time, the commercial availability of this technology is extremely limited. To date, we are aware of only one application, a 1.5 MW turbine in Santa Clara, California. There is no information available regarding the operation of such a system on a turbine the size of the one to be installed at this project, which is over 30 times larger. Based on this information, we do not believe that XONON represents a technologically feasible control option for this project.

Water will be injected into the turbine combustor to reduce NOx emissions in the combustor exhaust. Aqueous ammonia is injected into the SCR catalyst to control exiting stack emissions to less than 5.0 ppmvd NOx @ 15% O2. The ammonia slip will be limited by permit condition to 10.0 ppmv. The applicant is proposing to reduce average NOx emissions below those levels required by current District BACT. Thus, some allowance for ammonia slip is appropriate. Since SCR, controlling NOx emissions to 5.0 ppmv corrected to 15% oxygen, represents a control technology that is technologically feasible, cost-effective, and achieved in practice in a wide variety of applications, it represents BACT for the project.

Carbon Monoxide (CO)

District BACT Guideline 89.1.2, dated 8/28/00, specifies BACT (achieved in practice) for CO for a gas turbine with a power rating ≤ 50 MW as CO emissions ≤ 10.0 ppmvd @ 15% O₂, achieved through the use of a catalytic combustor.

The CO emissions from the combustion turbine will be reduced through the use of an oxidation catalyst to less than 4.0 ppmvd CO @ 15% O₂. CO emissions are also minimized through the use of best combustion practices and "clean burning" natural gas. This will comply with BACT.

The Crockett Cogeneration facility was permitted by the District in 1993 at a CO emission concentration limit of 5.9 ppmvd @ 15% O₂. This established the technologically feasible/cost-effective BACT specification cited above. However, subsequent operation of the facility has shown that this emission concentration cannot be achieved under all operating modes and ambient conditions. Specifically, CO emissions exceed 5.9 ppmvd during minimum load operation under ambient conditions of low temperature and high relative humidity and during peak load operation under ambient conditions of high temperature and moderate to high relative humidity. However, Crockett Cogeneration has indicated that the gas turbine will not exceed a CO emission concentration of 10 ppmvd @ 15% O₂ under all loads and ambient conditions with and without duct burner firing.

EPA advised that Sacramento Power Authority (SPA) is permitted at 4.0 ppmvd CO @15% O₂, averaged over 1 hour. The Sacramento Municipal Utility District (SMUD) CEM data for the SPA installation over the past six months shows compliance with their CO mass limit, which is equivalent to 3.0 ppm. In fact, the data shows very low CO concentrations (<1 ppm averaged over 24 hours). The District staff believes there is sufficient justification at this time to lower the BACT level for CO to 4.0 ppmvd @ 15% O₂ three-hour average.

The LECEF has agreed to a CO emission limit of 4 ppmvd @ 15% O₂ that will apply to all gas turbine operating modes except for gas turbine start-up and shutdown. The LECEF intends to comply with this BACT specification through the use of an oxidation catalyst and combustor design. The proposed CO level of 4 ppm therefore complies with BACT.

Precursor Organic Compounds (POCs)

District BACT Guideline 89.1.2, dated 8/28/00, specifies BACT (achieved in practice) for POC for a gas turbine with a power rating ≤ 50 MW as POC emissions ≤ 2.0 ppmvd @ 15% O₂, achieved through the use of an Oxidation Catalyst in conjunction with combustion modifications.

Because CEMs for organic compounds only measure carbon (as C₁), it is not possible to determine non-methane/ethane hydrocarbon concentrations on a real-time basis. As a result, a continuous emission concentration limitation as BACT for POC is not feasible. Therefore, BACT for POC is deemed to be a concentration limitation to be verified by

annual source testing. The POC emissions from the combustion turbine will be reduced to less than 2.0 ppmvd through the use of an oxidation catalyst. POC emissions are also minimized through the use of best combustion practices and "clean burning" natural gas.

Sulfur Dioxide (SO₂)

District BACT Guideline 89.1.2, dated 8/28/00, specifies BACT (achieved in practice) for SO₂ for a gas turbine with a rated heat input \geq 2.0 MW and < 50 MW as the exclusive use of clean-burning natural gas. The gas turbines will utilize natural gas exclusively to minimize SO₂ emissions. Because the emission rate of SO₂ depends on the sulfur content of the fuel burned and is not dependent upon the burner type or other combustion characteristics, the use of natural gas will result in the lowest possible emission of SO₂.

Particulate Matter (PM₁₀)

District BACT Guideline 89.1.2, dated 8/28/00, specifies BACT (achieved in practice) for POC for a gas turbine with a rated heat input \geq 2.0 MW and < 50 MW as the exclusive use of clean-burning natural gas. The proposed turbines will utilize natural gas exclusively, which will result in minimal nitrate and sulfate particulate formation. PM₁₀ emissions are minimized through the use of best combustion practices and "clean burning" natural gas.

BACT for S-5, Fire Pump Engine & S-6, Emergency Generator Engine

The Fire Pump Engine, S-5, is a diesel, which, during an emergency, can operate up to 24 hours per day. Therefore it will be subject to BACT since it can emit more than 10 lbs./day of any one pollutant when operated for as little as 3 hours (a possibility in an emergency). Maximum emission is 82 lbs./day as NO₂. BACT 2 for a diesel engine is summarized in the table below:

Pollutant	BACT 2 Requirement	Proposed Engine Fairbanks Morse JDFP-06WR
	(gm/bhp-hr)	(gm/bhp-hr)
NO _x as NO ₂	6.9	5.2
CO	2.75	0.27
PM ₁₀	0.15	0.09

Previously the applicant had proposed a Fire Pump Engine that did not meet BACT for NO_x. The presently proposed engine does meet the required BACT criteria and is acceptable to the District.

The Emergency Generator, S-6, is natural gas fired and can operate up to 24 hours per day during an emergency. The proposed engine also triggers BACT since it can emit up to 72 lbs./day of CO. However, the proposed engine meets the required BACT 2 criteria and is acceptable.

(xii)

(xiii) *Emission Offsets*

(xiv) *Permitted Maximum Annual Emissions, tons/yr.*

Pollutant	NO₂	SO₂	CO	POC	PM₁₀
Facility Emissions (tpy)	75.4	5.8	72.9	21.0	44.2
Facility Threshold (tpy)	15	100	none	15	100
Offsets Required (tpy)	86.7	0	0	21.0	0

Pursuant to Regulation 2-2-303, emission reduction credits are not required for the proposed SO₂ emission increase associated with this project because the facility SO₂ emissions will not exceed 100 tons per year. Regulation 2-2-303 allows for the voluntary offsetting of SO₂ emission increases of less than 100 tons per year. The applicant has not opted to provide such emission offsets.

Pursuant to Regulation 2-2-302, federally enforceable emission reduction credits are required for NO_x and POC increases at a ratio of 1.15 and 1.00, respectively. The applicant has demonstrated that it possesses sufficient valid POC offsets for this project, and will submit certificates before the Authority to Construct is issued. The applicant has proposed to meet the NO_x offset requirement by providing POC ERC credits per 3-2-302.2. The total POC credits required would then be 107.7 tons. The applicant has provided a list of POC ERC credits, under its control, that is sufficient to satisfy the offset requirement.

As indicated, Calpine has secured sufficient valid emission reduction credits to offset the emission increases from the permitted sources proposed for the Los Esteros Critical Energy Project. These ERC credits are summarized in the table below.

**Emission Reduction Credits Identified by Calpine as of December 21, 2001
(tons/yr.)**

Current Owner	Certificate Number	Amount of POC (tpy)	Origin Location	Date Banked	Source Type
Calpine	751	53.3	Quebecor San Jose	6/99	Printing
Calpine	752	25.1	Quebecor San Jose	6/99	Printing
LSI Logic	573	15.9	LSI Milpitas	9/98	Semiconductor Fab
Owens Brockway	628	10.8	Owens Brockway Antioch	6/99	Glass Furnace
Owens Brockway	605	0.4	Owens Brockway Oakland	1/95	Glass Plant
Philips Semiconductor	287	2.6	Philips Sunnyvale	8/93	Semiconductor Fab
Philips Semiconductor	288	9.0	Philips Sunnyvale	7/93	Semiconductor Fab
Anacomp Inc.	393	7.1	Disk Systems Sunnyvale	7/94	Solvents
Total		124			

The applicant plans, however, to substitute the emission reduction credits generated by the Gilroy retrofit of the existing GE Frame 7 turbine when the modification is made and its performance verified. The District considers this approach acceptable.

Pursuant to District Regulation 2-2-311, the applicant must provide the required valid emission reduction credits to mitigate the emission increases for the facility prior to the issuance of the Authority to Construct. Pursuant to District Regulation 2, Rule 3, Power Plants, the Authority to Construct will be issued after the California Energy Commission issues the Certificate for the power plant.

Prevention of Significant Deterioration, PSD

Pursuant to Regulation 2-2-304, a PSD air quality analysis is not required because this new facility emits less than the trigger levels listed below for NO₂, POC, PM₁₀, CO and SO₂. As such, the project will not be subject to PSD review for those pollutants.

Pollutant	PSD Trigger Level (tpy)	Project Emissions (tpy)
NO ₂	100	75.2
POC	n/a	20.8
PM ₁₀	100	44.2
CO	100	73.1
SO ₂	100	5.8

The sulfuric acid mist (SAM) emissions will be conditioned to be less than the PSD threshold of 7 tons per year. An enforceable permit condition has been included (Number 23) limiting sulfuric acid mist from the new combustion units to a level below the PSD trigger level. Compliance will be determined by use of emission factors (using fuel gas rate and sulfur content as input parameters) derived from quarterly compliance source tests. The quarterly source test will be conducted, as indicated in Condition number 27, to measure SO₂, SO₃ and SAM. This approach is necessary because the extent of conversion in turbines of fuel sulfur to SO₃, and then to SAM is not well established.

Public Notice, Comment and Inspection

Because the California Energy Commission has accepted an Application for Certification for this plant, the plant is subject to the District Power Plant Regulation 2-3. Per Regulation 2-3-404, this project is subject to the Public Notice, Public Comment and Public Inspection requirements contained in Sections 2-2-406 and 407 of Rule 2. Pursuant to these sections, the APCO shall, within 10 days of the notification of the applicant, cause to have published in at least one newspaper of general circulation within the District, a prominent notice stating the preliminary decision of the APCO, the location of the information available, and inviting written public comment for a 30 day period. The Public Notice was published in the San Jose Mercury/News on November 20, 2001. Three comment letters were received and considered in the preparation of this FDOC.

California Environmental Quality Act (CEQA) Analysis

The CEQA requirements of District Regulation 2-1-426 are met because the California Energy Commission (CEC) is the lead agency on this project and is thus responsible for complying with CEQA. CEC's final certification and licensure will serve as the EIR equivalent pursuant to the CEC's certified regulatory program (CEQA Guidelines Section 15253(b) and Public Resource Code Sections 21080.5 and 25523).

Toxic Risk Screen

Pursuant to the BAAQMD Risk Management Policy, a health risk screening analysis must be performed to determine the potential impact on public health resulting from the

worst-case emissions of toxic air contaminants (TACs) from the project. In accordance with the requirements of the BAAQMD Risk Management Policy and California Air Pollution Control Officers Association (CAPCOA) guidelines, the impact on public health due to the emission of these compounds was assessed utilizing air pollutant dispersion models.

The District’s Toxics Evaluation Section performed a review of the health risk assessment submitted by the applicant for operation of this gas turbine peaking facility. The emission rates used in that analysis are calculated based on an annual fuel use of 16,560,000 MMBtu (16,200 MMscf/yr.). The ammonia emissions shown are based upon a worst-case ammonia emission concentration of 10 ppmvd @ 15% O₂ due to ammonia slip from the SCR systems. The rest of the pollutant emissions, except for PAHs, hexane and propylene, were calculated using the emission factors from the AP42 Background Document published, by US-EPA, in April 2000. California Air Toxics Emission Factor (CATEF II) database mean emission factors, available from the California Air Resources Board (CARB) for gas turbines with COC/SCR controls, were used for PAHs, hexane and propylene. Emissions from four gas turbines, the cooling tower, natural gas emergency generator and diesel fire pump have been included in this risk screen. The detailed input calculations are presented in Appendix A.

The results of the District’s risk screen are as follows:

Cancer Risk	Chronic Hazard Index	Acute Hazard Index
0.8 in a million	0.003	0.5

Pursuant to the BAAQMD Risk Management Policy, the increased carcinogenic risk attributed to this project is considered to be not significant since it is less than 1.0 in one million. Thus, in accordance with the BAAQMD Risk Management Policy, the screen passes. Therefore, the facility is deemed to be in compliance with the BAAQMD Risk Management Policy.

Other Applicable District Rules and Regulations

Regulation 1, Section 301: Public Nuisance

None of the project's proposed sources of air contaminants are expected to cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public with respect to any impacts resulting from the emission of air contaminants regulated by the District. In part, the air quality impact analysis is designed to insure that the proposed facility will comply with this Regulation.

**Regulation 2, Rule 1, Sections 301 and 302:
Authority to Construct and Permit to Operate**

Pursuant to Regulation 2-1-301 and 2-1-302, the applicant has submitted an application to the District to obtain an Authority to Construct and Permit to Operate for the proposed S-1, 2, 3 and 4 Gas Turbines.

Regulation 2, Rule 2, Section 307: Certification of Compliance

Pursuant to Regulation 2-2-307, Calpine Corporation has submitted Certification of Compliance that all major stationary sources owned or operated by the company 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. The Certificate is presented in Appendix B.

Regulation 2, Rule 3: Power Plants

Pursuant to Regulation 2-3-403, this Final Determination of Compliance (FDOC) serves as the APCO's decision that the proposed power plant will meet the requirements of all applicable BAAQMD, state and federal regulations. The FDOC contains proposed permit conditions to ensure compliance with those regulations. Pursuant to Regulation 2-3-403, the PDOC was subject to the public notice, public comment, and public inspection requirements contained in Regulation 2-2-406 and 407. The issuance of the FDOC is not considered a final determination of whether the facility can be constructed or operated.

(xv)

(xvi) *Regulation 2, Rule 6: Major Facility Review*

Title V of the 1990 Clean Air Act Amendments (CAAA) required states to implement and administer a source-wide operating permit program consistent with the provisions of Title 40, Code of Federal Regulations (CFR), Part 70. The BAAQMD administers the Title V program through Rule 2-6.

Pursuant to Regulation 2, Rule 6, section 404.3 the owner or operator of the Los Esteros Critical Energy Project shall submit an application to the BAAQMD for a Title IV permit (Acid Rain) prior to operation.

Regulation 2, Rule 7: Acid Rain

Per the definition of Phase II Acid Rain Facility in Regulation 2-6-217.1, this facility is a Phase II Acid Rain Facility. This project will be subject to the requirements of Title IV of the federal Clean Air Act. The requirements of the Acid Rain Program are set forth in 40 CFR Part 72, 73, and 75. The specifications for the type and operation of continuous emission monitors (CEMs) for pollutants that contribute to the formation of acid rain are given in 40 CFR Part 75.

District Regulation 2, Rule 7 incorporates by reference the provisions of 40 CFR Part 72.

The facility must obtain an Acid Rain Permit from the BAAQMD prior to the date on which the unit commences operation

The project will be subject to the following general requirements under the acid rain program:

- Duty to apply for a modification to the Acid Rain Permit.
- Compliance with SO₂ and NO_x emission limits.
- Duty to obtain required SO₂ allowances.
- Duty to install, operate and certify Continuous Emission Monitoring Systems (CEMs) to demonstrate compliance with the acid rain requirements.

The applicant will secure the required SO₂ allowances and will perform the required emission monitoring. Monitoring plans will be submitted as required by EPA rules.

Regulation 6: Particulate Matter and Visible Emissions

The combustion of natural gas at the proposed gas turbine is not expected to result in visible emissions. Specifically, the facility's combustion sources are expected to comply with Regulation 6, including sections 301 (Ringelmann No. 1 Limitation), 302 (Opacity Limitation) with visible emissions not to exceed 20% opacity, and 310 (Particulate Weight Limitation) with particulate matter emissions of less than 0.15 grains per dry standard cubic foot of exhaust gas volume.

Regulation 7: Odorous Substances

Regulation 7-302 prohibits the discharge of odorous substances, which remain odorous beyond the facility property line after dilution with four parts odor-free air. Regulation 7-302 limits ammonia emissions to 5000 ppm. Because the ammonia emissions from the proposed SCR system will each be limited by permit condition to 10 ppmvd @ 15% O₂, the facility is expected to comply with the requirements of Regulation 7.

Regulation 8: Organic Compounds

This facility is exempt from Regulation 8, Rule 2, "Miscellaneous Operations" per 8-2-110 since natural gas will be fired exclusively at the project.

Regulation 9: Inorganic Gaseous Pollutants

Regulation 9, Rule 1, Sulfur Dioxide

This regulation establishes emission limits for sulfur dioxide from all sources and applies to the combustion sources at this facility. Section 301 (Limitations on Ground Level Concentrations) prohibits emissions which would result in ground level SO₂

concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes, 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours. Section 302 (General Emission Limitation) prohibits SO₂ emissions in excess of 300 ppm (dry). The gas turbine is not expected to contribute to noncompliance with ground level SO₂ concentrations and should easily comply with section 302.

Regulation 9, Rule 3, Nitrogen Oxides from Heat Transfer Operations

The proposed combustion gas turbine shall comply with the Regulation 9-3-303 NO_x limit of 125 ppm with nitrogen oxide emissions of 5.0 ppmvd @ 15% O₂.

Regulation 9, Rule 8, Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines

The proposed S-5 diesel-fired fire-pump engine and the S-6 natural gas-fired generator engine are expected to comply with Regulation 9-8-330 which allows emergency use for unlimited hours, and limits non-emergency use to 200 hours per year.

Regulation 9, Rule 9, Nitrogen Oxides from Stationary Gas Turbines

Because the proposed combustion gas turbine will be limited by permit condition to NO_x emissions of 4.0 ppmvd @ 15% O₂, it will comply with the Regulation 9-9-301.3 NO_x limitation of 9 ppmvd @ 15% O₂.

Regulation 9, Rule 11, Nitrogen Oxides and Carbon Monoxide from Electric Power Generating Steam Boilers

This rule does not apply because this project does not utilize a boiler.

Regulation 10: New Source Performance Standards (NSPS)

This regulation incorporates the federal NSPS.

Subpart A General Provisions provides the general framework for NSPS. Subpart Db Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units does not apply because this project does not utilize duct burners.

Subpart GG Standards of Performance for Stationary Gas Turbines – contains NO_x and SO_x emission limits, as well as monitoring and testing requirements for combustion turbines. The project emissions will be well below the applicable NO_x and SO₂ emissions limits. The Applicant will comply with emission and fuel monitoring requirements, and monitoring plans will be submitted, as required. The applicable requirements will be incorporated into the Title V permit.

Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)

These standards are contained in 40 CFR Parts 61 and 63 and are not applicable to the proposed project.

CEQA

The CEQA requirements of Districts Regulation 2-1-426 are met because the California Energy (CEC) is the lead agency on this project. CEC is thus responsible for conducting the CEQA review and preparing the CEQA document for this project. CEC's final certification and licensure will serve as the EIR equivalent pursuant to the CEC's certified regulatory program (CEQA Guidelines Section 15253(b) and Public Resources Code Section 21080.5 and 25523).

Sunset Provision

Simple Cycle Powerplants (gas turbines without heat recovery steam cycles) are less efficient than combined cycle plants (those with heat recovery steam cycles) but require less time to design and build. In order to expedite the permitting of Simple Cycle Powerplants, the California legislature enacted Section 25552 of the California Public Resources Code. This legislation provided rapid permitting for plants that could be put into service on or before December 31, 2002. Section 25552(e)(5) of this law provides that the plant must have:

"A binding and enforceable agreement with the commission, that demonstrates either of the following:

- (A) That the thermal powerplant will cease to operate and the permit will terminate within three years.
- (B) That the thermal powerplant will be recertified, modified, replaced, or removed within a period of three years with a cogeneration or combined-cycle thermal powerplant that uses best available control technology and obtains necessary offsets, as determined at the time that the combined-cycle thermal powerplant is constructed, and that complies with all other applicable laws, ordinances, and standards."

Condition 38 has been included in the proposed permit conditions to require conversion or shutdown of this plant at the end of three years.

Permit Conditions

Definitions:

Clock Hour:	Any continuous 60-minute period beginning on the hour.
Calendar Day:	Any continuous 24-hour period beginning at 12:00 AM or 0000 hours.
Year:	Any consecutive twelve-month period of time

Heat Input:	All heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in Btu/scf.
Firing Hours:	Period of time, during which fuel is flowing to a unit, measured in fifteen-minute increments.
MM Btu:	million British thermal units
Gas Turbine Start-up Mode:	The time beginning with the introduction of continuous fuel flow to the Gas Turbine until the requirements listed in Condition 19 are met, but not to exceed 60 minutes.
Gas Turbine Shutdown Mode:	The time from non-compliance with any requirement listed in Condition 19 until termination of fuel flow to the Gas Turbine, but not to exceed 30 minutes.
Corrected Concentration:	The concentration of any pollutant (generally NO _x , CO or NH ₃) corrected to a standard stack gas oxygen concentration. For an emission point (exhaust of a Gas Turbine) the standard stack gas oxygen concentration is 15% O ₂ by volume on a dry basis
Commissioning Activities:	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 gas turbines, heat recovery steam generators, steam turbine, and associated electrical delivery systems.
Commissioning Period:	The Period shall commence when all mechanical, electrical, and control systems are installed and individual system start-up has been completed, or when a gas turbine is first fired, whichever occurs first. The period shall terminate when the plant has completed performance testing, is available for commercial operation, and has initiated sales to the power exchange. In no event shall the Commissioning Period exceed 120 days unless the applicant has made a written request for an extension and the District has granted such an extension. In no case may the Commissioning Period exceed 180 days.
Alternate Calculation:	A District approved calculation used to calculate mass emission data during a period when the CEM or other monitoring system is not capable of calculating mass emissions.
Precursor Organic Compounds (POCs):	Any compound of carbon, excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate

EQUIPMENT DESCRIPTION:

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

Installation of four Simple-Cycle Gas Turbine Generators Consisting Of:

1. Simple Cycle Gas Turbine, General Electric LM6000PC, Maximum Heat Input 472.6 MMBtu/hr, Nominal Electrical Output 45 MW, Natural Gas-Fired.
2. Selective Catalytic Reduction (SCR) NOx Control System.
3. Ammonia Injection System.
(including the ammonia storage tank and control system)
4. Oxidation Catalyst (OC) System.
5. Continuous emission monitoring system (CEMS) designed to continuously record the measured gaseous concentrations, and calculate and continuously monitor and record the NOx and CO concentrations in ppmvd corrected to 15% oxygen on a dry basis. The CEM shall also calculate, using District approved methods, and log any mass limits required by these conditions.

PERMIT CONDITIONS:

Conditions for the Commissioning Period

1. The owner/operator of the Los Esteros Critical Energy Facility shall minimize emissions of carbon monoxide and nitrogen oxides from S-1, S-2, S-3 and S-4 Gas Turbine to the maximum extent possible during the commissioning period. Conditions 1 through 11 shall only apply during the commissioning period as defined above.
2. At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the owner/operator shall tune the S-1, S-2, S-3 and S-4 Gas Turbine combustors to minimize the emissions of carbon monoxide and nitrogen oxides.
3. At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the owner/operator shall install, adjust and operate the SCR Systems (A-2, A-4, A-6 & A-8) and OC Systems (A-1, A-3, A-5 & A-7) to minimize the emissions of nitrogen oxides and carbon monoxide from S-1, S-2, S-3 and S-4 Gas Turbine.
4. Coincident with the steady-state operation of SCR Systems (A-2, A-4, A-6 & A-8) and OC Systems (A-1, A-3, A-5 & A-7) pursuant to condition 3 the owner/operator shall operate the facility in a manner such that the Gas Turbine (S-1, S-2, S-3 and S-

- 4) comply with the NO_x and CO emission limitations specified in conditions 19a and 19c.
5. The owner/operator of the Los Esteros Critical Energy Facility shall submit a plan to the District Permit Services Division at least two weeks prior to first firing of S-1, S-2, S-3 and S-4 Gas Turbines describing the procedures to be followed during the commissioning of the turbines. 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 be limited to, the tuning of the water injection, the installation and operation of the required emission control systems, the installation, calibration, and testing of the CO and NO_x continuous emission monitors, and any activities requiring the firing of the Gas Turbines (S-1, S-2, S-3 and S-4) without abatement by their respective SCR Systems. The Gas Turbines (S-1, S-2, S-3 and S-4) shall be fired no sooner than fourteen days after the District receives the commissioning plan.
6. During the commissioning period, the owner/operator of the Los Esteros Critical Energy Facility shall demonstrate compliance with conditions 8 through 10 through the use of properly operated and maintained continuous emission monitors and data recorders for the following parameters:
 - a. firing hours
 - b. fuel flow rates
 - c. stack gas nitrogen oxide emission concentrations,
 - d. stack gas carbon monoxide emission concentrations
 - e. stack gas oxygen concentrations.

The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the S-1, S-2, S-3 and S-4 Gas Turbines. The owner/operator shall use District-approved methods to calculate heat input rates, nitrogen dioxide mass emission rates, carbon monoxide mass emission rates, and NO_x and CO emission concentrations, summarized for each clock hour and each calendar day. All records shall be retained on site for at least 5 years from the date of entry and made available to District personnel upon request.

7. The owner/operator shall install, calibrate and make operational the District-approved continuous monitors specified in condition 6 prior to first firing of each turbine (S-1, S-2, S-3 and S-4 Gas Turbines). After first firing of the turbine, the owner/operator shall adjust the detection range of these continuous emission monitors as necessary to accurately measure the resulting range of CO and NO_x emission concentrations. The type, specifications, and location of these monitors shall be subject to District review and approval.
8. The owner/operator shall not operate the facility such that the number of firing hours of S-1, S-2, S-3 and S-4 Gas Turbines without abatement by SCR or CO Systems

exceed 100 hours during the commissioning period. Such operation of the S-1, S-2, S-3 and S-4 Gas Turbines without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR or CO system in place. Upon completion of these activities, the owner/operator shall provide written notice to the District Permit Services and Enforcement Divisions and the unused balance of the 100 firing hours without abatement shall expire.

9. The total mass emissions of nitrogen oxides, carbon monoxide, precursor organic compounds, PM₁₀, and sulfur dioxide that are emitted by the S-1, S-2, S-3 and S-4 Gas Turbines during the commissioning period shall accrue towards the consecutive twelve-month emission limitations specified in condition 22.
10. The owner/operator shall not operate the facility such that the pollutant mass emissions from each turbine (S-1, S-2, S-3 and S-4 Gas Turbines) exceed the following limits during the commissioning period. These emission limits shall include emissions resulting from the start-up and shutdown of the S-1, S-2, S-3 and S-4 Gas Turbines.

	<u>Without Catalyst</u>	<u>With Catalyst</u>
a. NO _x (as NO ₂)	1224 lbs./day 102 lbs./hr	410 lbs./day 34.2 lbs./hr
b. CO	1056 lbs./day 88 lbs./hr	300 lbs./day 25 lbs./hr
c. POC (as CH ₄)	114 lbs./day	114 lbs./day
d. PM ₁₀	240 lbs./day	240 lbs./day
e. SO ₂	32 lbs./day	32 lbs./day

11. Within sixty (60) days of startup, the Owner/Operator shall conduct a District approved source test using external continuous emission monitors to determine compliance with condition 10. The source test shall determine NO_x, CO, and POC emissions during start-up and shutdown of the gas turbines. The POC emissions shall be analyzed for methane and ethane to account for the presence of unburned natural gas. The source test shall include a minimum of three start-up and three shutdown periods. Thirty (30) days before the execution of the source tests, the Owner/Operator shall submit to the District a detailed source test plan designed to satisfy the requirements of this condition. The Owner/Operator shall be notified of any necessary modifications to the plan within 20 working days of receipt of the plan; otherwise, the plan shall be deemed approved. The Owner/Operator shall incorporate the District comments into the test plan. The Owner/Operator shall notify the District within ten (10) days prior to the planned source testing date. Source test results shall be submitted to the District within 30 days of the source testing date. These results can be used to satisfy applicable source testing requirements in Condition No. 26 below.

Conditions for Operation:

12. Consistency with Analyses: Operation of this equipment shall be conducted in accordance with all information submitted with the application (and supplements thereof) and the analyses under which this permit is issued unless otherwise noted

below.

13. Conflicts Between Conditions: In the event that any condition herein is determined to be in conflict with any other condition contained herein, then, if principles of law do not provide to the contrary, the condition most protective of air quality and public health and safety shall prevail to the extent feasible.
14. Reimbursement of Costs: All reasonable expenses, as set forth in the District's rules or regulations, incurred by the District for all activities that follow the issuance of this permit, including but not limited to permit condition implementation, compliance verification and emergency response, directly and necessarily related to enforcement of the permit shall be reimbursed by the owner/operator as required by the District's rules or regulations.
15. Access to Records and Facilities: As to any condition that requires for its effective enforcement the inspection of records or facilities by representatives of the District, the Air Resources Board (ARB), the U.S. Environmental Protection Agency (U.S. EPA), or the California Energy Commission (CEC), the owner/operator shall make such records available or provide access to such facilities upon notice from representatives of the District, ARB, U.S. EPA, or CEC. Access shall mean access consistent with California Health and Safety Code Section 41510 and Clean Air Act Section 114A.
16. Notification of Commencement of Operation: The owner/operator shall notify the District of the date of anticipated commencement of turbine operation not less than 10 days prior to such date. Temporary operations under this permit are granted consistent with the District's rules and regulations.
17. Operations: The gas turbine, emissions controls, CEMS and associated equipment shall be properly maintained and kept in good operating condition at all times when the equipment is in operation.
18. Visible Emissions: No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour, which is as dark or darker than Ringelmann 1 or equivalent 20% opacity.
19. Emissions Limits:

The owner/operator shall operate the facility such that none of the following limits are exceeded:

- a. The Oxides of nitrogen (NO_x) emissions from the gas turbine shall not exceed 5.0 ppmvd @ 15% O₂ (3-hour rolling average), except during periods of startup and shutdown as defined in this permit. The NO_x emission concentration shall be verified by a District-approved continuous emission monitoring system (CEMS) and during any required source test. (basis: BACT)

- b. Ammonia emissions from the gas turbine shall not exceed 10 ppmvd @ 15% O₂ (3-hour rolling average), except during periods of startup and shutdown as defined in this permit. The ammonia emission concentration shall be verified by the continuous recording of the ratio of the ammonia injection rate to the NO_x inlet rate into the SCR control system (molar ratio). The maximum allowable NH₃/NO_x molar ratio shall be determined during any required source test, and shall not be exceeded until reestablished through another valid source test. (basis: BACT)
 - c. Carbon monoxide (CO) emissions from the gas turbine shall not exceed 4 ppmvd @ 15 % O₂ (3-hour rolling average), except during periods of startup and shutdown as defined in this permit. The CO emission concentration shall be verified by a District-approved CEMS and during any required source test. (basis: BACT)
 - d. Precursor organic compound (POC) emissions from the gas turbine shall not exceed 2 ppmvd @ 15% O₂ (3-hour rolling average), except during periods of startup and shutdown as defined in this permit. The POC emission concentration shall be verified during any required source test. (basis: BACT)
 - e. Particulate matter emissions less than ten microns in diameter (PM₁₀) from each gas turbine shall not exceed 2.5 pounds per hour, except during periods of startup and shutdown as defined in this permit. The PM₁₀ mass emission rate shall be verified during any required source test. (basis: BACT & cumulative increase)
 - f. Oxides of sulfur emissions (SO_x) from each gas turbine shall not exceed 0.33 pounds per hour, except during periods of startup and shutdown as defined in this permit. The SO_x emission rate shall be verified during any required source test. (basis: BACT & cumulative increase)
20. Turbine Startup: The owner/operator shall not operate the facility such that startup of the gas turbine exceeds a time period of 60 minutes each per occurrence, or another time period based on good engineering practice and approved in advance by the District. The startup applicable period begins with the turbine's initial firing and continues until the unit meets the emission concentration limits. (Basis: Cumulative increase)
21. Turbine Shutdown: The owner/operator shall not operate the facility such that shutdown of the gas turbine exceeds a time period of 30 minutes each per occurrence, or another time period based on good engineering practice and approved in advance by the District. Shutdown begins with initiation of the turbine shutdown sequence and ends with the cessation of turbine firing. (Basis: Cumulative increase)
22. Mass Emission Limits: The owner/operator shall not operate the facility such that the mass emissions from the S-1, S-2, S-3 and S-4 Gas Turbines exceeds the daily, and annual mass emission limits listed in Table 1 below. The owner/operator shall implement process computer data logging including running totals to demonstrate compliance with Table 1 limits without further calculations

Table 1 – Mass Emission Limits (Including Startups and Shutdowns)

Pollutant	Each turbine lb./day	Daily (4 units) (lb.)	Annual (tons)
NOx (as NO ₂)	205.2	821	74.9
POC	28.3	113	20.8
CO	99.8	399	72.9
SOx (as SO ₂)	7.9	32	5.8
PM ₁₀	60.0	240	43.8
NH ₃	151.7	607	110.7

The daily mass limits are on a Calendar Day basis as defined under Permit Conditions. The Annual Mass Limit is based on a rolling 8760-hour period ending on the last hour. Compliance shall be based on calendar average one-hour readings through the use of process monitors (e.g., fuel use meters), CEMS, and source test results; and the monitoring, recordkeeping and reporting conditions of this permit. If any part of the CEM, involved in the mass emission calculations, is inoperative for more than three hours of plant operation, the mass data for the inoperative period shall be calculated using a District approved Alternate Calculation.
(Basis: Cumulative increase & record keeping)

23. Acid Limit: The owner/operator shall not operate the facility such that sulfuric acid emissions (SAM) from S-1 through S-4 combined exceed 7 tons in any consecutive four quarters. (Basis: PSD)

24. Operational Limits: In order to comply with the emission limits of this rule, the owner/operator shall comply with the following operational limits:
 - a. The heat input to any gas turbine shall not exceed:
 - Hourly: 472.6 MMBtu/hr
 - Daily: 11,342 MMBtu/day
 - Four Turbines
 - Annual: 16,560,000 MMBtu/year

 - b. Only PUC Quality natural gas (General Order 58-a) shall be used to fire the gas turbine. The natural gas shall not contain total sulfur in concentrations exceeding 0.25 gr./100 scf.

 - c. The owner/operator of the gas turbine shall comply with the daily and annual emission limits listed in Table 1 by keeping running totals based on CEM data.
(Basis: Cumulative increase)

25. Monitoring Requirements: The owner/operator shall comply with the following monitoring requirements for each gas turbine:

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

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

- a. NO_x – ppmvd at 15% O₂ and LB/MMBtu (as NO₂);
- b. Ammonia – ppmvd at 15% O₂ (Exhaust);
- c. CO – ppmvd at 15% O₂ and LB/MMBtu (Exhaust);
- d. POC – ppmvd at 15% O₂ and LB/MMBtu (Exhaust);
- e. PM₁₀ – LB/hr (Exhaust);
- f. SO_x – LB/hr (Exhaust);
- g. Natural gas consumption, fuel High Heating Value (HHV), and total fuel sulfur content;

- h. Turbine load in megawatts;
 - i. Stack gas flow rate (SDCFM) calculated according to procedures in U.S. EPA Method 19.
 - j. Exhaust gas temperature (°F)
 - k. Ammonia injection rate (LB/hr or moles/hr)
 - l. Water injection rate for each turbine at S-1, S-2, S-3, & S-4
(Basis: source test requirements & monitoring)
27. Within 60 days of start-up of the LECEF and on a semi-annual basis thereafter, the owner/operator shall conduct a District approved source test on exhaust points for S-1 through S-4 while each Gas Turbine is operating at maximum load to demonstrate compliance with the SAM levels in Condition number 23. The owner/operator shall test for (as a minimum) SO₂, SO₃ and SAM. After acquiring one year of source test data on these units, the owner/operator may petition the District to switch to annual source testing if test variability is low. (Basis: PSD Avoidance, SAM Periodic Monitoring)
28. The owner/operator shall prepare a written quality assurance program must be established in accordance with 40 CFR Part 75, Appendix B and 40 CFR Part 60 Appendix F. (Basis: continuous emission monitoring)
29. The owner/operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart GG. (Basis: NSPS)
30. The owner/operator shall notify the District of any breakdown condition consistent with the District's breakdown regulations. (Basis: Regulation 1-208)
31. The owner/operator shall notify the District in writing in a timeframe consistent with the District's breakdown regulations following the correction of any breakdown condition. The breakdown condition shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the actions taken to restore normal operations. (Basis: Regulation 1-208)
32. Recordkeeping: The owner/operator shall maintain the following records:
- a. hourly, daily, quarterly and annual quantity of fuel used and corresponding heat input rates;
 - b. the date and time of each occurrence, duration, and type of any startup, shutdown, or malfunction along with the resulting mass emissions during such time period;
 - c. emission measurements from all source testing, RATAs and fuel analyses;
 - d. daily, quarterly and annual hours of operation;
 - e. hourly records of NO_x and CO, emission concentrations and hourly ammonia injection rates and ammonia/NO_x ratio.
 - f. for the continuous emissions monitoring system; performance testing, evaluations, calibrations, checks, maintenance, adjustments, and any period of non-operation of any continuous emissions monitor.

(Basis: record keeping)

33. The owner/operator shall maintain all records required to be maintained by this permit for a period of five years and shall make such records readily available for District inspection upon request. (Basis: record keeping)
34. Reporting: The owner/operator shall submit to the District a written report for each calendar quarter, within 30 days of the end of the quarter, which shall include:
- a. Daily and quarterly fuel use and corresponding heat input rates;
 - b. Daily and quarterly mass emission rates for all criteria pollutants during normal operations and during other periods (startup/shutdown, breakdowns);
 - c. Time intervals, date, and magnitude of excess emissions;
 - d. Nature and cause of the excess emission, and corrective actions taken;
 - e. Time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments;
 - f. A negative declaration when no excess emissions occurred;
 - g. Results of quarterly fuel analyses for HHV and total sulfur content.
- (Basis: record keeping & reporting)

35. Emission Offsets: The owner/operator shall offset the project emissions in the amount and at the ratios outlined in Table 2 below.

Table 2 – Emission Offsets

Pollutant	Emissions Requiring Offsets (tons/yr.)	Offset Ratio	Total ERCs Required (tons/yr.)
NOx (as NO ₂)	75.4	1.15	86.7
POC	21.0	1.00	21.0

The ERC certificates must be delivered to the District ten days prior to the issuance of the ATC. (Basis: Emission Offsets)

36. District Operating Permit: The owner/operator shall apply for and obtain all required operating permits from the District according to the requirements of the District’s rules and regulations. (Basis: Regulations 2-2 & 2-6)
37. Title IV and Title V Permits: The owner/operator must deliver applications for the Title IV and Title V permits to the District prior to first-fire of the turbines. The owner/operator must cause the acid rain monitors (Title IV) to be certified within 90 days of first-fire. (Basis: Regulation 2-6)
38. Sunset Provision: Within three years of CEC Approval, The owner/operator must convert to either a combined cycle or cogeneration plant using BACT in effect at the time of conversion. If conversion does not occur the plant must cease operation. (Basis: California State Resources Code, Section 25552)
39. The owner/operator shall fire S-5 Fire Pump Engine exclusively on diesel fuel having a sulfur content no greater than 0.05% by weight. (Toxics, Cumulative Increase)
40. The owner/operator shall operate the S-5 Fire Pump Engine for no more than 100 hours per year for the purpose of reliability testing and non-emergency operation. (Cumulative Increase, Regulation 9-8-231 & 330)
41. The owner/operator shall equip the S-5 Fire Pump Engine with a non-resettable totalizing counter that records hours of operation. (BACT)

42. The owner/operator shall maintain the following monthly records in a District-approved log for at least 5 years and shall make such records and logs available to the District upon request: (BACT)
- a. Total number of hours of operation for S-5.
 - b. Fuel usage at S-5
43. The owner/operator shall fire the S-6 Emergency Generator exclusively on natural gas. (Toxics, Cumulative Increase).
44. The owner/operator shall not operate S-6 Emergency Generator for more than 100 hours per year for the purpose of reliability testing or in anticipation of imminent emergency conditions. Emergency conditions are any of the following: loss of regular natural gas supply, failure of regular electric power supply, flood mitigation, sewage overflow mitigation, fire, failure of a primary motor, but only for such time as needed to repair or replace the primary motor. (Regulation 9-8-231 & 330, Cumulative Increase)
45. The owner/operator shall equip the S-6 Emergency Generator with a non-resettable totalizing counter that records hours of operation. (BACT)
46. The owner/operator shall maintain the following monthly records in a District-approved log for at least 5 years and shall make such records and logs available to the District upon request: (BACT)
- a. Total number of hours of operation for S-6
 - b. Fuel usage at S-6
47. The owner/operator shall operate the facility such that maximum projected annual toxic air contaminant emissions (per condition 48) from the gas turbines combined (S-1, S-2, S-3 and S-4) shall not exceed the following limits:
- 6000 pounds of formaldehyde per year
 - 3000 pounds of acetaldehyde per year
 - 1.7 pounds of Specified polycyclic aromatic hydrocarbons (PAHs) per year
 - 60 pounds of acrolein per year

unless the following requirement is requirement satisfied:

The owner/operator shall perform a health risk assessment using the emission rates determined by source test and the most current Bay Area Air Quality Management District approved procedures and unit risk factors in effect at the time of the analysis. This analysis shall be submitted to the District and the CEC CPM within 60 days of

the source test date. The owner/operator may request that the District and CEC CPM revise the carcinogenic compound emission limits specified above. If the owner/operator demonstrates to the satisfaction of the APCO that these revised emission limits will result in a cancer risk of not more than 1.0 in one million, the District and CEC CPM may, at their discretion, adjust the carcinogenic compound emission limits listed above. (TRMP)

48. To demonstrate compliance with Condition 47, the owner/operator shall calculate and record on an annual basis the maximum projected annual emissions shall be calculated using the maximum Heat Input of 16,560,000 MM Btu/year and the highest emission factor (pound of pollutant per MM Btu of Heat Input) determined by any source test of the S-1, S-2, S-3 & S-4 Gas Turbines. If this calculation method results in an unrealistic mass emission rate (the highest emission factor occurs at a low firing rate) the applicant may use an alternate calculation, subject to District approval. (TRMP)
49. Within 60 days of start-up of the Los Esteros Critical Facility and on a biennial (once every two years) thereafter, the owner/operator shall conduct a District-approved source test at exhaust point P-1, P-2, P-3, or P-4 while the Gas Turbines are at maximum allowable operating rates to demonstrate compliance with Condition 47. If three consecutive biennial source tests demonstrate that the annual emission rates calculated pursuant to condition 47 For any of the compounds listed above are less than the BAAQMD Toxic Risk Management Policy trigger levels shown, and then the owner/operator may discontinue future testing for that pollutant:

Formaldehyde	<	132 lbs./yr.
Acetaldehyde	<	288 lbs./yr.
Specified PAHs	<	0.18 lbs./yr.
Acrolein	<	15.6 lbs./yr.

(TRMP)

Conclusion

The proposed Los Esteros Critical Energy Project, which is composed of the permitted sources listed below, complies with all applicable federal, state and District rules and regulations. We recommend that the District issue a Final Determination of Compliance document for the following equipment:

- S-1 Combustion Gas Turbine with Water Injection, General Electric LM6000PC Sprint, natural gas fired, 45 MW nominal, net simple-cycle, 472.6 MMBtu/hr maximum heat input rating; abated by A-1 Oxidation Catalyst, and A-2 Selective Catalytic Reduction System.**

- S-2 Combustion Gas Turbine with Water Injection, General Electric LM6000PC Sprint, natural gas fired, 45 MW nominal, net simple-cycle, 472.6 MMBtu/hr maximum heat input rating; abated by A-3 Oxidation Catalyst, and A-4 Selective Catalytic Reduction System.**
- S-3 Combustion Gas Turbine with Water Injection, General Electric LM6000PC Sprint, natural gas fired, 45 MW nominal, net simple-cycle, 472.6 MMBtu/hr maximum heat input rating; abated by A-5 Oxidation Catalyst, and A-6 Selective Catalytic Reduction System.**
- S-4 Combustion Gas Turbine with Water Injection, General Electric LM6000PC Sprint, natural gas fired, 45 MW nominal, net simple-cycle, 472.6 MMBtu/hr maximum heat input rating; abated by A-7 Oxidation Catalyst, and A-8 Selective Catalytic Reduction System.**
- S-5 Fire Pump Engine, Fairbanks Morse JDFP-06WR, diesel fired, 300 HP, 2.0 MMBtu/hr maximum heat input rating.**
- S-6 Emergency Generator Engine, Caterpillar G3512 90 LE or equivalent, natural gas-fired, 804 HP (600 kW), 6.44 MMBtu/hr maximum heat input rating.**

Pursuant to District Regulation 2-3-404, the Preliminary Determination of Compliance (PDOC) fulfilled the public notice, public comment, and public inspection requirements of Regulation 2-2-406 and 2-2-407. A notice inviting written comment was published in the San Jose Mercury News on November 20, 2001. The public comment period ended on December 20, 2001. Comments received on the PDOC have been considered and, where appropriate this FDOC reflects changes in response to those comments.

Ellen Garvey
Air Pollution Control Officer/Executive Officer
Bay Area Air Quality Management District
939 Ellis Street
San Francisco CA 94109

Appendix A
Toxic Risk Analysis Input Data

2/1/02

1

FDOC
LECEF

Appendix B
Certificate of Compliance

2/1/02

2

FDOC
LECEF

(To be furnished by Calpine)

2/1/02

3

FDOC
LECEF

APPENDIX B TO STATEMENT OF BASIS
GLOSSARY

ACT

Federal Clean Air Act

APCO

Air Pollution Control Officer

ARB

Air Resources Board

BAAQMD

Bay Area Air Quality Management District

BACT

Best Available Control Technology

Basis

The underlying authority that allows the District to impose requirements.

CAA

The federal Clean Air Act

CAAQS

California Ambient Air Quality Standards

CAPCOA

California Air Pollution Control Officers Association

CEQA

California Environmental Quality Act

CFR

The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO

Carbon Monoxide

Cumulative Increase

The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Cumulative increase is used to determine whether threshold-based requirements are triggered.

District

The Bay Area Air Quality Management District

dscf

Dry Standard Cubic Feet

EPA

The federal Environmental Protection Agency.

Excluded

Not subject to any District regulations.

Federally Enforceable, FE

All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (MACT), and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP

Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

HAP

Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

Major Facility

A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MFR

Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Federal Clean Air Act and implemented by District Regulation 2, Rule 6.

MOP

The District's Manual of Procedures.

NAAQS

National Ambient Air Quality Standards

NESHAPS

National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

NMHC

Non-methane Hydrocarbons (Same as NMOC)

NMOC

Non-methane Organic Compounds (Same as NMHC)

NO_x

Oxides of nitrogen.

NSPS

Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Federal Clean Air Act, and implemented by 40 CFR Part 60 and District Regulation 10.

NSR

New Source Review. A federal program for pre-construction review and permitting of new and modified sources of pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

Offset Requirement

A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NO_x, PM₁₀, and SO₂.

Phase II Acid Rain Facility

A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC

Precursor Organic Compounds

PM

Particulate Matter

PM₁₀

Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD

Prevention of Significant Deterioration. A federal program for permitting new and modified sources of those air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

SIP

State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO₂

Sulfur dioxide

THC

Total Hydrocarbons (NMHC + Methane)

Title V

Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC

Total Organic Compounds (NMOC + Methane, Same as THC)

TPH

Total Petroleum Hydrocarbons

TRMP

Toxic Risk Management Plan

TSP

Total Suspended Particulate

VOC

Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
Btu	=	British Thermal Unit
cfm	=	cubic feet per minute
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m ²	=	square meter
min	=	minute
mm	=	million
MMbtu	=	million Btu
MMcf	=	million cubic feet
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year

Permit Evaluation and Statement of Basis: Site #B3289, Los Esteros Critical Energy Facility, 1515 Alviso-Milpitas Road, San Jose, CA

APPENDIX C
BAAQMD COMPLIANCE REPORT