

**DRAFT EVALUATION REPORT  
Los Esteros Critical Energy Facility, LLC  
Facility B3289, Application 24977  
800 Thomas Foon Chew Way  
San Jose, CA 95134**

## **Background**

Los Esteros Critical Energy Facility, LLC, (Los Esteros) has applied for the following:

1. An Authority to Construct a new fire pump and fire pump engine:  
S13, Fire Pump Engine, 282 hp, 2012 or later model year, John Deere Family CJDXL13.5103 or Cummins Family ACEXL0540AAB

which could, at Los Esteros' option, be installed to replace:  
S5, Fire Pump Engine

2. A Permit to Operate for a turbine to be temporarily installed when maintenance is required at S1, S2, S3, or S4, Turbines:  
S14, Combustion Gas Turbine, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMbtu/hr maximum rated capacity (HHV<sup>1</sup>); abated by Oxidation Catalyst and Selective Catalytic Reduction System.
3. A change in conditions for the following equipment:
  - S1 Combustion Gas Turbine #1, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMbtu/hr maximum rated capacity (HHV); abated by A-9 Oxidation Catalyst and A-10 Selective Catalytic Reduction System.
  - S2 Combustion Gas Turbine #2, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMbtu/hr maximum rated capacity (HHV); abated by A-11 Oxidation Catalyst and A-12 Selective Catalytic Reduction System.
  - S3 Combustion Gas Turbine #3, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMbtu/hr maximum rated capacity (HHV); abated by A-13 Oxidation Catalyst and A-14 Selective Catalytic Reduction System.
  - S4 Combustion Gas Turbine #4, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMbtu/hr maximum rated capacity (HHV); abated by A-15 Oxidation Catalyst and A-16 Selective Catalytic Reduction System.

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<sup>1</sup> High Heating Value

- S7 Heat Recovery Steam Generator #1, equipped with low-NOx Duct Burners, 139 MMBtu/hr maximum rated capacity (HHV); abated by A-9 Oxidation Catalyst and A-10 Selective Catalytic Reduction System.
- S8 Heat Recovery Steam Generator #2, equipped with low-NOx Duct Burners, 139 MMBtu/hr maximum rated capacity (HHV); abated by A-11 Oxidation Catalyst and A-12 Selective Catalytic Reduction System.
- S9 Heat Recovery Steam Generator #3, equipped with low-NOx Duct Burners, 139 MMBtu/hr maximum rated capacity (HHV); abated by A-13 Oxidation Catalyst and A-14 Selective Catalytic Reduction System.
- S10 Heat Recovery Steam Generator #4, equipped with low-NOx Duct Burners, 139 MMBtu/hr maximum rated capacity (HHV); abated by A-15 Oxidation Catalyst and A-16 Selective Catalytic Reduction System.

Calpine is the applicant's parent company. The original proposal in Calpine's letter to the District dated October 25, 2012, is contained in Appendix A of this evaluation.

On March 27, 2013, Calpine submitted an additional proposal. The proposal is to permit an additional turbine that can be used as a substitute for an existing turbine that needs maintenance. The applicant states that the General Electric (GE) LM 6000 turbines are standard turbines that can be switched readily. When a turbine needs maintenance, Calpine would like to substitute another similar turbine in its place until the original turbine is repaired and returns to the installation. GE maintains a number of turbines that can be sent around the country to be used while turbines are being repaired.

The applicant states that the emissions profile of all of the GE LM6000 turbines is similar. Operation with a substitute turbine will not increase emissions at Los Esteros because the substitute turbine will be abated with the existing abatement devices. The applicant has agreed to meet the same limits with the substitute turbine that apply to the existing turbines and that only four turbines may operate at the same time.

This evaluation considers each of Calpine's proposals of October 25, 2012 in the order that they are presented in the letter.

Proposal #1:

The applicant requested that the District allow an unspecified, but equivalent, fire pump engine instead of the Clarke engine proposed in the Authority to Construct for Application 8859.

Response:

The risk screen is specific to the plume for each engine that is evaluated.

Therefore, Calpine subsequently proposed the following two specific engines,

- John Deere Family CJDXL13.5103, 282 hp, 2012 or later model year, or
- Cummins Family ACEXL0540AAB, 282 hp, 2012 or later model year.

The District has evaluated both engines and has found either to be acceptable instead of the Clarke engine.

Proposal #2:

The definition of startup that precedes the numbered condition “parts” states that a startup is over after the lesser of the first 120 minutes of continuous fuel flow to the Gas Turbine after fuel flow is initiated or the period of time from Gas Turbine fuel flow initiation until the Gas Turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of conditions 19(a) and 19(c) and is in compliance with the emission limits contained in 19(a) through 19(d). (NOX, NH3, CO, POC)

The applicant has requested a change in the definition so that:

- the CEM data points include 19(b), which is the ammonia limit and monitoring, and,
- the emission limits include the ammonia limit in 19(b), but exclude the POC limit in 19(d).

Response:

NOx and CO are measured reliably during every startup by the NOx and CO CEMs.

POC emissions during startup will only be measured during the initial source tests.

It does not seem likely that the parametric ammonia monitoring system will give an accurate measurement of when the ammonia concentration reaches 5 ppm and remains steady. The 3-hour averaging time for the ammonia limit is incompatible with the maximum amount of time allowed for startup.

Therefore, the District will make a change to exclude POC and NH3 from the definition of startup.

Proposal #3:

Part 11: The applicant requested that the District correct part 11 so that it refers to testing to comply with parts 19 and 20, not 10.

Response:

The District will make the correction.

Proposal #4:

Part 11: The applicant requested that the District allow 120 days after startup of each turbine/HRSG set to perform the required source tests.

Response:

BAAQMD Regulation 2-1-411 states that:

“The APCO shall take final action to approve, approve with conditions, or disapprove a permit to operate a facility subject to this rule within 90 days after the initial date of the start-up period of the new or modified source. This time period may be extended upon the written request of the applicant stating the reasons why further start-up time is needed. In no case shall the APCO allow the start-up period to be greater than 180 days.”

The source tests could not occur more than 90 days after startup unless the time period has been extended. The request for a change of conditions is a written request for an extension of the startup period, so this change in the permit conditions can be made.

This proposed change is acceptable. However, the results for the initial source test cannot be submitted more than 165 days after startup to allow the permit to be issued within 180 days of startup.

Proposal #5:

Part 11: The applicant requested that the District delete the request for testing of methane and ethane during the source test in part 11.

Response:

The District believes that the testing is useful and is unwilling to change the condition without evidence that there is no unburned natural gas. The condition is for a one-time test and is not an ongoing requirement, so it is not unduly onerous.

Proposal #6:

Parts 19(a) and 19(c): The applicant requested that the District change the emissions averaging for the NO<sub>x</sub> and CO CEMS from a rolling 60-minute average to a clock-hour average.

Response:

The applicant has withdrawn this proposal.

Proposal #7:

Part 19(b): The applicant requested that the District allow for a District-approved ammonia slip method instead of a molar ratio method.

Response:

The District objected to Calpine’s proposed method because it appeared that the NO<sub>x</sub> inlet rate was not being measured, but rather that a fixed rate was assumed. Calpine has responded that the NO<sub>x</sub> inlet rate will be measured at each train. The condition has been

amended to require recording of the NOx inlet rate and the NOx outlet rate in lb/hr, and the fuel rate in MMBtu/hr in addition to the ammonia injection rate, and the use of a District-approved ammonia slip calculation method.

Proposal #8:

Part 19(d): The applicant requested that the District delete the requirement for a 1-hour rolling average for POC in part 19(d) of the condition.

Response:

The District will amend the permit condition to say “1-hour average” instead of “1-hour rolling average” because there are no POC CEMS and an ongoing rolling average could not be determined. For the purpose of the source tests, compliance will be determined based on three one-half hour runs as required by the source test method.

Proposal #9:

Part 20: The applicant requested that the District correct part 20 of the condition to include S2 and S4, Turbines.

Response:

The District will make this correction.

Proposal #10:

Part 21: The applicant requested that the District delete the definition of shutdown in part 21 of the condition.

Response:

The District agrees, and will delete the definition as requested, because there is a conflicting definition of shutdown at the beginning of the conditions.

Proposal #11:

Part 21: The applicant requested that the District change the wording in the first sentence from:

“The project owner shall operate the gas turbines so that the duration of a shutdown...”

to:

“The project owner shall operate the gas turbines so that the duration of operation in Gas Turbine Shutdown Mode...”

Response:

The District finds the language to be acceptable and will make the change.

Proposal #12:

Part 22: The applicant requested the following changes:

1. Deletion of the phrase “calendar average” from requirement to calculate daily emissions.
2. A rolling year based on a rolling 12-month period instead of a rolling 8760-hour period.
3. Additional details showing how the emissions of pollutants with monitoring based on annual source tests should be calculated.
4. Use of missing data procedures for missing CEM data instead of “a District-approved alternate calculation method.”

Response:

1. The District agrees to delete the phrase “calendar average” because the preceding sentence clearly states that the daily mass limits are based on calendar day.
2. The District agrees that a rolling 12-month period is equivalent to a rolling 8760-hour period and is simpler to administer.
3. The District has amended the condition so that it is clear that the emissions estimates of PM10, SO2, and POC are based on emission rates determined during source tests and the emission rates of NOx and CO are based on CEM data.
4. The District believes that the use of the phrase “District-approved calculation method” is preferable and allows the District to review and approve or disapprove missing data procedures that are used by the facility. As the applicant has stated, it is difficult to envision every situation where the CEMs or parametric monitors are inoperable and determine the right procedure for each ahead of time.

The District has added “parametric monitor” to the sentence about missing data from CEMs.

Proposal #13:

Part 24b: The applicant requested that the District allow the use of natural gas sulfur content data from the utility instead of requiring the applicant to perform monthly sampling and analysis.

Response:

The utility data would be equivalent or better data. The applicant has shown that the utility samples and analyzes the gas on a daily basis. Therefore, utility data will be allowed as long as it is based on actual sampling data. Assurances that the sulfur content is “within specifications” will not be sufficient.

Proposal #14:

Part 25b: The applicant requested that the District amend part 25b of the conditions so that the accuracy and calibration requirements apply only to the ammonia flow meter and not to the injection pressure indicator.

Response:

The District will make the change because the pressure indicator is simply an indicator and does not have a numerical output.

Proposal #15:

Part 25c of the conditions is written so that the CO, NO<sub>x</sub>, and O<sub>2</sub> monitors have to comply with 40 CFR 60, Appendices B and F and 40 CFR 75. The applicant requested that the District amend part 25c of the conditions so that the CO monitors comply with 40 CFR 60, Appendices B and F and the NO<sub>x</sub> and O<sub>2</sub> monitors comply with 40 CFR 75.

Response:

CO is not regulated by 40 CFR 75. For power plants, NO<sub>x</sub> and O<sub>2</sub> are regulated through the Federal Acid Rain Program by 40 CFR 75, Continuous Emission Monitoring. The District agrees that complying with 40 CFR 60 for CO is proper, but that complying with 40 CFR 60 for NO<sub>x</sub> and O<sub>2</sub> in this case would be unnecessarily duplicative. Therefore, the District will make this change.

Proposal #16:

Part 26: The applicant requested that the District amend that permit condition so that instead of annual relative accuracy test audits (RATA), the facility will perform RATAs during every fourth QA operating quarter as defined in 40 CFR 75.2, which states:

QA operating quarter means a calendar quarter in which there are at least 168 unit operating hours (as defined in this section) or, for a common stack or bypass stack, a calendar quarter in which there are at least 168 stack operating hours (as defined in this section).

Response:

The applicant has stated that the RATAs will at least be performed when a source test is conducted. Since the source tests are conducted annually, the condition will not change.

Proposal #17:

Part 26: The applicant requested deletion of the annual source tests in error.

Response:

The District understands that this request was made in error.

Proposal #18:

Part 26: The applicant requested sixty days, instead of thirty, to submit source test results.

Response:

This proposed change is acceptable.

Proposal #19:

Part 26: The applicant requested that the condition be revised to require the source test to show compliance with the hourly mass emission limits and concentrations in part 19(a) through 19(d) of the condition.

Response:

This proposed change is acceptable.

Proposal #20:

Part 26: The applicant requested that the condition be revised to add the lb/hr limits to parts 26(a) for NO<sub>x</sub>, 26(c) for CO, and 26(d) for POC.

Response:

This proposed change is acceptable.

Proposal #21:

Part 26: The applicant requested measurement of SO<sub>2</sub> in the source test to be based on the sulfur content of the fuel, not an actual measurement.

Response:

The sulfur in the natural gas may not be emitted as SO<sub>2</sub>, but rather as H<sub>2</sub>SO<sub>4</sub> (sulfuric acid mist). Nonetheless, an assumption that all of the sulfur is emitted as SO<sub>2</sub> is a worst-case assumption in the case of the SO<sub>2</sub> limit and is acceptable, as long as the sulfuric acid mist is measured directly.

Proposal #22:

Part 27: The applicant requested that the District allow 120 days after startup to conduct the sulfuric acid mist source test.

Response:

This change is acceptable. However, the results for the initial source test cannot be submitted more than 165 days after startup.

Proposal #23:

Part 27: The applicant requested that the district delete the requirement to test for SO<sub>2</sub> and SO<sub>3</sub>.

Response:

The District proposes to amend part 26 to allow the facility to estimate the SO<sub>2</sub> from the sulfur content of the natural gas as measured by the utility, so measurement of SO<sub>2</sub> would not be required. The EPA method requires measurement of SO<sub>3</sub> and H<sub>2</sub>SO<sub>4</sub>, although the District acknowledges that a separate determination of SO<sub>3</sub> is not possible. The District proposes to amend the condition to say "SO<sub>3</sub> evaluated as H<sub>2</sub>SO<sub>4</sub>."



Proposal #24:

Part 27: The applicant requested that the District allow annual testing for sulfuric acid mist instead of semi-annual.

Response:

The applicant may re-apply for a reduction in sulfuric acid mist monitoring when the facility has 3 or more source tests for each turbine/HRSG set.

Proposal #25:

Part 27: The applicant requested that the District delete the statement that the applicant could petition the District for a lower source test frequency.

Response:

The applicant has withdrawn this request.

Proposal #26:

Part 32f: The applicant requested that the District change performance testing to quarterly audits (RATAs).

Response:

The District will add the relative accuracy test audits (RATA), noting that the applicant has requested reduced RATA frequency in accordance with 40 CFR 75, Appendix B, Section 2.3.1.2. The District will remove the requirement for performance testing of the CEMs.

Proposal #27:

Part 34g: The applicant requested that the District delete the requirement to record the quarterly fuel analyses.

Response:

Quarterly fuel analyses are required by part 25 of the conditions and, therefore, should be recorded.

Proposal #28:

Part 44: The applicant requested that the District amend the condition so that the projected annual emissions would be calculated after the source test for formaldehyde, acetaldehyde, Specified PAHs, and acrolein.

Response:

The District agrees that this amendment makes the condition clearer and will make the change.

**Proposal #29:**

Part 45: The applicant requested that the District allow 120 days after startup of each turbine/HRSG set to perform the required source tests.

**Response:**

This proposed change is acceptable. However, the results for the initial source test cannot be submitted more than 165 days after startup.

**Plant Cumulative Increase (tons/year)**

The proposed changes in permit conditions will not change the annual emissions and therefore, will not change the cumulative increase.

**Toxic Risk Screening**

The proposed changes in permit conditions will not change the emissions of toxic air contaminants. Therefore, a new Health Risk Screening Analysis is not required.

**Public Notification**

Since this plant is not located within 1000 ft. of a school, public notification for the purposes of District Regulation 2-1-412 is not required. However, the change will undergo a public notice process that will be handled by the California Energy Commission (CEC).

**Statement of Compliance**

A thorough discussion of applicable requirements is contained in the Final Determination of Compliance published on June 2, 2005, which is available upon request, and the Statement of Basis for the significant revision of the Title V permit, issued on June 6, 2012, which is available on the District's website at:

<http://www.baaqmd.gov/Divisions/Engineering/Title-V-Permit-Programs/Title-V-Permits/Santa-Clara/B3289/Los-Esteros-Critical-Energy-Facility.aspx>.

The proposed changes to the permit conditions will not change applicable requirements other than monitoring, recordkeeping, and reporting requirements.

**CEQA**

The California Energy Commission is the state permitting agency for power plants. The CEC has a process that is equivalent to CEQA review. Therefore, the CEC will determine the level of CEQA review for this change in capacity and conditions.

**Best Available Control Technology (BACT)**

The proposed changes in permit conditions will not change the daily or annual emissions. Therefore, the facility is not subject to a new BACT determination.

### **Offsets**

The annual limits will not change. The required offsets have been provided for permit applications 3213 and 8859.

### **PSD, Prevention of Significant Deterioration**

PSD does not apply to this project. PSD applies to a project that causes a “significant” increase in the emissions of air pollutants defined in 40 CFR 51.166(b)(23)(i) and (ii) and these changes to conditions will not result in an increase in emissions.

### **Title V**

The change in conditions consists entirely of changes to monitoring, recordkeeping, and reporting. BAAQMD Regulation 2-6-226.3 defines as a significant revision to the Title V permit:

“Any significant change or relaxation of any applicable monitoring, reporting or recordkeeping condition.”

Although the proposed changes are many, they are not a relaxation or a significant change to the monitoring, reporting, or recordkeeping. The District is not proposing to make changes proposed by the applicant that are a relaxation or significant, such as reducing the frequency of source tests or RATAs.

The fuel sulfur data supplied by the utility will be of equal quality to analyses by the facility, so use of utility data is not a relaxation.

Use of fuel sulfur data to calculate SO<sub>2</sub> is more conservative than testing. Therefore, the change to part 26 of the conditions is not a relaxation.

Since the changes in conditions are not considered significant revisions, they are defined as minor revisions. Changes to the ammonia monitoring are not federally enforceable, so any changes to ammonia monitoring would be administrative amendments, as defined by BAAQMD Regulation 2-6-201.

The facility can act on any minor revisions as soon as they are approved in accordance with BAAQMD Regulation 2-6-406. However, the District cannot approve the minor revisions until after CEC approval.

### **CEC Requirements**

Application Number 24977

The California Energy Commission is the primary permitting authority for power plants of this size in California. BAAQMD staff will consult with CEC regarding the process to change the CEC permit. *SECTION TO BE COMPLETED.*

## PERMIT CONDITIONS

Condition # 23688

### 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 lesser of the first 120 minutes of continuous fuel flow to the Gas Turbine after fuel flow is initiated or the period of time from Gas Turbine fuel flow initiation until the Gas Turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of conditions 19(a) and 19(c) and is in compliance with the emission limits contained in 19(a) <del>and 19(c)</del> .
Gas Turbine Shutdown Mode:	The lesser of the 30 minute period immediately prior to the termination of fuel flow to the Gas Turbine or the period of time from non-compliance with any requirement listed in Conditions 19(a) through 19(d) until termination of fuel flow to the Gas Turbine
Corrected Concentration:	The concentration of any pollutant (generally NO <sub>x</sub> , CO or NH <sub>3</sub> ) corrected to a standard stack gas oxygen concentration. For a Gas Turbine emission point, the standard stack gas oxygen concentration is 15% O <sub>2</sub> 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 following the installation of the duct burners and associated equipment, whichever occurs first. The period shall terminate when the plant has completed performance testing, is available for commercial operation, and has initiated sales of power to the grid. The Commissioning Period shall not exceed 180 days under any circumstances.
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

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**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:

1. **Four Combined-Cycle Gas Turbine Generator Power Trains consisting of:**
  - a. **Combustion Gas Turbine, General Electric LM6000PC, Maximum Heat Input 500 MMBTU/hr (HHV), 49.4 MW (nominal), Natural Gas-Fired**
  - b. **Heat Recovery Steam Generator, equipped with low-NOx duct burners, 139 MM BTU/hour, Natural Gas-Fired**
  - c. **Selective Catalytic Reduction (SCR) NOx Control System.**
  - d. **Ammonia Injection System.  
(including the ammonia storage tank and control system)**
  - e. **Oxidation Catalyst (OC) System.**
  - f. **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.**
2. **Clarke JW6H-UF40 fire pump and fire pump engine or, at the owner/operator's option, either a 2012 or later model year, John Deere Family CJDXL13.5103 or Cummins Family ACEXL0540AAB fire pump and fire pump engine.**
3. **Six Cell Cooling Tower, 73,000 gallons per minute with drift eliminator of 0.0005% removal efficiency.**
4. **One spare Gas Turbine, General Electric LM6000PC, Maximum Heat Input 500 MMBTU/hr (HHV), 49.4 MW (nominal), Natural Gas-Fired**

**Permit Conditions:**

**Conditions for the Commissioning Period:**

1. The owner/operator of the Los Esteros Critical Energy Facility shall minimize the emissions of carbon monoxide and nitrogen oxides from S-1, S-2, S-3 and S-4 Gas Turbines and S-7, S-8, S-9, and S-10 Heat Recovery Steam Generators to the maximum extent possible during the commissioning period. Parts 1 through 11 shall only apply during the commissioning period as defined above. Unless noted, parts 12 through 47 shall only apply after the commissioning period has ended. (basis: cumulative increase)
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. (basis: cumulative increase)
3. At the earliest feasible opportunity and 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-10, A-12, A-14 & A-16) and OC Systems (A-9, A-11, A-13 & A-15) to minimize the emissions of nitrogen oxides and carbon monoxide from S-1, S-2, S-3 and S-4 Gas Turbines and S-7, S-8, S-9, and S-10 Heat Recovery Steam Generators. (basis: cumulative increase)

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4. Coincident with the steady-state operation of SCR Systems (A-10, A-12, A-14 & A-16) and OC Systems (A-9, A-11, A-13 & A-15) pursuant to part 3, the owner/operator shall operate the facility in such a manner that the Gas Turbines (S-1, S-2, S-3 and S-4) comply with the NO<sub>x</sub> and CO emission limitations specified in parts 19a and 19c. (basis: BACT, offsets)
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 & S-4 Gas Turbines and/or S-7, S-8, S-9, & S-10 HRSGs describing the procedures to be followed during the commissioning of the turbines in the combined-cycle configuration. 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<sub>x</sub> 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 in combined cycle mode no sooner than fourteen days after the District receives the commissioning plan. (basis: cumulative increase)
6. During the commissioning period, the owner/operator of the Los Esteros Critical Energy Facility shall demonstrate compliance with parts 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 and S-7, S-8, S-9, and S-10 Heat Recovery Steam Generators. 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<sub>x</sub> 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. If necessary to ensure that accurate data is collected at all times, the owner/operator shall install dual span emission monitors. (basis: cumulative increase)
7. The owner/operator shall install, calibrate and make operational the District-approved continuous monitors specified in part 6 prior to first firing of each turbine (S-1, S-2, S-3 and S-4 Gas Turbines) and HRSG (S-7, S-8, S-9, and S-10 Heat Recovery Steam Generators). 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<sub>x</sub> emission concentrations. The type, specifications, and location of these monitors shall be subject to District review and approval. If necessary to ensure accurate data is collected at all times, the owner/operator shall install dual-span monitors. (basis: BAAQMD 9-9-501, BACT, offsets)
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 and/or S-7, S-8, S-9, and S-10 Heat Recovery Steam Generators without abatement by SCR or OC Systems exceeds 250 hours for each power train 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 OC 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 250 firing hours without abatement shall expire. (basis: offsets)
9. The total mass emissions of nitrogen oxides, carbon monoxide, precursor organic compounds, PM<sub>10</sub>, and sulfur dioxide that are emitted by the S-1, S-2, S-3 and S-4 Gas Turbines and S-7, S-8, S-9, and S-

10 Heat Recovery Steam Generators during the commissioning period shall accrue towards the consecutive twelve-month emission limitations specified in part 22. (basis: offsets)

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) and corresponding HRSG (S-7, S-8, S-9, and S-10 Heat Recovery Steam Generators) 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 Controls</u>		<u>With Controls</u>	
a. NO <sub>x</sub> (as NO <sub>2</sub> )	1464 lb/day	102 lb/hr	1464 lb/day	61 lb/hr
b. CO	1056 lb/day	88 lb/hr	984 lb/day	41 lb/hr
c. POC (as CH <sub>4</sub> )	288 lb/day		114 lb/day	

(basis: cumulative increase)

11. Within ~~one hundred and twenty (120)~~ days of startup, the owner/operator shall conduct a District approved source test using external continuous emission monitors to determine compliance with part 19. The source test shall determine NO<sub>x</sub>, CO, and POC emissions during start-up and shutdown of the gas turbines. **The results of the source test must be submitted within 165 days of startup.** 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 part. 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 60 days of the source testing date. These results can be used to satisfy applicable source testing requirements in Part 26 below. (basis: offsets)

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**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. (Basis: BAAQMD 2-1-403)
13. Conflicts Between Conditions: In the event that any part herein is determined to be in conflict with any other part contained herein, then, if principles of law do not provide to the contrary, the part most protective of air quality and public health and safety shall prevail to the extent feasible. (Basis: BAAQMD 1-102)
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. (Basis: BAAQMD 2-1-303)
15. Access to Records and Facilities: As to any part 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. (Basis: BAAQMD 1-440, 1-441)



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. (Basis: BAAQMD 2-1-302)
17. Operations: The owner/operator shall insure that the gas turbines, HRSGs, emissions controls, CEMS, and associated equipment are properly maintained and kept in good operating condition at all times. (Basis: BAAQMD 2-1-307)
18. Visible Emissions: The owner/operator shall insure that no air contaminant is discharged from the LECEF into the atmosphere for a period or periods aggregating more than three minutes in any one hour, which is as dark as or darker than Ringelmann 1 or equivalent 20% opacity. (Basis: BAAQMD 6-1-301; SIP 6-301)
19. Emissions Limits: The owner/operator shall operate the facility such that none of the following limits are exceeded:
- a. The emissions of oxides of nitrogen (as NO<sub>2</sub>) from emission points P-1, P-2, P-3, and P-4 (combined exhaust of gas turbine/HRSG power trains S-1 & S-7, S-2 & S-8, S-3 & S-9, and S-4 & S-10, respectively) each shall not exceed 2.0 ppmvd @ 15% O<sub>2</sub> (1-hour rolling average), except during periods of gas turbine startup and shutdown as defined in this permit; and shall not exceed 4.68 lb/hour (1-hour rolling average) except during periods of gas turbine startup as defined in this permit. The NO<sub>x</sub> emission concentration shall be verified by a District-approved continuous emission monitoring system (CEMS) and during any required source test. (basis: BACT)
  - b. Emissions of ammonia from emission points P-1, P-2, P-3, and P-4 (combined exhaust of gas turbine/HRSG power trains S-1 & S-7, S-2 & S-8, S-3 & S-9, and S-4 & S-10, respectively) each shall not exceed 5 ppmvd @ 15% O<sub>2</sub> (3-hour rolling average), except during periods of start-up or shutdown as defined in this permit. The ammonia emission concentration shall be verified by the continuous recording of the ammonia injection rate, the NO<sub>x</sub> inlet emissions into the SCR control system, the NO<sub>x</sub> outlet rate at the stack, and the total heat input of the combustion turbine and duct burner, using a District-approved ammonia slip calculation. (basis: Regulation 2-5)
  - c. Emissions of carbon monoxide (CO) from emission points P-1, P-2, P-3, and P-4 (combined exhaust of gas turbine/HRSG power trains S-1 & S-7, S-2 & S-8, S-3 & S-9, and S-4 & S-10, respectively) each shall not exceed 2.0 ppmvd @ 15 % O<sub>2</sub> (1-hour rolling average), except during periods of start-up or shutdown as defined in this permit; and shall not exceed 2.85 lb/hr (1-hour rolling average) except during periods of start-up 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. Emissions of precursor organic compounds (POC) from emission points P-1, P-2, P-3, and P-4 (combined exhaust of gas turbine/HRSG power trains S-1 & S-7, S-2 & S-8, S-3 & S-9, and S-4 & S-10, respectively) each shall not exceed 1 ppmvd @ 15% O<sub>2</sub> (1-hour average), except during periods of gas turbine start-up or shutdown as defined in this permit; and shall not exceed 0.81 lb/hr (1-hour average) except during periods of start-up as defined in this permit. The POC emission concentration shall be verified during any required source test. (basis: BACT)
20. Turbine Start-up: The project owner shall ensure that the regulated air pollutant mass emission rates from each of the Gas Turbines (S-1, S2, S3, and S4) during a start-up do not exceed the limits established below. (Basis: BACT, Cumulative increase)

	Duration (Minutes)	NO <sub>x</sub> (lb/Event)	CO (lb/event)	POC (lb/event)
Start-Up	120	41	20	2

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21. **Turbine Shutdown:** The project owner shall operate the gas turbines so that the duration of operation in Gas Turbine Shutdown Mode does not exceed 30 minutes per event, or other time period based on good engineering practice that has been approved in advance by the BAAQMD. ~~(Basis: Cumulative increase)~~
22. **Mass Emission Limits:** The project owner shall operate the LECEF so that the mass emissions from the S-1, S-2, S-3 & S-4 Gas Turbines and S-7, S-8, S-9, & S-10 HRSGs do not exceed the daily and annual mass emission limits specified below. The project owner shall implement process computer data logging that includes running emission totals to demonstrate compliance with these limits so that no further calculations are required.

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Mass Emission Limits (Including Gas Turbine Start-ups and Shutdowns)

Pollutant	Each Turbine/HRSG Power Train (lb/day)	All 4 Turbine/HRSG Power Trains (lb/day)	All 4 Turbine/HRSG Power Trains (ton/yr)
NOx (as NO <sub>2</sub> )	175.6	702.4	94.1
POC	20.2	80.8	12.3
CO	97.0	388.0	53.4
SOx (as SO <sub>2</sub> )			6.43
PM <sub>10</sub>			38.5
NH <sub>3</sub>	104	416	56.9

The daily mass limits are based upon calendar day per the definitions section of the permit conditions. Compliance with the daily limits shall be based on one-hour readings through the use of process monitors (e.g., fuel use meters), CEMS, source test results, and the monitoring, recordkeeping, and reporting conditions of this permit. If any part of a CEM or parametric monitor involved in the mass emission calculations is inoperative for more than a clock hour of plant operation, the mass data for the period of inoperation shall be calculated using a District-approved alternate calculation method. The annual mass limits are based upon a rolling 12 calendar month period. Compliance with the annual limits for NOx, POC, and CO shall be demonstrated in the same manner as for the daily limits. **Compliance with the daily and annual emissions limits for POC from each gas turbine/HRSG train shall be calculated by multiplying turbine and HRSG fuel usage times an emission factor determined by source testing of the turbine/HRSG conducted in accordance with Part 26.** Compliance with the annual emissions limits for PM<sub>10</sub> and SO<sub>2</sub> from each gas turbine/HRSG shall be calculated by multiplying turbine fuel usage times an emission factor determined by source testing of the turbine/HRSG conducted in accordance with Part 26. The emission factor for each turbine/HRSG shall be based on the average of the emissions rates observed during the 4 most recent source tests on that turbine/HRSG (or, prior to the completion of 4 source tests on a turbine/HRSG, on the average of the emission rates observed during all source tests on the turbine/HRSG). (Basis: cumulative increase, recordkeeping)

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23. **Sulfuric Acid Mist Limit:** The project owner shall operate the LECEF so that the sulfuric acid mist emissions (SAM) from S-1, S-2, S-3, S-4, S-7, S-8, S-9, and S-10 combined do not exceed 7 tons totaled over any consecutive four quarters. (Basis: Regulation 2-2-306)
24. **Operational Limits:** In order to comply with the mass emission limits of this rule, the project owner shall operate the gas turbines and HRSGs so that they comply with the following operational limits:

a. Heat input limits (Higher Heating Value):

	Each Gas Turbine w/o Duct Burner	Each Gas Turbine w/Duct Burner
Hourly:	500 MM BTU/hr	639 MM BTU/hr
Daily:	12,000 MM BTU/day	15,336 MM BTU/day
Four Turbine/HRSG Power Trains combined:	18,215,000 MM BTU/year	

- b. Only PUC-Quality natural gas (General Order 58-a) shall be used to fire the gas turbines and HRSGs. The total sulfur content of the natural gas shall not exceed 1.0 gr/100 scf. To demonstrate compliance with this sulfur content limit, the owner/operator shall sample and analyze the gas from each supply source at least monthly to determine the sulfur content of the gas, in addition to any monitoring requirements specified in Paragraph 29. **The owner/operator may obtain the data from each source of natural gas monthly. In this case, the data must be real data based on actual sulfur analyses performed by the supplier of natural gas and not assurances that the natural gas meets all specifications.** (Basis: BACT for SO<sub>2</sub> and PM<sub>10</sub>.)
- c. The owner/operator of the gas turbines and HRSGs shall demonstrate compliance with the daily and annual NOx and CO emission limits listed in part 22 by maintaining running mass emission totals based on CEM data. (Basis: Cumulative increase)

25. Monitoring Requirements: The owner/operator shall ensure that each gas turbine/HRSG power train complies with the following monitoring requirements:

- a. The gas turbine/HRSG exhaust stack shall be equipped with permanent fixtures to enable the collection of stack gas samples consistent with EPA test methods.
- b. The ammonia injection system shall be equipped with an operational ammonia flow meter accurate to plus or minus five percent at full scale and shall be calibrated at least once every twelve months **and an injection pressure indicator.**
- c. The gas turbine/HRSG exhaust stacks shall be equipped with continuously recording emissions monitor(s) for NOx, CO and O<sub>2</sub>. Continuous emissions monitors **for CO** shall comply with the requirements of 40 CFR Part 60, Appendices B and F, **Continuous emissions monitors for NOx and O2 shall comply with the requirements of 40 CFR Part 75. All CO, NOx, and O2 monitors** shall be capable of monitoring concentrations and mass emissions during normal operating conditions and during gas turbine 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).

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26. a. RATA: Within **one hundred and twenty (120)** days of the startup of the gas turbines and HRSGs, and at a minimum on an annual basis thereafter, the owner/operator shall perform a relative accuracy test audit (RATA) on the **CO** CEM, in accordance with 40 CFR Part 60, Appendix B, Performance Specifications, **and on the NOx and O2 CEMs in accordance with 40 CFR 75.**

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**b. Source Testing:** A source test shall be performed **on an annual basis.** 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 **sixty** 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 NOx, CO, POC, and stack gas oxygen content shall be conducted in accordance with ARB Test Method 100; measurements of PM<sub>10</sub> 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<sub>x</sub> – ppmvd at 15% O<sub>2</sub> and lb/MM BTU (as NO<sub>2</sub>)
  - b. Ammonia – ppmvd at 15% O<sub>2</sub> (Exhaust)
  - c. CO – ppmvd at 15% O<sub>2</sub> and lb/MM BTU (Exhaust)
  - d. POC – ppmvd at 15% O<sub>2</sub> and lb/MM BTU (Exhaust)
  - e. PM<sub>10</sub> – lb/hr (Exhaust)
  - f. SO<sub>x</sub> – lb/hr **(based on sulfur content of fuel as measured by utility)**
  - g. Natural gas consumption, fuel High Heating Value (HHV), and total fuel sulfur content
  - h. Turbine load in megawatts
  - i. Stack gas flow rate (DSCFM) 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 **120** days of start-up of the LECEF in combined-cycle configuration and on a semi-annual basis thereafter, the project owner shall conduct a District approved source test on exhaust points P-1, P-2, P-3, and P-4 while each Gas Turbine/HRSG power train is operating at maximum load to demonstrate compliance with the SAM emission limit specified in part 23. **The results of the initial source test must be submitted within 165 days of startup. Subsequent source tests must be submitted within 60 days of the date of the source test.** The owner/operator shall test for SO<sub>3</sub> evaluated as H<sub>2</sub>SO<sub>4</sub> and sulfuric acid mist (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 acceptably low as determined by the District. (Basis: Regulation 2-2-306, 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)
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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. The format of the records is subject to District review and approval:
- 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

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- e. hourly records of NOx and CO emission concentrations and hourly ammonia injection rates and ammonia/NOx ratio
  - f. for the continuous emissions monitoring system; ~~relative accuracy test audits, 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 by this permit for a minimum period of five years from the date of entry 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 all of the following items:
- 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, including 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: recordkeeping & reporting)
35. Emission Offsets: The project owner shall provide 23.35 tons of valid NOx emission reduction credits prior to the issuance of the Authority to Construct. The owner/operator shall deliver the ERC certificates to the District Engineering Division at least ten days prior to the issuance of the authority to construct. (Basis: Offsets)
36. District Operating Permit: The owner/operator shall apply for and obtain all required operating permits from the District in accordance with the requirements of the District's rules and regulations. (Basis: Regulations 2-2 & 2-6)
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39. The project owner shall not operate S-5 Fire Pump Diesel Engine more than 50 hours per year for reliability-related activities. (Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3), offsets).
40. The project owner shall operate S-5 Fire Pump Diesel Engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating hours while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited. (Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection 9e)(2)(A)(3) or (e)(2)(B)(3)).
41. The project owner shall operate S-5 Fire Pump Diesel Engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained. (Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(G)(1), cumulative increase).

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- 42. Records: The project owner shall maintain the following monthly records in a District-approved log for at least 60 months from the date of entry. Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.
  - a. Hours of operation for reliability-related activities (maintenance and testing).
  - b. Hours of operation for emission testing to show compliance with emission limits.
  - c. Hours of operation (emergency).
  - d. For each emergency, the nature of the emergency condition.
  - e. Fuel usage for each engine(s). (Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I), cumulative increase)

- \*43. The project owner shall operate the facility such that maximum calculated annual toxic air contaminant emissions (pursuant to part 45) from the gas turbines and HRSGs combined (S-1, S-2, S-3, S-4, S-7, S-8, S-9, and S-10) do not exceed the following limits:
  - 6490 pounds of formaldehyde per year
  - 3000 pounds of acetaldehyde per year
  - 3.2 pounds of Specified polycyclic aromatic hydrocarbons (PAHs) per year
  - 65.3 pounds of acrolein per year

unless the following requirement is satisfied:

The project owner 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 project owner may request that the District and CEC CPM revise the carcinogenic compound emission limits specified above. If the project owner 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. (Basis: Regulation 2-5)

- 44. To demonstrate compliance with Part 43, **after each source test performed pursuant to Part 43**, the project owner shall calculate and record ~~the maximum projected annual emissions for the compounds specified in part 43 using the maximum heat input of 18,215,000 MM BTU/year and the highest emission factor (pound of pollutant per MM BTU) determined by any source test of the S-1, S-2, S-3 & S-4 Gas Turbines and S-7, S-8, S-9, and S-10 HRSGs.~~ If this calculation method results in an unrealistic mass emission rate the applicant may use an alternate calculation, subject to District approval. (Basis: Regulation 2-5)
- 45. Within ~~120 days of start-up of the Los Esteros Critical Energy Facility and on a biennial (once every two years) thereafter,~~ the project owner 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 Part 44. **The results of the initial source test must be submitted within 165 days of startup. Subsequent source tests must be submitted within 60 days of the date of the source test.** If three consecutive biennial source tests demonstrate that the annual emission rates for any of the compounds listed above calculated pursuant to part 45 are less than the BAAQMD Toxic Risk Management Policy trigger levels shown below, then the owner/operator may discontinue future testing for that pollutant.

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

(Basis: BAAQMD 2-1-316, Regulation 2-5)

- 46. The project owner shall properly install and maintain the cooling towers to minimize drift losses. The owner/operator shall equip the cooling towers with high-efficiency mist eliminators with a maximum guaranteed drift rate of 0.0005%. The maximum total dissolved solids (TDS) measured at the base of the cooling towers or at the point of return to the wastewater facility shall not be higher than 6,000

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ppmw (mg/l). The project owner shall sample and test the cooling tower water at least once per day to verify compliance with this TDS limit. (Basis: cumulative increase; Regulation 2-1-319)

47. The owner/operator shall perform a visual inspection of the cooling tower drift eliminators at least once per calendar year, and repair or replace any drift eliminator components which are broken or missing. Prior to the initial operation of the combined-cycle Los Esteros Critical Energy Facility, the owner/operator shall have the cooling tower vendor's field representative inspect the cooling tower drift eliminators and certify that the installation was performed in accordance with the manufacturer's design and specifications. Within 60 days of the initial operation of the cooling tower, the owner/operator shall perform an initial performance source test to determine the PM<sub>10</sub> emission rate from the cooling tower to verify compliance with the vendor-guaranteed drift rate specified in part 46. The CPM may, in years 5 and 15 of cooling tower operation, require the owner/operator to perform source tests to verify continued compliance with the vendor-guaranteed drift rate specified in part 46. (Basis: cumulative increase; Regulation 2-1-319)
  
48. **S14 is a GE LM6000 turbine that is equivalent to the existing gas turbines and is brought in as a substitute when one of the existing turbines is being maintained. The owner/operator may substitute S14, Combustion Gas Turbine #5 into any of the four power trains at any time (S1/S7, S2/S8, S3/S9, and S4/S10). The owner/operator shall ensure that the power train operating with S14 complies with all permit conditions for that power train. The owner/operator shall operate no more than four turbines at any time. (Basis: Cumulative Increase)**

## RECOMMENDATION

It is recommended that a change in conditions for the following equipment be granted for the following sources:

- S-1 Combustion Turbine Generator #1, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMbtu/hr maximum rated capacity (HHV); abated by A-9 Oxidation Catalyst and A-10 Selective Catalytic Reduction System.
- S-2 Combustion Turbine Generator #2, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMbtu/hr maximum rated capacity (HHV); abated by A-11 Oxidation Catalyst and A-12 Selective Catalytic Reduction System.
- S-3 Combustion Turbine Generator #3, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMbtu/hr maximum rated capacity (HHV); abated by A-13 Oxidation Catalyst and A-14 Selective Catalytic Reduction System.
- S-4 Combustion Gas Turbine #4, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMbtu/hr maximum rated capacity (HHV); abated by A-15 Oxidation Catalyst and A-16 Selective Catalytic Reduction System.
- S7 Heat Recovery Steam Generator #1, equipped with low-NOx Duct Burners, 139 MMbtu/hr maximum rated capacity (HHV); abated by A-9 Oxidation Catalyst and A-10 Selective Catalytic Reduction System.
- S8 Heat Recovery Steam Generator #2, equipped with low-NOx Duct Burners, 139 MMbtu/hr maximum rated capacity (HHV); abated by A-11 Oxidation Catalyst and A-12 Selective Catalytic Reduction System.
- S9 Heat Recovery Steam Generator #3, equipped with low-NOx Duct Burners, 139 MMbtu/hr maximum rated capacity (HHV); abated by A-13 Oxidation Catalyst and A-14 Selective Catalytic Reduction System.
- S10 Heat Recovery Steam Generator #4, equipped with low-NOx Duct Burners, 139 MMbtu/hr maximum rated capacity (HHV); abated by A-15 Oxidation Catalyst and A-16 Selective Catalytic Reduction System.

that an Authority to Construct be granted to the following source:



S13, Fire Pump Engine, 282 hp, 2012 or later model year, John Deere Family CJDXL13.5103 or Cummins Family ACEXL0540AAB, which Los Esteros may construct at its option to replace existing S5, Fire Pump Engine.

and that a Permit to Operate be granted to the following source:

S14, Combustion Gas Turbine, General Electric LM 6000 PC Sprint, natural gas fired, 49.4 MW (nominal), 500 MMBtu/hr maximum rated capacity (HHV<sup>1</sup>); abated by Oxidation Catalyst and Selective Catalytic Reduction System.

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By: \_\_\_\_\_ Date: \_\_\_\_\_  
Brenda Cabral  
Air Quality Engineering Supervisor

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<sup>1</sup> High Heating Value

Appendix A

Calpine Letter of October 25, 2012 to BAAQMD

