

California Energy Commission
DOCKETED
09-AFC-3C

TN # 69569

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February 15, 2013

Mr. Craig Hoffman, CPM (09-AFC-3C) California Energy Commission 1516 Ninth Street Sacramento, CA 95814

SUBJECT: Mariposa Energy Project (09-AFC-3C)

Petition to Amend, Proposed Increase to the Combustion Turbine Heat Input

Dear Mr. Hoffman:

Please find attached a petition to amend (PTA) the California Energy Commission (CEC) license for the Mariposa Energy Project (MEP). The PTA would allow Mariposa Energy to increase the maximum allowable hourly and daily turbine fuel consumption rate. Despite an increase in the hourly and daily heat rates, no changes to the hourly, daily, or annual emission limits are being proposed since the project will comply with both the mass and concentration emission limits as they currently exist.

If you have any questions, please do not hesitate to contact me at (213) 473-0092 or Stephanie Moore at (916) 286-0334.

Sincerely,

Bo Buchynsky

Mariposa Energy, LLC Senior Vice President

Do Budynsly

Attachment: Petition to Amend, Proposed Increase to the Combustion Turbine Heat Input

cc: Brenda Cabral, BAAQMD

James Spicer, DGC Gary Normoyle, DGC

Mike Kromer, DGC Operations Gregg Wheatland, ES & H Doug Urry, CH2M HILL Keith McGregor, CH2M HILL Stephanie Moore, CH2M HILL Jerry Salamy, CH2M HILL

Petition to Amend, Proposed Increase to the Combustion Turbine Heat Input

Mariposa Energy Project

Livermore, California (09-AFC-3C)

Prepared for

California Energy Commission

February 2013

Submitted by

Mariposa Energy, LLC

With Technical Assistance from

CH2MHILL®

2485 Natomas Park Drive, Suite 600 Sacramento, CA 95833

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Bay Area Air Quality Management District's Draft Amended Final Determination of Compliance

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3-1 Comparison of MEP Expected and Permitted Hourly Emission Rates

Introduction

1.1 Background

On May 18, 2011, the California Energy Commission (CEC) issued a license to Mariposa Energy, LLC (Mariposa Energy) for the construction and operation of the Mariposa Energy Project (MEP). On June 15, 2011, the CEC Compliance Project Manager (CPM) issued a full notice to proceed and the project achieved commercial operation on October 1, 2012.

MEP is a nominal 200-megawatt (MW) simple-cycle generating facility consisting of four General Electric Energy LM6000 PC-SPRINT natural-gas-fired combustion turbine generators and associated equipment. The facility is located in northeastern Alameda County, California, on approximately 10 acres of a 158-acre parcel that consists of non-irrigated grazing land, a former wind-turbine development, and a former cogeneration (cogen) power plant. MEP is approximately 7 miles northwest of Tracy, 7 miles east of Livermore, 6 miles south of Byron, and approximately 2.5 miles west of the community of Mountain House.

1.2 Description of Proposed Amendment

Mariposa Energy is requesting a change to the maximum allowable hourly and daily fuel throughput for the MEP combustion turbines. The maximum allowable hourly throughput would increase the fuel throughput from 481 MMBtu/hr/turbine to 500 MMBtu/hr/turbine and the maximum allowable daily throughput would increase the fuel input from 11,544 MMBtu/day/turbine to 12,000 MMBtu/day/turbine. The allowable annual fuel throughput will remain unchanged. The project is also expected to comply with both the mass and concentration emission limits as they currently exist. Therefore, no changes to the hourly, daily, or annual emission limits are being proposed despite the marginal increase in the hourly and daily heat inputs.

The purpose of this filing is to request the CEC's approval to amend the MEP project description to allow minor modification of the heat input rate to the turbines. More detailed information on these proposed changes is provided in Section 2.

1.3 Necessity of Proposed Changes

Sections 1769 (a)(1)(A), (B), and (C) of the CEC Siting Regulations require a discussion of the necessity for the proposed revisions to the project and whether the revisions are based on information known by the petitioner during the certification proceeding. As discussed in Section 2, the proposed heat input rate increases are being proposed to allow the combustion turbines to operate at their maximum capacity.

1.4 Summary of Environmental Impacts

Section 1769 (a)(1)(E) of the CEC Siting Regulations requires that an analysis be conducted to address impacts the proposed revisions may have on the environment, and proposed measures to mitigate significant adverse impacts. Section 1769 (a)(1)(F) requires a discussion of the impacts of proposed revisions on the facility's ability to comply with applicable laws, ordinances, regulations, and standards (LORS). Section 3 discusses the potential impacts of the proposed changes on the environment, as well as the consistency of the proposed revisions with LORS. The proposed changes in the project will not result in any significant, unmitigated adverse environmental impacts.

EY012009005SAC

1.5 Consistency of Changes with License

Section 1769 (a)(1)(D) of the CEC Siting Regulations requires a discussion of the consistency of each proposed project revision with the assumptions, rationale, findings, or other bases of the CEC's Final Decision, and whether the revision is based on new information that changes or undermines the bases of the Final Decision. Also required is an explanation of why the changes should be permitted. As discussed in Section 3, the proposed revisions do not undermine the assumptions, rationale, findings, or other bases of the Final Decision for the project.

Description of Project Changes

Consistent with Section 1769(a)(1)(A) of the CEC Siting Regulations, this section includes a description of the requested project modifications, as well as the necessity for the changes.

2.1 Proposed Changes

MEP currently has a maximum allowable hourly throughput of 481 MMBtu/hr/turbine and a maximum allowable daily throughput of 11,544 MMBtu/day/turbine. During the initial source testing of the facility, it was determined that the turbines were able to operate at a slightly higher heat input (2 to 3 percent) than the permitted heat input limit of 481 MMBtu/hr (higher heating value). Mariposa Energy has been able to reduce the turbine load to achieve compliance with the permitted heat input limit during operation. However, increasing the hourly and daily allowable fuel throughput would increase the electrical output of MEP by approximately 4 megawatts without physical alteration or modification. The project is also expected to comply with both the mass and concentration emission limits as they currently exist. Therefore, no changes to the hourly, daily, or annual emission limits are being proposed despite the marginal increase in the hourly and daily heat inputs.

Consistent with this discussion, Mariposa Energy seeks to increase the maximum allowable hourly throughput to 500 MMBtu/hr/turbine and the maximum allowable daily throughput to 12,000 MMBtu/day/turbine while maintaining the current annual fuel throughput.

2.2 Necessity of Proposed Changes

Sections 1769 (a)(1)(B) and 1769(a)(1)(C) of the CEC Siting Regulations require a discussion of the necessity for the proposed changes and whether this modification is based on information that was known by the petitioner during the certification proceeding. The maximum allowable heat input limits identified in the MEP Application for Certification were based on a preliminary engineering design for the combustion turbines and the turbine inlet air mechanical chiller systems. However, as constructed, the facility is operating slightly better than envisioned in the preliminary design. Therefore, increasing the hourly and daily allowable fuel throughput will increase the electrical output of MEP with no increase in the allowable air emissions or additional environmental impacts.

EY012009005SAC

Environmental Analysis of the Project Changes

Mariposa Energy has reviewed the modifications proposed herein to determine if the changes will result in any environmental, economic, or societal impacts that were not originally analyzed by the CEC. Based on this review, it has been concluded that the only disciplines that could be affected by the changes described in this amendment are air quality and public health.

3.1 Air Quality

A comparison of the expected hourly air emissions based on a heat input of 500 MMBtu/hr and the maximum measured emission rates (in lb/MMBtu) from the September 2012 source test are presented in Table 3-1. This comparison shows that MEP can operate at the slightly higher heat input of 500 MMBtu/hr without exceeding the existing hourly permit emission limits. Since the daily emission limitations were based on the maximum hourly emission rates (plus 12 start up and shutdowns per turbine), the project is also expected to comply with the daily emission limitations. As stated in Section 2, no change in the annual emissions is being requested.

The Bay Area Air Quality Management District (District) also concluded the following:

"The source tests show that emissions of every pollutant are below 80% of the permitted levels. The District is confident that the 4% increase in capacity will not increase hourly, daily, and annual emissions over the original permit levels set in 2010 because there is a sufficient margin for a small hourly increase at maximum capacity." —Draft Amended Final Determination of Compliance (FDOC; provided as an appendix to this Petition)

Because the project is not expected to increase the hourly, daily, or annual emissions, the air quality impacts are expected to be equivalent or less than those analyzed during the licensing proceeding. As such, the basis for the Commission's finding of no significant air quality impacts are still applicable.

TABLE 3-1
Comparison of MEP Expected and Permitted Hourly Emission Rates

Pollutants	Maximum Source Test Emission Factors* (lb/MMBtu)	Proposed Emissions per Turbine (lb/hr)	Permitted Emissions per Turbine (lb/hr)
NOx	0.00785	3.925	4.4
со	0.00077	0.385	2.14
VOC	0.00102	0.51	0.612
SO ₂	0.0004	0.2	1.347
PM _{10/2.5}	0.00165	0.825	NA

^{*}MEP Compliance Test Report, Avogadro Group, September 2012, Tables 1-2, 1-3, and 1-4.

3.1.1 Laws, Ordinances, Regulations, and Standards

Although MEP currently complies with applicable LORS, increasing the maximum allowable daily and hourly heat throughput will require an amendment to the MEP Permit to Operate issued by the District. In accordance with this requirement, Mariposa Energy submitted a permit modification request to the District. The District has issued the draft FDOC (provided here as an appendix), which includes draft modifications to Conditions of Certification AQ-12 and AQ-13 that reflect the changes proposed herein. These changes would not alter the ability of MEP to comply with all other applicable LORS.

EY012009005SAC

3.1.2 Cumulative Impacts

The proposed changes to MEP will not result in an increase in air emissions. Therefore, no cumulative air quality impacts are expected.

3.2 Public Health

The public health assessment in the CEC's Final Decision addressed three categories of health risks: acute, chronic, and cancer risk. Acute health risks are those associated with short-term (one-hour) exposure to toxic air contaminants (TAC), whereas chronic and cancer health risks are associated with long-term exposure. The predicted operational public health risks submitted as part of the licensing process were analyzed by computing the acute and chronic hazard index (HI) and the incremental increase in cancer risk associated with the maximum hourly and annual heat input levels and approved TAC emission factors. Based on this approach, the predicted acute and chronic health indices presented in the Final Decision were 0.07 and 0.00088, respectively, with a significance threshold of 1.0. Likewise, the incremental increase in cancer risk was 0.77 in a million with a significance threshold of 10 in a million.

Because the acute impacts are based on the maximum hourly heat input levels, the proposed changes to MEP could result in a theoretical increase in hourly and daily TAC emission rates from the combustion turbines. However, as concluded in the District's draft amended FDOC, the actual source test data shows that actual emissions (including TACs) were approximately 80 percent lower than the allowable permit limits. Furthermore, as noted above, the predicted acute HI associated with MEP operations was reported as 0.07, which is 7 percent of the significance threshold of 1.0. Therefore, it is unlikely that a 4 percent increase in MEP's TAC emissions would result in a more than 14 fold increase in the acute HI. Therefore, the increase in the hourly and daily combustion turbine heat inputs is not expected to result in a significant public health impact or alter the basis of the CEC's Final Decision.

3.2.1 Laws, Ordinances, Regulations, and Standards

MEP currently complies with applicable LORS. The proposed revisions will not change the discussion related to LORS as presented in the CEC's Final Decision.

3.2.2 Cumulative Impacts

Although the proposed changes to MEP would potentially result in a very small change to the hourly and daily TAC emissions, no new significant cumulative impacts are expected from the proposed changes relative to those presented in the CEC's Final Decision. Therefore, no cumulative public health impacts are expected.

SECTION 4

Proposed Modifications to the Conditions of Certification

Consistent with the requirements of the CEC Siting Regulations Section 1769 (a)(1)(A), this section addresses the proposed modifications to the project's Conditions of Certification.

Mariposa Energy proposes to increase the maximum allowable daily and hourly heat input rates specified in Conditions of Certification AQ-12 and AQ-13. The proposed revisions to Conditions of Certification AQ-12 and AQ-13 are presented below in an underline/strike-out format.

AQ-12: The project owner shall not operate the units such that the heat input rate to each Gas Turbine (S-1, S-2, S-3, and S-4) exceeds 481-500 MMBtu (HHV) per hour. (Basis 2-2-409)

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

AQ-13: The project owner shall not operate the units such that the heat input rate to each Gas Turbine (S-1, S-2, S-3, and S-4) exceeds $\frac{11,544}{12,000}$ MMBtu (HHV) per day. (Basis 2-2-409, Cumulative Increase for PM₁₀)

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

SECTION 5

Potential Effects on the Public and Property Owners

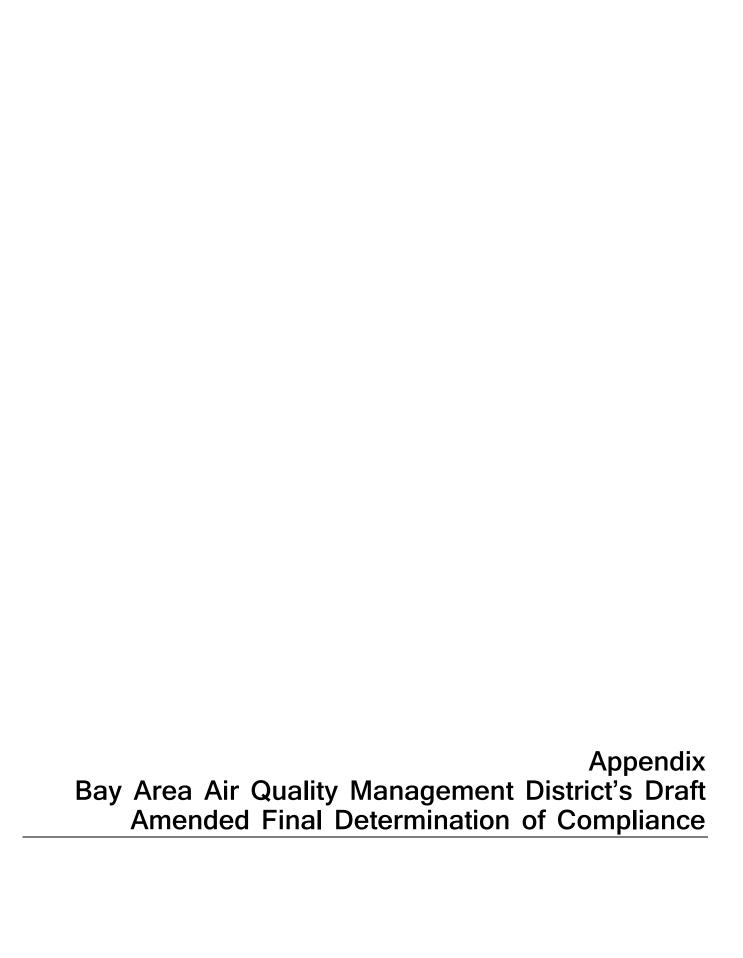
Sections 1769 (a)(1)(G) and 1769(a)(1)(I) of the CEC Siting Regulations require a discussion of how the modification affects the public and the potential effect on nearby property owners. The proposed heat input increases are expected to result in comparable impacts to the public and property owners to those analyzed during project licensing. Therefore, impacts to the public and property owners are expected to be the same as those analyzed during the licensing of the project.

SECTION 6

List of Property Owners

Consistent with the CEC Siting Regulations Section 1769(a)(1)(H), this section lists the property owners affected by the proposed modifications. The list of property owners within 1,000 feet of the proposed project is provided in the AFC application submitted in the 2009 AFC.

The list of property owners within 1,000 feet of the proposed project is being submitted to the CEC under a separate cover.





BAY AREA

Air Quality

MANAGEMENT

DISTRICT

ALAMEDA COUNTY Tom Bates Scott Haggerty Jennifer Hosterman Nate Miley (Secretary)

CONTRA COSTA COUNTY

John Gioia (Chairperson) David Hudson Mary Piepho Mark Ross

MARIN COUNTY Katie Rice

NAPA COUNTY Brad Wagenknecht

SAN FRANCISCO COUNTY

John Avalos Edwin M. Lee Eric Mar

SAN MATEO COUNTY

Carole Groom Carol Klatt

SANTA CLARA COUNTY

Susan Garner Ash Kalra (Vice-Chair) Liz Kniss Ken Yeager

SOLANO COUNTY James Spering

SONOMA COUNTY Susan Gorin Shirlee Zane

Jack P. Broadbent EXECUTIVE OFFICER/APCO

January 9, 2013

Mr. Craig Hoffman Project Manager California Energy Commission 1516 Ninth Street, MS-15 Sacramento, CA 95814-5512

Re:

Mariposa Energy Project BAAQMD Application 20737

Dear Mr. Hoffman:

The District has received a request from the applicant to amend the Final Determination of Compliance (FDOC) for the proposed Mariposa Energy Project.

The Mariposa Energy Project consists of four GE LM 6000 PC-Sprint simple-cycle gas turbines and one diesel-fired fire pump. The facility is located at 4887 Bruns Road in unincorporated Alameda County, between Byron and Livermore.

The applicant has determined that the final capacity of turbines will be 500 MMbtu/hr, not 481 MMbtu/hr as the applicant proposed in their application on June 17, 2009. The applicant has requested an amendment to the FDOC to increase the stated capacity of the turbines. The applicant is proposing an amendment to the hourly and daily throughput limits. The applicant is not proposing amendments to the emission limits or the annual throughput. Since the daily and annual emissions of criteria pollutants will not change, this amendment is acceptable to the District.

The District understands that the applicant will submit a Petition to Amend the Energy Commission Decision to change the stated capacity of the turbines. The District will not issue the District's final permit until the Energy Commission has ruled on the petition. Attached are the proposed changes to BAAQMD Permit Condition #24955.

If you have any questions regarding this matter, please contact Brenda Cabral, Supervising Air Quality Engineer, at (415) 749-4686 (bcabral@baaqmd.gov).

Sincerely,

Jim Karas

Acting Director of Engineering Division

Attachment

Cc: Bo Buchynsky, Diamond Generating Company, 333 S. Grand Ave., Suite 1570, Los Angeles, CA 90071

JK:jmo:bfc

DRAFT EVALUATION REPORT AMENDMENT TO APPLICATION 20737 MARIPOSA ENERGY, LLC PLANT 19730 4887 BRUNS ROAD BYRON, CA 94514

Background

Mariposa Energy, LLC (Mariposa) has requested a change in the description of and a change in conditions for the following equipment:

- S-1 Combustion Turbine Generator (CTG) #1, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481 MMbtu/hr maximum rated capacity (HHV¹); abated by A-1 Oxidation Catalyst and A-2 Selective Catalytic Reduction System (SCR).
- S-2 Combustion Turbine Generator (CTG) #2, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481 MMbtu/hr maximum rated capacity (HHV); abated by A-3 Oxidation Catalyst and A-4 Selective Catalytic Reduction System (SCR).
- S-3 Combustion Turbine Generator (CTG) #3, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481 MMbtu/hr maximum rated capacity (HHV); abated by A-5 Oxidation Catalyst and A-6 Selective Catalytic Reduction System (SCR).
- S-4 Combustion Turbine Generator (CTG) #4, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481 MMbtu/hr maximum rated capacity (HHV); abated by A-7 Oxidation Catalyst and A-8 Selective Catalytic Reduction System (SCR).

The turbines were started up between May 23, 2012 and June 2, 2012. The California Energy Commission and the District originally issued an authority to construct for the turbines with a capacity of 481 MMbtu/hr. After construction, Mariposa determined that the turbines were capable of firing at 500 MMbtu, with a small increase in generation of electricity. Mariposa has applied to change the hourly firing capacity of the turbines without an increase of the hourly, daily or annual emission limits.

Mariposa submitted the initial application, #20737, for an Authority to Construct on June 17, 2009. The District is proposing an amendment to the initial application, subject to CEC approval.

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¹ High Heating Value

EMISSIONS SUMMARY

The turbines' emission limits are fully described in the Final Determination of Compliance (FDOC), issued on November 24, 2010. The FDOC is available at: http://www.baaqmd.gov/Divisions/Engineering/Public-Notices-on-Permits/2010/112410-20737/Mariposa-Energy-Project.aspx. The application has not requested an increase in any emission limit.

Mariposa is proposing to increase only the hourly heat input rate from 481 MMbtu/hr to 500 MMbtu/hr and the daily heat input rate from 11,544 MMbtu/day to 12,000 MMbtu/day. The hourly, daily, and annual limits of criteria pollutants (NOx, CO, POC, PM10, and SO2) will not increase.

The source tests show that emissions of every pollutant are below 80% of the permitted levels. The District is confident that the 4% increase in capacity will not increase hourly, daily, and annual emissions over the original permit levels set in 2010 because there is a sufficient margin for a small hourly increase at maximum capacity. Copies of the source test summaries are attached to this evaluation.

Statement of Compliance

A thorough discussion of application requirements is contained in the Final Determination of Compliance published on November 24, 2010, which is available upon request. Raising the hourly heat input only changes one applicable requirement. The NOx limit in District Regulation 9-9-301.2 will be 0.15 lb/MW-hr or 5 ppmv, dry @ 15% O2, instead of 0.43 lb/MW-hr or 9 ppmv, dry @ 15% O2. Since the turbines are subject to a BACT NOx limit of 2.5 ppmv, dry @ 15% O2, the turbines will comply with the more stringent limit.

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.

CEC Requirements

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

S-1 Combustion Turbine Generator (CTG) #1, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481500 MMbtu/hr maximum rated capacity (HHV); abated by A-1 Oxidation Catalyst and A-2 Selective Catalytic Reduction System (SCR).

- S-2 Combustion Turbine Generator (CTG) #2, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481500 MMbtu/hr maximum rated capacity (HHV); abated by A-3 Oxidation Catalyst and A-4 Selective Catalytic Reduction System (SCR).
- S-3 Combustion Turbine Generator (CTG) #3, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481500 MMbtu/hr maximum rated capacity (HHV); abated by A-5 Oxidation Catalyst and A-6 Selective Catalytic Reduction System (SCR).
- S-4 Combustion Turbine Generator (CTG) #4, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481500 MMbtu/hr maximum rated capacity (HHV); abated by A-7 Oxidation Catalyst and A-8 Selective Catalytic Reduction System (SCR).
- S-5 Diesel Fire Pump: Make: Cummins; Model: CFP7E-F40; Model Year: TBD (2009 or later); Rated bhp: 220

Condition 24955:

- 12. The owner/operator shall not operate the units such that the heat input rate to each Gas Turbine (S-1, S-2, S-3, and S-4) exceeds 481500 MMbtu (HHV) per hour. (Basis: 2-2-409)
- 13. The owner/operator shall not operate the units such that the heat input rate to each Gas Turbine (S-1, S-2, S-3, and S-4) exceeds <u>11,54412,000</u> MMbtu (HHV) per day. (Basis: 2-2-409, Cumulative Increase for PM10)

RECOMMENDATION

It is recommended that a change in the description of and a change in conditions for the following equipment be granted for the following sources, subject to CEC approval:

- S-1 Combustion Turbine Generator (CTG) #1, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481500 MMbtu/hr maximum rated capacity (HHV); abated by A-1 Oxidation Catalyst and A-2 Selective Catalytic Reduction System (SCR).
- S-2 Combustion Turbine Generator (CTG) #2, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481500 MMbtu/hr maximum rated capacity (HHV); abated by A-3 Oxidation Catalyst and A-4 Selective Catalytic Reduction System (SCR).

- S-3 Combustion Turbine Generator (CTG) #3, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481500 MMbtu/hr maximum rated capacity (HHV); abated by A-5 Oxidation Catalyst and A-6 Selective Catalytic Reduction System (SCR).
- S-4 Combustion Turbine Generator (CTG) #4, GE LM 6000 PC-Sprint, Natural Gas Fired, with high efficiency inlet air filtration, 50 MW (nominal), 481500 MMbtu/hr maximum rated capacity (HHV); abated by A-7 Oxidation Catalyst and A-8 Selective Catalytic Reduction System (SCR).

By:_	Date:	
	Brenda Cabral	
	Air Quality Engineering Supervisor	