

CALIFORNIA ENERGY COMMISSION

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DATE: May 8, 2013
TO: Interested Parties
FROM: Craig Hoffman, Compliance Project Manager

California Energy Commission

DOCKETED**09-AFC-3C**

TN # 70664

MAY 08 2013

**SUBJECT: MARIPOSA ENERGY PROJECT (09-AFC-3C)
Staff Analysis of Proposed Increase to Hourly and Daily Fuel/Heat
Throughput.**

On February 19, 2013, Mariposa Energy, LLC (Mariposa Energy) filed a petition with the California Energy Commission requesting to modify the Decision for the Mariposa Energy Project (MEP). The petition requests to increase the maximum allowable hourly and daily fuel/heat throughput rates for the MEP combustion turbines from 481 Million Metric British thermal units (MMBtu)/hour/turbine to 500 MMBtu/hour/turbine, and the maximum allowable daily fuel/heat throughput from 11,544 MMBtu/day/turbine to 12,000 MMBtu/day/turbine. The allowable annual fuel throughput would remain unchanged. The proposed change will allow MEP to meet their power purchase agreement requirements without exceeding air quality permit limits as operating conditions change over the life of the facility.

Mariposa Energy is not requesting any changes to the hourly, daily, or annual emission limits, despite the increase in the hourly and daily heat inputs.

MEP is a 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 project was certified by the Energy Commission on May 18, 2011, and began commercial operation on August 1, 2012. The project is located in northeastern Alameda County, California.

California Energy Commission staff (staff) reviewed the petition and assessed the impacts of this proposal on environmental quality and on public health and safety. Staff proposes modifications to Air Quality conditions of certification **AQ-12** and **AQ-13**. It is staff's opinion that, with the implementation of the revised conditions, the project would remain in compliance with applicable laws, ordinances, regulations, and standards (LORS), and the proposed changes to conditions of certification would not result in any significant adverse direct, indirect, or cumulative impacts to the environment (Title 20, California Code of Regulations, section 1769).

This notice has been mailed to Mariposa mail list 7358 and sent electronically to the Mariposa list serve. The petition and staff's analysis have been posted on the California Energy Commission's MEP webpage at

<http://www.energy.ca.gov/sitingcases/mariposa/compliance/html>. Staff intends to

recommend approval of the petition at the **June 12, 2013** Business Meeting of the Energy Commission. If the petition is approved, the Commission's order will also be posted on the webpage.

Any person may file written comments on the petition. All comments must be in writing and filed with the Energy Commission's Dockets Unit. Those who wish to provide comments on the petition are asked to file them prior to **June 7, 2013**. All written comments and all materials filed with the Dockets Unit will become part of the public record of the proceeding and may be posted on the Commission's webpage for the Mariposa Energy Project.

Those submitting comments electronically should provide them as either a Microsoft Word document (.doc or .docx) or in Portable Document Format (.pdf) and include your name or your organization's name in the file name. Please e-mail electronic written comments to docket@energy.ca.gov and include the docket number 09-AFC-3C in the subject line of your e-mail. Those submitting non-electronic written comments should include the docket number 09-AFC-6C in the first paragraph and mail or hand-deliver the comments to:

California Energy Commission
Dockets Unit, MS-4
Docket No. 09-AFC-3C
1516 Ninth Street
Sacramento, CA 95814-5512

If you have any questions, please contact Craig Hoffman, Compliance Project Manager, at (916) 654-4781, or fax your questions to (916) 654-3882, or e-mail them to craig.hoffman@energy.ca.gov.

If you desire information on participating in the Energy Commission's review of the project, please contact the Energy Commission's Public Adviser at (916) 654-4489, or at (800) 822-6228 (toll free in California). The Public Adviser's Office can also be contacted via e-mail at publicadviser@energy.ca.gov. News media inquiries should be directed to the Energy Commission Media Office at (916) 654-4989, or by e-mail at mediaoffice@energy.ca.gov.

Enclosure

Mail List – Mariposa Energy Project 7358

List Serve - Mariposa

MARIPOSA ENERGY PROJECT (09-AFC-3C)

Petition for the Proposed Increase to Hourly and Daily Fuel/Heat Throughput Rates

EXECUTIVE SUMMARY
Prepared by: Craig Hoffman
May, 2013

INTRODUCTION

On February 19, 2013, Mariposa Energy, LLC (Mariposa Energy), filed a petition with the California Energy Commission requesting to modify the Mariposa Energy Project (MEP). The modification(s) proposed in the petition would change the maximum allowable hourly and daily fuel/heat throughput rate for the MEP's combustion turbines. The maximum allowable hourly fuel/heat throughput rate would increase from 481 Million Metric British thermal units (MMBtu)/hour/turbine to 500 MMBtu/hour/turbine, and the maximum allowable daily fuel/heat throughput from 11,544 MMBtu/day/turbine to 12,000 MMBtu/day/turbine. The allowable annual fuel throughput would remain unchanged. The proposed change will allow MEP to meet their power purchase agreement requirements without exceeding air quality permit limits as operating conditions change over the life of the facility.

The project applicant is not requesting any changes to the hourly, daily, or annual emission limits, despite the increase in the hourly and daily heat inputs.

The purpose of the Energy Commission's review process is to assess any impacts the proposed modifications would have on environmental quality and on public health and safety. The process includes an evaluation of the consistency of the proposed changes with the Energy Commission's Decision and an assessment of whether the project, as modified, would remain in compliance with applicable laws, ordinances, regulations, and standards (Title 20, Calif. Code of Regulations (20 CCR), section 1769).

Energy Commission staff (staff) has completed its review of all materials received. The staff analysis below is staff's assessment of Mariposa Energy's proposal to increase the maximum allowable hourly and daily fuel/heat throughput rates for the MEP combustion turbines.

PROJECT LOCATION AND DESCRIPTION

MEP is a 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 project was certified by the Energy Commission on May 18, 2011, and began commercial operation on August 1, 2012. The project is located in northeastern Alameda County, California.

DESCRIPTION OF PROPOSED MODIFICATIONS

MEP currently has a maximum allowable hourly fuel/heat throughput of 481 MMBtu/hr/turbine and a maximum allowable daily fuel/heat 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 fuel/heat throughput limit during operation. Increasing the hourly and daily allowable fuel/heat throughput would increase the electrical output of MEP by approximately 4 MW without physical alteration or modification.

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

The proposed modification would not result in increased emissions and only change conditions of certification AQ-12 and AQ-13 in regard to heat rate.

NECESSITY FOR THE PROPOSED MODIFICATIONS

The maximum allowable fuel/heat throughput 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. As constructed, the facility is operating slightly better than envisioned in the preliminary design. During the initial source testing of the facility, it was determined that the turbines were able to operate at a slightly higher heat input than what was permitted. Mariposa Energy has been able to reduce the turbine load to achieve compliance with the permitted fuel/heat throughput limit during operation. Therefore, increasing the hourly and daily allowable fuel/heat throughput would increase the electrical output of MEP by approximately 4 MW with no increase in the allowable air emissions or additional environmental impacts.

STAFF'S ASSESSMENT OF THE PROPOSED PROJECT CHANGES

The technical area sections contained in this staff analysis include staff-recommended changes to the existing conditions of certification. The proposed changes do not result in increases to air quality emissions and environmental impacts will remain at less than significant levels. Staff's conclusions in each technical area are summarized in **Executive Summary Table 1**, below.

Energy Commission technical staff reviewed the petition for potential environmental effects and consistency with applicable LORS. Staff has determined that the technical or environmental areas of biological resources, cultural resources, geological hazards and resources, facility design, noise and vibration, paleontological resources, public health, socioeconomics, traffic and transportation, transmission line safety and

nuisance, visual resources, waste management, and worker safety and fire protection are not affected by the proposed changes, and no revisions or new conditions of certification are needed to ensure the project remains in compliance with all applicable LORS for these areas.

Staff determined, however, that the technical area of air quality would be affected by the proposed project changes and has proposed modifications to Conditions of Certification **AQ-12** and **AQ-13** in order to assure compliance with LORS and to ensure that air emission remain at a less than significant level. The proposed Conditions of Certification **AQ-12** and **AQ-13** are provided in the Air Quality staff analysis section below.

**Executive Summary Table 1
Summary of Impacts for Each Technical Area**

TECHNICAL AREAS REVIEWED	STAFF RESPONSE			New or Revised Conditions of Certification Recommended
	Technical Area Not Affected	No Significant Environmental Impact*	Process As Amendment	
Air Quality			X	X
Biological Resources	X			
Cultural Resources	X			
Geological Hazards & Resources	X			
Hazardous Materials Management	X			
Facility Design	X			
Land Use	X			
Noise and Vibration	X			
Paleontological Resources	X			
Public Health	X			
Socioeconomics	X			
Soil and Water Resources	X			
Traffic and Transportation	X			
Transmission Line Safety & Nuisance	X			
Transmission System Engineering	X			
Visual Resources	X			
Waste Management	X			
Worker Safety and Fire Protection	X			

*There is no possibility that the proposed modifications would have a significant effect on the environment, and the modification would not result in a change or deletion of a condition adopted by the Commission in the final decision or make changes that would cause the project not to comply with any applicable laws, ordinances, regulations, or standards (LORS) (20 Cal. Code Regs., § 1769(a)(2)).

STAFF RECOMMENDATIONS AND CONCLUSIONS

Staff concludes that the following required findings mandated by 20 CCR, §1769(a)(3) can be made and recommends approval of the petition by the Energy Commission:

- A. The modification would not change the findings in the Energy Commission's Final Decision pursuant to Title 20, section 1755;
- B. There would be no new or additional unmitigated, significant environmental impacts associated with the proposed changes;
- C. The facility would remain in compliance with all applicable Laws, Ordinances, Regulations, and Standards;
- D. The modification(s) proposed in the petition would not result in emission increases or violate any existing air quality standards;
- E. There has been a substantial change in circumstances since the Energy Commission certification, thus justifying the changes.

MARIPOSA ENERGY PROJECT (09-AFC-3C)
Request to Amend Final Commission Decision
Air Quality Analysis prepared by: Jacquelyn Leyva Record

INTRODUCTION

The Mariposa Energy Project (MEP) is a nominally-rated, 200-megawatt (MW) facility 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 farm, and a former cogeneration power plant. MEP is located 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.

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

MEP is requesting approval to slightly increase each combustion turbine's maximum hourly fuel throughput from 481 Million Metric British thermal units (MMBtu)/hour to 500 MMBtu/hour. Correspondingly, MEP is requesting approval to increase each turbine's daily maximum fuel throughput from 11,544 MMBtu/day to 12,000 MMBtu/day. These changes would enable each turbine to increase its power output by approximately 1 MW.

Staff notes the BAAQMD has stated that because Mariposa Energy is not proposing amendments to the emission limits or the annual throughput, and the daily and annual emission of criteria pollutants would not change, this amendment is acceptable to BAAQMD. BAAQMD will issue Permit to Operate (PTO) conditions which reflect the changes proposed in this amendment as requested by the project owners; however, the BAAQMD would not issue the final Permit to Operate until the Energy Commission has ruled on the petition to amend.

LAWS, ORDINANCES, REGULATION, AND STANDARDS (LORS) COMPLIANCE

Increasing the hourly fuel throughput as requested by the facility owner would change two applicable air quality permit conditions of certification. At the time of permitting, the District Regulation 9-9-301.2 NO_x limit was 0.43 lb/MW-hr or 9 ppmv, dry @ 15 percent O₂. However, as determined in the FDOC, a Best Available Control Technology (BACT) limit for NO_x was set at 2.5 ppmv, dry @ 15 percent O₂. The NO_x limit in District Regulation 9-9-301.2 is currently 0.15 lb/MW-hr or 5 ppmv, dry @ 15 percent O₂. Since the BACT limit is 2.5 ppmv dry @ 15 percent O₂, if the proposed change is approved, the turbines would continue to comply with the most current version of District Regulation 9-9-301.2.

**Air Quality Table 1
Laws, Ordinances, Regulations, and Standards,
Changed Since Time of Permitting**

<i>Applicable Law</i>	<i>Description</i>
Local	Bay Area Air Quality Management District (BAAQMD)
BAAQMD Regulation 9, Rule 9.301.2	Stationary Gas Turbines--Specifies emission limits of 5 ppmvd NOx or 0.15 pounds NOx per megawatt-hour (lbs NOx/MWh), applicable to the combustion turbines.

SETTING

Federal and state ambient air quality attainment status designations have not changed significantly since the 2011 Energy Commission Decision. **Air Quality Table 2** summarizes current area ambient air quality attainment status designations for the BAAQMD.

**Air Quality Table 2
Attainment Status Designations for Bay Area Air Quality Management District**

Pollutant	Attainment Status	
	State	Federal
Ozone (1-hr)	Nonattainment	No Standard ^a
Ozone (8-hr)	Nonattainment	Nonattainment (Marginal)
PM10 (24-hr)	Nonattainment	Unclassified
PM10 (Annual)	Nonattainment	NA
PM2.5 (24-hr)	NA	Nonattainment
PM2.5 (Annual)	Nonattainment	Attainment
CO	Attainment	Attainment
NO ₂	Attainment	Attainment ^b
SO ₂	Attainment	Attainment ^c
Sulfates	Attainment	N/A
Lead	Attainment	Attainment

Source: http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm. Accessed April 19, 2013.

Notes:

a. The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.

b. 1-hr design value is 54 ppb for the BAAQMD.

c. U.S. EPA established a new SO₂ standard effective June 2, 2010.

NA = no designation at this time

ANALYSIS

Mariposa Energy is requesting a change to the maximum allowable hourly and daily fuel throughput for the MEP combustion turbines. The maximum allowable hourly fuel throughput would increase from 481 MMBtu/hr/turbine (high heat value—HHV) to 500 MMBtu/hr/turbine HHV, and the maximum allowable daily fuel throughput would increase from 11,544 MMBtu/day/turbine HHV to 12,000 MMBtu/day/turbine HHV. The allowable annual fuel throughput would remain unchanged. The project is also expected to continue to comply with both 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 fuel throughput rates.

ANALYSIS OF SPECIFIC AMENDMENT REQUESTS

Maximum Allowable Throughput Modifications (Hourly and Daily)

Mariposa Energy requests a revision of the maximum allowable hourly fuel throughput from 481 MMBtu/hr/turbine to 500 MMBtu/hr/turbine and the maximum allowable daily fuel throughput would increase from 11,544 MMBtu/day/turbine to 12,000 MMBtu/day/turbine, based on a 24-hr day. Emissions source tests show that this increase would not result in MEP's turbines exceeding permitted hourly and daily limits.

**Air Quality Table 3
Comparison of MEP Expected and Permitted Hourly Emission Rates**

Pollutant	Maximum Source Test Emission Factor * (lb/MMBtu)	Proposed Emissions per Turbine @ 500 MMBtu HHV (lb/hr)	Permitted Emissions per Turbine per AQ-17 (lb/hr)	Proposed Value less than Permitted Value?
NOx	0.00785	3.925	4.4	Yes
CO	0.00077	0.385	2.14	Yes
VOC	0.00102	0.51	0.612	Yes
SO ₂	0.0004	0.2	1.347	Yes
PM10/2.5	0.00165	0.825	NA	NA

Note: Values for the maximum source test emission factors were taken from the September 28, 2012 Compliance Test Report (page 5 of 64), *Table 1-3 Summary of Average Emission Test Results Gaseous Emissions, Maximum Load MEP July-August 2012*.

* PM10 and PM2.5 only have annual emission limits. Mariposa Energy has not requested changes to the annual heat input limits at this time.

Based upon independent, third-party emissions source tests conducted during July and August, 2012, MEP can operate at the slightly higher heat throughput of 500 MMBtu/hr without exceeding the existing hourly permit emission limits. This source test result was confirmed by another independent, third party, who conducted additional emissions source tests in April, 2013. The proposed pounds-per-hour emissions rates should not increase to more than 89 percent of permitted values, well within the permitted limits for all pollutants. The daily emission limitations were based on the maximum hourly emission rates (plus 12 start-ups and shutdowns per turbine per day). The project is also expected to comply with the daily emission limitations, which are based on concurrent operation of all four turbines and include emissions generated during gas turbine start-ups and shutdowns during any calendar day.

The source test data indicate that if the proposed heat input is raised from 481 MMBtu/hour to 500 MMBtu/hour (a 3.8 percent increase in fuel throughput), this would not increase hourly, daily, or annual emissions over the original permit levels set in 2012 because the permitted limit has a sufficient margin to accommodate this small hourly increase. Based upon the source testing, the turbines would be able to operate at their maximum-rated power capacity without exceeding any permit limits. This would enable the facility to meet their power purchase agreement requirements without exceeding air quality permit limits.

CONCLUSIONS AND RECOMMENDATIONS

- If the requested fuel/heat throughput increases are approved, the project would continue to comply with all applicable BAAQMD Rules and Regulations.
- The amended project would result in emissions similar to those currently permitted and would be consistent with BACT limits, and the resulting air quality impacts would be less than significant.
- Increasing the allowable fuel/heat throughput would increase the electrical output of MEP by approximately 1 MW per turbine without physical alteration or modification.
- The amended project is expected to continue to comply with both the mass and concentration emission limits as they currently exist.

PROPOSED AMENDED CONDITIONS OF CERTIFICATION

Staff proposes amending Air Quality Conditions of Certification AQ-12 and AQ-13 that were originally contained in the Energy Commission Decision for MEP (Energy Commission 2011). These changes will allow MEP to remain in compliance with all applicable LORS. The BAAQMD will issue a Final Revised Permit to Operate, including permit conditions, following the Energy Commission Decision approving these changes. ~~Strikeout~~ is used to indicate deleted language and underline and **bold** is used for new language.

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~~ **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 11,544 ~~12,000~~ **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**).

REFERENCES

ARB—California Air Resources Board, Ambient Air Quality Standards, Area Designations <http://www.arb.ca.gov/desig/desig.htm> April, 2013.

BAAQMD 2010—Bay Area Air Quality Management District, Final Determination of Compliance, November, 2010.

CEC 2011—California Energy Commission, Final Commission Decision, Mariposa Energy Project (09-AFC-3C), May, 2011.

MEP 2013—Mariposa Energy, LLC, Petition to Amend, Proposed Increase to the Combustion Turbine Heat Input, Mariposa Energy Project (09-AFC-3C), February, 2013.