

CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833
Tel 916.920.0300
Fax 916.920.8463



November 4, 2010

Ms. Brenda Cabral
Supervising Air Quality Engineer
Bay Area Air Quality Management District
939 Ellis Street
San Francisco CA 94109

DOCKET	
09-AFC-3	
DATE	NOV 04 2010
RECD.	NOV 08 2010

Subject: Mariposa Energy LLC's Response to Public Comments Received on the Mariposa Energy Project Preliminary Determination of Compliance – Application 20737

Dear Ms. Cabral:

On behalf of Mariposa Energy LLC (Mariposa Energy), CH2MHILL respectfully submits the following responses for consideration with regards to public comments submitted by Mr. Rob Simpson on the District's Mariposa Energy Project (MEP) Preliminary Determination of Compliance (PDOC). Mariposa Energy believes that many of the comments received on the MEP PDOC have already been addressed in their October 19, 2010, letter to the District. Therefore, Mariposa Energy is only providing responses to the specific comments listed below. The original comments have been excerpted from the comment letter to organize our responses.

Gas Turbine Selection Process – Page 3

The conclusion to allow the applicant to choose to eliminate other variants of the LM-6000 turbine due to some classified information in their contract with PG&E is not only erroneous and contrary to law it precludes comparison of other LM-6000 variations and the significant advantages in both cost effectiveness and environmental performance and negatively affects the PDOC's BACT determinations.

Response:

The commenter has not provided any project-specific cost effectiveness or environmental performance analyses that demonstrate another LM6000 turbine model would be a superior choice compared to the LM6000-PC turbine, specifically with regards to achieving lower emissions. Furthermore, the text the commenter copied from General Electric's (GE) website¹ notes that the LM6000-PF combustion turbine "avoids 15,000 metric tons of CO₂ emissions..." However, omitted from this text is the qualifier included on GE's website that indicates the comparison is between a LM6000-PF combustion turbine and similar turbine operating at a 35 percent efficiency. In contrast, MEP is expected to have a thermal efficiency of 55 to 56 percent on a lower heating value (LHV) basis.²

¹ http://www.gepower.com/about/press/en/2010_press/041310.htm

² Mariposa Energy Project Application for Certification, Section 2.2.4.3 Thermal Efficiency, page 2-39.

Gas Turbine Selection Process – Page 5

There are numerous advantages to the new DLE LM-6000 model turbines that must be considered in the PDOC's BACT and environmental analysis both in terms of environmental performance and cost effectiveness.

Response:

As of October 2010, GE notes that "Initial testing of the LM6000-PH is taking place at the GE facility in Evendale, Ohio. The package-testing milestone for the LM6000-PG validates the design of the gas turbine and the new power generation package design, which allows a power and emission advantage for the LM6000-PG and the LM6000-PH with DLE, respectively. Testing for both engine and package is expected to be completed during the fourth quarter of 2010."³ However, the engineering review process to select a combustion turbine for MEP occurred during the middle of 2008, in order to provide a response to PG&E's RFO. Therefore, the PH and PG versions of the LM6000 were not considered commercially available by Mariposa Energy at that time. Regarding the LM6000-PF turbine, which is the other GE DLE turbine available, Mariposa Energy addressed the cost effectiveness of using an LM6000-PF turbine to reduce NOx emission in its October 19, 2010 letter and determined the use of the LM6000-PF would exceed the BAAQMD's NOx cost effectiveness threshold.

Mariposa Energy also assessed whether the LM6000-PG would be more efficient to operate. The LM6000-PG has a gross heat rate (measure of efficiency) of 8,720 btu/kW-hr-LHV.⁴ This heat rate is comparable or slightly higher than the LM6000-PC heat rate of 8,566 btu/kW-hr-LHV.⁵ Therefore, the comparable heat rates mean that there is no substantial difference in thermal efficiency between these two turbines, as claimed by the commenter.

The LM6000-PG turbine is also water injected to control NOx emissions and overall water use is expected to be comparable to the LM6000-PC turbine. Therefore, no reduction in water use would be achieved by using the LM6000-PG turbine compared to the LM6000-PC turbine.

Lastly, the commenter cites the selection of the LM6000-PG turbine for the Turlock Irrigation District (TID) Almond Power Plant and suggests that environmental benefits would be achieved if the LM6000-PG turbine were used at MEP. However, the TID Final Determination of Compliance (FDOC) indicates the operational emission limitations for the LM6000-PG turbine are comparable or slightly higher than the LM6000-PC emission limitations for MEP. Below is a summary of the emission limits from the Almond Power Plant FDOC.

TID has proposed to demonstrate compliance with the following emission rates after using water-injection, SCR and oxidation catalyst devices:

³ http://www.gepower.com/about/press/en/2010_press/100710c.htm

⁴ http://www.energy.ca.gov/sitingcases/almond/documents/applicant/afc/Volume_2/ Appendix 5.1A, Table 5.1A-3 (54.2 MWs gross production with a heat input of 523.2 MMBtu/hr- HHV).

⁵ MEP PDOC, Table 1 for LM6000PC at an ambient air temperature of 59 °F.

2.5 ppmvd NO_x @ 15% O₂ on 1-hour rolling average basis
4.0 ppmvd CO @ 15% O₂ on 3-hour rolling average basis
2.0 ppmvd VOC @ 15% O₂ on 3-hour rolling average basis
2.5 lb/hr PM₁₀
10 ppmvd ammonia @ 15% O₂ on a 24-hour rolling average basis⁶

Furthermore, the start up and shutdown emissions for the LM6000-PG (shown below) are also comparable or slightly higher than the proposed start up/shut down emissions for MEP.

During start-up or shutdown period, the emissions shall not exceed any of the following limits: NO_x (as NO₂) - 25.00 lb/hr; CO - 40.00 lb/hr; VOC (as methane) - 2.00 lb/hr; PM₁₀ - 2.50 lb/hr; SOX (as SO₂) - 1.56 lb/hr; or NH₃ - 7.44 lb/hr. [District Rules 2201 and 47031]⁷

Therefore, it is unclear how the new LM-6000 turbine technologies present “numerous advantages” with regards to environmental performance and cost effectiveness when compared to the LM6000-PC.

Best Available Control Technology for Oxides of Nitrogen (NO_x) for Turbines – Page 6

The applicants contract with PG&E includes a tolling agreement where ratepayers are responsible for paying for the natural gas used by the project so the applicant has no incentive to preserve fuel costs which in turn lower emissions and greenhouse gases.

Response:

PG&E’s RFO specified evaluation criteria for selecting power projects. These evaluation criteria include a technical reliability criterion that evaluated plant performance parameters such as heat rate and capacity estimates, availability guarantees, unplanned outage factor guarantee, fixed and variable O&M costs, start-up times and costs.⁸ Once a project is selected, PG&E and the project proponents apply to the California Public Utilities Commission (CPUC) for approval of the power purchase agreement (PPA). The CPUC is responsible for ensuring that consumers have safe, reliable utility service at reasonable rates.⁹ In light of these considerations, the CPUC approved the MEP’s PPA on October 15, 2009 after determining that MEP was a cost effective solution to satisfy PG&E’s long-term procurement plans.

Mariposa Energy’s PPA with PG&E includes performance incentives for reducing the actual turbine heat rate below the contractually guaranteed heat rate. Therefore, the conclusion that Mariposa Energy has no motivation to increase plant efficiency is incorrect.

⁶ [http://www.valleyair.org/notices/public_notices_idx.htm#Permitting and Emission Reduction Credit Certificate Notices – 2/16/2010](http://www.valleyair.org/notices/public_notices_idx.htm#Permitting%20and%20Emission%20Reduction%20Credit%20Certificate%20Notices%20-%202/16/2010), pages 3 and 5.

⁷ [http://www.valleyair.org/notices/public_notices_idx.htm#Permitting and Emission Reduction Credit Certificate Notices – 2/16/2010](http://www.valleyair.org/notices/public_notices_idx.htm#Permitting%20and%20Emission%20Reduction%20Credit%20Certificate%20Notices%20-%202/16/2010), page 16.

⁸ <http://www.pge.com/b2b/energysupply/wholesaleelectricssuppliersolicitation/allsourceinfo/> pages 14 and 15.

⁹ <http://www.cpuc.ca.gov/NR/rdonlyres/77E9A246-8F2F-46D7-8C4A-BE8B06A6A57A/0/CPUCRegulatoryResponsibilities0410.pdf>

Federal NO2 Standard - Page 8

The PDOC does not contain a demonstration of compliance with the new Federal NO2 standard. Maximum NO2 hourly emissions for the project are 21.276 pounds per hour.

The applicant has provided an analysis which purportedly demonstrates compliance with the new NO2 standard when the maximum hourly NO2 emissions are 18.5 lbs per hour for each turbine.¹⁰ The higher NO2 hourly emissions from commissioning tuning and maximum hourly emissions of 21.276 pounds per hour have not been analyzed.

Modeled commissioning emissions will violate the federal NO2 standard as depicted in table 5.1-25 for the applicants AFC.

Response:

The results presented in AFC Table 5.1-25 assume that three combustion turbines will be commissioned simultaneously. The results in Table 5.1-25 also represent the maximum predicted 1-hour NO₂ concentration combined with the maximum background concentration recorded between 2006 and 2008. It is worth noting that the new federal 1-hour NO₂ standard is based on the 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour NO₂ concentrations. Therefore, a comparison of the maximum predicted 1-hour NO₂ concentration (plus the maximum 3-year background concentration) to the new federal 1-hour NO₂ standard would represent a conservative approach. Furthermore, Mariposa Energy does not expect to commission more than one turbine at a time. Therefore, the maximum predicted 1-hour NO₂ commissioning impacts for a single turbine are expected to be in compliance with the federal 1-hour NO₂ standard.

PM-2.5 Issues- Page 10

The FDOC needs to address the applicability of the new rules and compliance of the project with the new rules. The EPA rule can be found at: <http://edocket.access.gpo.gov/2010/pdf/2010-25132.pdf>.

Response:

The EPA's promulgation of the final rule for the "Prevention of Significant Deterioration (PSD) for Particulate Matter Less Than 2.5 Micrometers" does not alter the District's conclusion that MEP is not subject to PSD review. Therefore, the recently promulgated final PSD PM_{2.5} rule is not applicable to MEP.

5.5 Best Available Control Technology for Particulate Matter (PM) for Turbines - Page 11

The project should also be required to utilize inlet air filters to remove particulate matter from the combustion air stream, reducing the amount of particulate matter emitted into the atmosphere. A lube oil coalescer should also be required which would result in the merging together of oil mist to form larger droplets. The larger droplets will return to the oil stream instead of being emitted.

¹⁰<http://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2010/20737/Application%20Correspondence%20and%20Supporting%20Documents/049-email%207-8-2010%20CH2M%20to%20Cabral.ashx>

Response:

The MEP design already incorporates both inlet air filtration and a lubricating oil system coalescing filter consistent with the manufacturer's requirements.

The use of an LM-6000 turbine equipped with a DLE system will also reduce PM-10 emissions. An LM-6000 turbine equipped with a DLE system for NOx control will eliminate the particulate matter from the impurities in the water used for NOx control that can contribute to particulate matter emissions.

Response:

The commenter's statement that the use of a turbine with DLE technology would reduce PM formation is not supported by any analysis. However, CH2MHILL sought to determine if other LM6000 turbines using DLE combustors have been permitted with lower PM₁₀ emission rates. While this review identified two projects, the Black Hills Pueblo Airport Generating Station¹¹ in Colorado and the Southern Montana Electric Highwood Generating Station in Montana¹², both projects include PM₁₀ emission limits of 4.8 and 4.3 pounds per hour of PM₁₀, respectively, which are higher than the proposed MEP PM₁₀ emission limit. Therefore, it does not appear that the use of DLE technology alone would significantly reduce PM₁₀ emissions compared to the water-injected combustion technology.

5.7 Best Available Control Technology For Startup and Shutdown Conditions for Turbines - Page 12

The LM6000 standard 10 minutes start time can be improved to just 5 minutes. "By properly maintaining the package purge requirements, and by keeping the lube oil 'warm', approximately 2 minutes can be removed from the 10-min start sequence. Then the gas turbine acceleration rate to full load can be increased from 12MW/min to 50MW/min, reducing the time from sync idle to full load from 4 minutes down to approximately 1 minute.

Response:

GE has only recently offered the 5 minute start feature for the LM6000 on a commercial basis and there are no turbines in service using this technology. GE has advised Mariposa Energy that this fast start feature is limited to no more than 4 times per year due to maintenance concerns. Also, it is unknown what the effects on long term maintenance will be given the starting ramp rate increase of more than a factor of 4. Given that MEP's 10 minute turbine start up emissions for NOx, CO, and POC are 3.5, 3.0, and 0.058 pounds per hour respectively, incorporation of this relatively new start technology for 4 turbine starts per year would not reduce air emissions sufficiently to warrant incorporation of this technology.

Innovation in Turbine Inlet Conditioning - Page 12

The use of inlet chilling on aeroderivative gas turbines provides a substantial improvement to a turbine's power output and efficiency. An innovative solution has been developed by a partnership to equip GE's aeroderivative gas turbines with a more efficient and factory packaged

¹¹ Black Hill Electric Generation, LLC Pueblo Airport Generating Station - Facility AIRS ID: 101/1160

¹² Southern Montana Electric Generation and Transmission Cooperative, Inc., Highwood Generating Station Natural Gas Plant - http://deq.mt.gov/AirQuality/ARMPermits/AWM_final_permit.mcp

Ms. Brenda Cabral
Page 6
November 4, 2010

inlet chilling alternative. The new system provides more hot-day power than other chilling systems available on the market today.

Response:

As the turbine inlet conditioning system is used to increase turbine performance losses during periods of warm ambient temperatures and is not an emission control technology, Mariposa Energy does not see the relevance of this comment. The use of an innovative turbine inlet conditioning system that reduces plant electrical consumption would increase overall efficiency but would not result in actual MEP emissions reduction of any criteria pollutant subject to the District's BACT requirements.

The inlet chilling system developed by GE (ARCTIC) has only been installed on one LM6000. This application just began commercial operation in late June this year. There is little known field experience with this application, where exhaust gasses are used to produce inlet chilling. The mechanical chillers proposed for MEP have years of proven operation and the reliability.

Greenhouse Gas BACT - Page 15

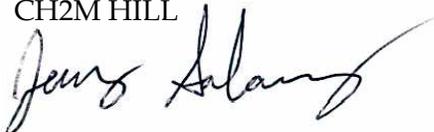
The PDOC contains no BACT analysis for Greenhouse gasses. There are variations of the LM-6000 turbines which result in substantial reductions in greenhouse gas emissions.

Response:

In reviewing District Rule 2-2-301.1, it is our understanding that no statutory obligation exists which requires the District to conduct a greenhouse gas (GHG) BACT analysis. However, as part of the California Energy Commission authority to site power plants, the Energy Commission will analyze MEP's GHG impacts and determine if the impacts are significant.

If you have any questions regarding our comments, please contact me at (916) 286-0207.

Sincerely,
CH2M HILL



Jerry Salamy
Principal Project Manager

c: Craig Hoffman/CEC
Bo Buchynsky/Mariposa Energy
Doug Urry/CH2M HILL
Keith McGregor/CH2M HILL



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

**APPLICATION FOR CERTIFICATION
FOR THE *MARIPOSA ENERGY PROJECT*
(MEP)**

Docket No. 09-AFC-3

PROOF OF SERVICE
(Revised 10/20/2010)

APPLICANT

Bo Buchynsky
Diamond Generating Corporation
333 South Grand Avenue, #1570
Los Angeles, California 90071
b.buchynsky@dgc-us.com

*California Pilots Association
c/o Andy Wilson
31438 Greenbrier Lane
Hayward, CA 94544
andy_psi@sbcglobal.net

Craig Hoffman
Siting Project Manager
choffman@energy.state.ca.us

Kerry Willis
Staff Counsel
kwillis@energy.state.ca.us

APPLICANT'S CONSULTANTS

Doug Urry
2485 Natomas Park Dr #600
Sacramento, CA 95833-2975
Doug.Urry@CH2M.com

Rajesh Dighe
395 W. Conejo Avenue
Mountain House, California 95391
dighe.rajesh@gmail.com

Jennifer Jennings
Public Adviser
publicadviser@energy.state.ca.us

Morgan K. Groover
Development Director
Mountain House Community
Services District
230 S. Sterling Drive, Suite 100
Mountain House, CA 95391
mgroover@sjgov.org

COUNSEL FOR APPLICANT

Gregg Wheatland
Ellison, Schneider & Harris L.L.P.
2600 Capitol Avenue, Suite 400
Sacramento, CA 95816-5905
glw@eslawfirm.com

ENERGY COMMISSION

JEFFREY D. BYRON
Commissioner and Presiding Member
jbyron@energy.state.ca.us

INTERESTED AGENCIES

California ISO
E-mail Service Preferred
e-recipient@caiso.com

ROBERT B. WEISENMILLER
Commissioner and Associate Member
rweisenm@energy.state.ca.us

INTERVENORS

Mr. Robert Sarvey
501 W. Grantline Road
Tracy, California 95376
Sarveybob@aol.com

Kenneth Celli
Hearing Officer
kcelli@energy.state.ca.us

Kristy Chew
Advisor to Commissioner Byron
E-Mail Service preferred
kchew@energy.state.ca.us

DECLARATION OF SERVICE

I, Mary Finn, declare that on November 8, 2010, I served and filed copies of the attached Mariposa Energy LLC's Response to Public Comments Received on the Mariposa Energy Project (09-AFC-3) Preliminary Determination of Compliance—Application 20737. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

[\[http://www.energy.ca.gov/sitingcases/mariposa/index.html\]](http://www.energy.ca.gov/sitingcases/mariposa/index.html).

The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

- sent electronically to all email addresses on the Proof of Service list;
- by personal delivery;
- by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

- sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (*preferred method*);

OR

- depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 09-AFC-3

1516 Ninth Street, MS-4

Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.



Mary Finn