

State of California
State Energy Resources Conservation and Development Commission

In the Matter of:)	Docket # 09-AFC-03
)	
Mariposa Energy Project)	
)	Robert Sarvey’s Rebuttal Testimony
)	Air Quality
_____)	Exhibit 403

Mariposa Air Quality Testimony

Operation Impacts and Mitigation

The CEC Staff on Page 4.1-28 of the Supplemental Staff Assessment concludes, “*that particulate matter emissions from routine operation would cause a significant impact because they will contribute to existing violations of PM10 and PM2.5 ambient air quality standards. Significant secondary impacts would also occur for PM10, PM2.5, and ozone because operational emissions of particulate matter precursors including SOx) and ozone precursors (NOx and VOC) would contribute to existing violations of these standards.*” To offset this significant impact Staff recommends that “*Mitigation should be provided for emissions of PM10, PM2.5, SOx, NOx, and VOC to reduce PM10, PM2.5, and ozone impacts*”.¹

Unfortunately Staff’s mitigation proposal falls short of its intended goal of mitigating all of the criteria and precursor emissions. First Staff’s mitigation proposal fails because it mitigates only a portion of the projects potential emissions. Staff’s analysis assumes that the project is only allowed to operate for 4,000- 4,225 hours a year.² The projects FDOC allows up to 5,200 hours of operation each year for each turbine so staff’s initial

¹ SSA 4.1-28

² SSA 4-1.19 “Each CTG firing up to 4,000 hours at full turbine capacity with air inlet chiller operation and 300 startup and shutdown events per turbine (MEP 2009a) or 4,225 hours per turbine annually”

assessment of the projects potential emissions is flawed.³ Next CEC Staff proposes to mitigate the projects emissions based on only 1,400 hours of operation. This is pure speculation on Staff's part and it is reasonably foreseeable that the project could operate up to 5,200 hours a year since its air permit allows it to. This is a **dangerous precedent** for the CEC Staff to arbitrarily estimate the projects operating profile and not require full mitigation of all pollutants based on the projects true potential to emit.

Next Staff overestimates the effectiveness of the projects BAAQMD ERC's. The applicant is providing one ERC located in Santa Clara for 52.44 tons per year. *“To determine the effectiveness of the BAAQMD offsets locally, staff looked to the rules and regulations established by the SJVAPCD, which is responsible for protecting air quality in the San Joaquin Valley. According to SJVAPCD Rule 2201 (Sec 4.8.3 and 4.13.2) and the Air Quality Mitigation Settlement, emission reductions from a neighboring air district at a distance of less than 50 miles would be effective at a ratio of 1.5-to-1. Dividing the BAAQMD-required offsets of 52.44 tons per year by 1.5 for the distance ratio results in an effective mitigation in the SJVAPCD of 34.96 tons per year NOx.”*

Staff bases this conclusion on a, “ratio is found in SJVAPCD Rule 2201 as adopted for the SJVAPCD New Source Review program, which is a key component of region-wide attainment planning.” Staff misunderstands SJVAPCD Rule 2201. The distance ratio applied in SJVAPCD rules applies to offsets that originate in the SJVAPCD. This offset provided in Santa Clara is not located in the SJVAPCD it originates in the BAAQMD. SJVAPCD Rule 2201, 4.13.2 allows for the use of out-of-district ERCs only where the Air Pollution Control Officer has reviewed the permit conditions and certified that the offsets meet Health and Safety Code section 40709.6. No such certification has occurred.

Health and Safety Code section 40709.6(a) allows the use of ERCs from an air district in a different air basin than where the emissions occur only if the following conditions are met: (1) the stationary source to which the emission reductions are credited is located in an upwind district that is classified as being in a worse non-attainment status than the downwind district”, and (2) the stationary source at which there

³ http://www.energy.ca.gov/sitingcases/mariposa/documents/others/2010-11-24_BAAQMD_FDOC_TN-59081.pdf FDOC Page 14

are emission increases to be offset is located in a downwind district that is *overwhelmingly impacted* by emissions transported from the upwind district.”

SJVAPCD rules require that offsets only be obtained from regions that have a nonattainment classification equal to or higher than the project area. (SJVUAPCD 2201, § 4.13.10.1.) BAAQMD is in a better non-attainment status, compared to the SJVUAPCD, for both ozone and PM10. Therefore, if the project was truly evaluated in accordance with the California Health and Safety Code and the SJVAPCD rules no credit for the ERCs offered would be allowed.

CARB and the Energy Commission have conducted an analysis to develop an effectiveness ratio of BAAQMD ERC’s in the northern SJV for other siting cases.⁴ The study concluded that reducing one ton of emissions in the greater Bay Area would provide the benefit of reducing 0.27 tons in the Northern San Joaquin Valley. Applying the 27% effectiveness ratios to the proposed Santa Clara and San Jose ERC’s shows that the equivalent effectiveness of the applicant’s proposed NOx and VOC ERC’s in the SJV is 15.9 tpy and 2.99 tpy respectively. This is compared to Staffs analysis which has determined that BAAQMD ERC’s provide 34.96 tpy of mitigation for NOx in northern SJV. Staffs analysis is based on a misinterpretation of SJVAPCD rules and an attainment plan which has been rejected by EPA.⁵

It is very important for the projects emissions to be completely mitigated. The project area is the epicenter of a great deal of housing and industrial projects. Staff’s cumulative analysis captures some of the larger industrial projects including the East Altamont Energy Center and the Tracy Peaker Plant expansion but does not provide a true picture of the degradation in the project area. In 2006 a PSD increment analysis was performed for the Tesla Power Plant utilizing all the potential sources not just the limited industrial facilities modeled by Staff. The analysis demonstrated that the maximum modeled 24-hour average PM10 increment consumption was 140 µg/m³, and annual average PM10 increment consumption was 30 µg/m³.⁶ Therefore full mitigation of the projects emissions is necessary.

⁴ Tesla Power Project, East Altamont Energy Center

⁵ <http://www.epa.gov/region9/air/actions/pdf/ca/SJV-PM25-notice.pdf>

⁶ Exhibit 12 - PSD Increment Consumption Status Report April 16, 2008 BAAQMD Page 4 “The maximum modeled 24-hour average PM₁₀ increment consumption

Ammonia Emissions

The CEC Staff did not perform an air quality analysis for the Mariposa Project to examine the potential formation of secondary Particulate Matter from the 28 tons per year of ammonia slip. The CEC Staff instead states that it mitigates the projects ammonia emissions by limiting the ammonia slip to 5 PPM.⁷ That does not quantify or mitigate the potential formation of secondary PM 2.5 from the projects ammonia emissions. Staff's testimony states "*that particulate matter emissions from routine operation would cause a significant impact because they will contribute to existing violations of PM10 and PM2.5 ambient air quality standards. Significant secondary impacts would also occur for PM10, PM2.5, and ozone because operational emissions of **particulate matter precursors** including SOx) and ozone precursors (NOx and VOC) would contribute to existing violations of these standards.*"⁸ Ammonia is a known precursor emission for secondary particulate matter formation. Staff does not even bother to quantify the secondary particulate formation must less mitigate the ammonia emissions. Staff must provide mitigation for the secondary particulate formation from the ammonia emissions since by their own testimony all precursor emissions must be mitigated to avoid contributing to existing violations of PM10 and PM2.5 ambient air quality standards.

LORS Compliance District Rule 2-2-301 BACT For Particulate Matter Emissions

The project does not comply with BAAQMD Rule 2-2-301 (b) or BAAQMD SIP Rule 2-2-206.2. District Regulation 2-2-301 requires that the Mariposa Energy Project use the Best Available Control Technology to control NOx, CO, POC, PM10, and SOx emissions from sources that will have the potential to emit over 10 pounds per highest day of each of those pollutants. Pursuant to Regulation 2-2-206, BACT is defined as the more stringent of:

is 140 µg/m³, and annual average PM₁₀ increment consumption is 30 µg/m³. Although these values exceed the allowed Class II increments for PM₁₀, the location of the exceedance is in SJAPCD, which is non-attainment for PM₁₀."

⁷ SSA 4.1-43

⁸ SSA 4.1-28

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

The district in its analysis of BACT for PM-10 looked at emissions performance data for seven recently permitted simple cycle facilities that utilize the LM6000 turbine.⁹ Of those seven facilities analyzed only one facility has measured PM-10 emissions over 2.3 pounds per hour which was the Goosehaven Facility. The next highest PM-10 emission rate was from the Los Esteros Facility which had a 2.266 lb/hr emission rate back in 2005. Five of the seven facilities have never exceeded 2.2 pounds per hour for PM-10. The best performing facility the Gilroy Energy Center has never exceeded 2 lbs/hr. The district instead of looking to the BEST performing facilities and their work practices and technology the district looked to the worst performing facility the Goosehaven facility to establish a BACT limit of 2.5 pound per hour. An emission limit between 2.0 and 2.2 pounds per hour should be considered BACT since these limits have been achieved in practice at similar facilities.

The district in table 25 of the PDOC also completes a review of “Recent BACT PM-10 permit limits for large simple cycle gas turbines” The districts review omits three recent PM-10 BACT determinations for large simple cycle turbines that have been recently licensed by the CEC and support a lower PM-10 BACT emission rate for the Mariposa Project. The first determination is for the Hanford facility. The projects simple cycle PM-10 emission rate is 2.2 pounds per hour utilizing the LM 6000 turbine.¹⁰ The

⁹ PDOC page 54

¹⁰ <http://www.energy.ca.gov/2009publications/CEC-700-2009-012/CEC-700-2009-012-REV1.PDF> Page 4.1-12

Henrietta Project has just been licensed with a 2.2 lb/hr PM-10 emission limit for simple cycle operation also with the LM-6000.¹¹ The Marsh Landing simple cycle facility was just permitted with PM-10 rate of 0.0041 lb/MMBTU or just 1.97 lbs/hr. The three most recent BACT determinations for simple cycle turbines have been 2.2 pounds per hour or less for PM-10 and support a lower BACT limit for PM-10.

While the district has imposed a 2.2 lbs/hr for an annual average in response to public comment this does not comply with Regulation 2-2-301 (b). The Majority of the LM-6000 turbines examined by the district have achieved in practice a PM-10 emission rate of 2.2 lbs/hr or less which would qualify as BACT under District Regulation 2-2-301(b). “The most stringent emission limitation achieved by an emission control device or technique.”

Greenhouse Gases

Staff’s testimony is that, “*The proposed MEP would have a net worst-case heat rate of approximately 10,187 Btu/kWh.*”¹² This is higher than the average system-wide heat rate for California which in 2002 was about 9,750 BTU/kWh.¹³ Staff then goes on to compare the MEP to the Greater Bay Area facilities and their heat rates. The majority of facilities that staff considers in its analysis are once through cooling units. Contra Costa 6 & 7 are already scheduled to retire in early 2013. The Potrero Peakers are also slated to be retired this year. The Tracy Peaker Plant has been approved for its new upgrade and its new heat would be between 7,800 and 8,700 Btu/kWh. The remaining units have equivalent or better heat rates than the proposed MEP with the exception the Pittsburg Power Plant which produced only 216 GWH in 2009 according to staff’s testimony.¹⁴ The existing Pittsburg units will continue to have declining yearly production and will most likely be irrelevant when PG&E’s fast start Oakley Project comes online with its heat rate around 7,000 Btu/kwh. When all the facts are holistically

¹¹ <http://www.energy.ca.gov/2009publications/CEC-700-2009-013/CEC-700-2009-013-REV1.PDF> Page 4.1-21

¹² SSA Page 4.1-81

¹³ http://www.energy.ca.gov/sitingcases/russellcity_amendment/amendment_two/2010-06-28_Letter_and_Staff_Analysis.pdf page 4

¹⁴ SSA Page 4.1-80

considered the MEP is likely to increase Greenhouse Gas emissions since it has a higher heat rate than the system average and a higher heat rate than most of the projects that are already approved at the CPUC. The MEP heat rate will also degrade over time and with the predicted operating profile of 600 hours and 200 starts a year the actual heat rate will be much higher.

In terms of the renewable integration capabilities of the MEP a thorough analysis of existing and expected dispatchable and renewable generation and their proper location would be necessary to conclude that in fact the MEP will be needed to integrate renewable energy within the greater Bay Area Load Pocket.¹⁵ With the approval of four new dispatchable gas fired generating units within or near the Bay Area Load Pocket including the 719 MW Marsh Landing Generating Station, the 586 MW fast start Oakley Project, the upgrade of the GWF Peaker and LECEF facilities for another 251 MW of new generation, it is reasonably foreseeable that additional dispatchable generation is not needed in this area. The combination of newly approved facilities represents 1,556 MW of new dispatchable generation to meet the needs of renewable integration in the area. This does not include the Russell City Project which is reportedly commencing construction.

In the immediate area near the MEP there are several resources that are reasonably foreseeable that make the MEP unneeded. A few miles away from the MEP the Mulqueeny Ranch Pumped storage Project is being developed.¹⁶ This pumped storage project will utilize off peak wind power and recycled water from the City of Tracy to produce 240 MW of stored renewable energy connected to the Tesla Substation. Unlike the MEP this project is high in the loading order and a desirable project for integrating renewable energy with 240 MW of instant power without Greenhouse Gas emissions.

¹⁵ **IMPACT OF ASSEMBLY BILL 32 SCOPING PLAN ELECTRICITY RESOURCE GOALS ON NEW NATURAL GAS-FIRED GENERATION CEC 2009**

http://www.energy.ca.gov/reti/documents/phase2A/comments/Joan_Taylor_Ca-Nevada_Desert_Energy_Committee_Attachment.PDF "Once combined heat and power targets and once through cooling retirements were made only a few new natural gas fired plants had to be added to meet local capacity and reliability needs. Those were in the Sacramento Utility District, Turlock Irrigation District, and Imperial Valley Control Areas which have no once through cooling units and limited large hosts for combined heat and power units."

¹⁶ Electrical Load & Power Generation Evaluation - Alameda County Mariposa Energy, LLC Diamond Generating Corporation June 3, 2009 Page 3 Exhibit 411
http://www.energy.ca.gov/sitingcases/mariposa/documents/applicant/afc/MEP%20Volume%202/MEP_Apendix%205.6A_Load%20and%20Resource%20Balance.pdf

As mentioned above the Tracy Peaker Plant is being converted to combined cycle providing an additional 145 MW with duct firing capability connected to the Tesla Substation. GWF has also signed a contract with the city of Tracy to lease 200 acres next to the GWF Project for a thermal solar farm with a potential 40 MW of solar capacity. According to the Tracy Peaker operation website the existing peaker plant ran less than 3% of capacity in 2010.¹⁷

Another project proposed within two miles of the MEP is the East Altamont Energy Center an 1100 MW combined cycle Project with 254 MW of duct firing.¹⁸ The maximum annual generation possible from the facility is estimated to be between 7,125 and 7,655 gigawatt hours (GWh) per year.¹⁹ The project can produce two and half times the electrical energy needed for Eastern Alameda County.²⁰

This type of analysis was recommended in the Committee Guidance on Fulfilling California Environmental Quality Act Responsibilities for Greenhouse Gas Impacts In Power Plant Siting applications.²¹ In a situation such as this where reserve margins in PG&E's service territory are over 35% and the CPUC has allowed 555 MW of overprocurement in the LTPP with almost all of the generation in the Bay Area Load Pocket, this analysis is critical to preventing the overbuilding of fossil fuel resources to the detriment of preferred resources.²²

¹⁷ http://gwfenergy.com/tpp_ops_data.htm

¹⁸ http://www.energy.ca.gov/sitingcases/eastaltamont/documents/applicants_files/EAEC_AFC_files/EAEC_AFC_Vol01.pdf Page 2-9

¹⁹ http://www.energy.ca.gov/sitingcases/eastaltamont/documents/applicants_files/EAEC_AFC_files/EAEC_AFC_Vol02_8.10-.pdf 10-4

²⁰ $7,125 \text{ GWh} / 2868 = 2.48$

http://www.energy.ca.gov/sitingcases/mariposa/documents/applicant/afc/MEP%20Volume%202/MEP_Appendix%205.6A_Load%20and%20Resource%20Balance.pdf Page 2

²¹ 1) Staff should prepare an analysis comparing the degree that different kinds of gas-fired power plants facilitate AB 32 goals, and whether (or the degree to which) project technology and location may make a proposed power plant more consistent with AB 32 goals.

4) Staff should collaborate with the California ISO and the CPUC to provide a more detailed "systemic analysis" of new generation and transmission line additions necessary for each load pocket, considering such issues as retirement of aging and once-through cooled plants and emission offset constraints. This work would supplement the work in item 2, and would likely extend beyond the 2009 IEPR reporting cycle with the goal of providing a more precise identification of needed generation and transmission resources for California's load pockets. Staff should work with the CPUC and parties to more closely couple siting of preferred resources with the CPUC's Long-Term Procurement Plan process.

Committee Guidance on fulfilling California Environmental Quality Act Responsibilities for Greenhouse Gas Impacts In Power Plant Siting Applications Page 29

²² **The Greenhouse Gas CEQA Guidance document attempted to address the situation but never contemplated outright over procurement by the CPUC.** "These long-term procurement plans (LTPPs) must balance the costs of

meeting customer needs with state policy goals of minimizing environmental impacts and meeting state targets for preferred resources. In preparing the plans, IOUs do two assessments, one to identify physical and contractual resources needed to meet bundled customer needs and one to identify new resources needed in their service territories to maintain adequate reserve margins. After approving the LTPPs, the CPUC authorizes the IOUs to procure the resources needed to meet long-run growth in energy demand and cover the expiration of existing contracts. The CPUC sets targets over the next 10 years for energy efficiency, demand response and interruptible load programs, and renewable energy. The utilities provide estimates of the remaining need for energy and capacity in their LTPPs and then solicit long-term agreements through competitive requests for offers (RFOs) overseen by the CPUC. Moreover, even without “central planning” by the Energy Commission or the CPUC, there are compelling reasons that the state is unlikely to “overbuild” new gas-fired power plants. Utilities are contracting for power based on the demand assessments of the Energy Commission, as implemented by the CPUC in its procurement process⁷. Power plants require huge capital investments and elaborate financing; unless a project receives a contract through a utility procurement process such financing cannot, as a practical matter, be obtained, and the project cannot be built. There is simply too high a risk, in the turmoil of rapid change, that a project without a utility contract would not run enough (and earn enough) to justify the considerable capital investment, particularly as the electric generation system transforms to greater reliance on renewables.” Committee Guidance on fulfilling California Environmental Quality Act Responsibilities for Greenhouse Gas Impacts In Power Plant Siting Applications Page 22

Committee Guidance on fulfilling California Environmental Quality Act Responsibilities for Greenhouse Gas Impacts In Power Plant Siting Applications Page 22