

Testimony

In Support of the

Application for Certification

for the

East Altamont Energy Center

Alameda County, California

01-AFC-004

Submitted to the

California Energy Commission

Submitted by

East Altamont Energy Center, LLC

October 2002

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I. PROJECT DESCRIPTION

PROJECT DESCRIPTION

A. Name: Alicia Torre

B. Purpose: The purpose of this testimony is to present an overview of the project and cover the portions of the AFC not represented by other witnesses.

C. Qualifications : A detailed overview of my qualifications and professional experience is provided in the attached resume (Appendix A).

D. Prior Filings: This testimony includes by reference the following documents submitted in this proceeding:

- Sections 1 through 4 of the Application for Certification (AFC) submitted to the California Energy Commission (CEC) for the proposed East Altamont Energy Center project.
- Appendix 1 of the AFC
- Supplement A to the AFC, Filed on May 3, 2001
- Supplement B to the AFC, Filed on October 9, 2001
- Supplement C to the AFC, Filed on February 6, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinion, such opinion is my own. I make these statements and render these options freely and under oath for the purpose of constituting sworn testimony in this proceeding.

DECLARATION OF
Alicia Torre

I, Alicia Torre, declare as follows:

- 1. I am presently a consultant contracted to Calpine Corporation as Project Development Manager for the East Altamont Energy Center.
- 2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
- 3. I prepared the attached testimony on Project Description for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
- 4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
- 5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ **Signed:** _____

At: Dublin, California

II. ENVIRONMENTAL ASSESSMENT

AIR QUALITY

BIOLOGICAL RESOURCES

CULTURAL RESOURCES

HAZARDOUS MATERIALS

LAND USE

NOISE

PUBLIC HEALTH

SOCIOECONOMICS

SOIL RESOURCES

TRAFFIC AND TRANSPORTATION

TRANSMISSION LINE SAFETY AND NUISANCE

VISUAL RESOURCES

VISUAL PLUME IMPACTS ANALYSIS

WASTE MANAGEMENT

WATER RESOURCES

WORKER SAFETY AND FIRE PROTECTION

AIR QUALITY

I. INTRODUCTION

A. Name: Gary Rubenstein, Thomas Andrews, and Jeffrey Adkins

B. Purpose: This testimony addresses the air quality issues associated with the proposed project, and presents underlying technical analyses that support portions of the Applicant's public health, visual resources, and biological resources testimony.

C. Qualifications:

Gary Rubenstein

I am a Senior Partner in the firm of Sierra Research, an air quality consulting firm located in Sacramento, California. I have a Bachelor of Science degree in Engineering from the California Institute of Technology.

I co-founded Sierra Research in 1981, after serving as Deputy Executive Officer for technical programs for the California Air Resources Board (ARB). While at ARB, I supervised the work of more than 300 engineers and scientists involved in the development and enforcement of a wide variety of air pollution control regulations.

Since co-founding Sierra Research, I have had primary responsibility for the firm's activities in the areas of stationary source (i.e., industrial) air pollution. These activities include the preparation of permit applications for new facilities; evaluation of the effect of existing or proposed regulations on existing or new sources of air pollution; and assessments of compliance by existing sources of air pollution with federal, state and local requirements. I have had extensive experience in regard to advising clients in interpretation and compliance with regulations concerning environmental air pollution, including the regulations of the Bay Area Air Quality Management District.

While with Sierra Research, I have prepared application materials, participated in energy facility siting workshops and hearings, and/or presented testimony before the California Energy Commission, in the following cases:

- San Joaquin Valley Energy Center
- Avenal Energy Project
- Cosumnes Power Plant Project
- Los Esteros Critical Energy Facility
- Inland Empire Energy Center
- El Segundo Power Redevelopment Project

- Morro Bay Modernization Project
- Metcalf Energy Center
- Woodland II Generating Station
- Gilroy Energy Center
- Los Medanos Energy Center
- Mountainview Power Project
- Moss Landing Power Plant Project
- Delta Energy Center
- Sutter Power Project
- San Francisco Energy Project
- Carson Ice-Gen Project
- SMUD/Sacramento Power Authority Cogeneration Project
- SMUD/Sacramento Cogeneration Authority Cogeneration Project
- SDG&E South Bay 3 Repowering Project
- Crockett Cogeneration Project
- Argus Cogeneration Expansion (ACE) Project
- Texaco Coolwater Coal Gasification Project
- Mojave Cogeneration Project
- Midway Sunset Cogeneration Project
- Sycamore Cogeneration Project

While with the California Air Resources Board, prior to founding Sierra Research, I participated in energy facility siting workshops and hearings, and presented testimony before the California Energy Commission, in the following cases:

- PG&E Fossil 1&2
- Various PG&E geothermal power plants
- SCE Cal Coal

- SCE Coolwater

Thomas Andrews

I am a Senior Engineer/Partner in the firm of Sierra Research, an air quality consulting firm located in Sacramento, California. I have a Bachelor of Science degree in Mechanical Engineering from the University of California, Davis. I have worked on numerous projects evaluating the combustion and dust impacts from the construction and operations activities at power plant facilities, landfills, and gravel operations. My qualifications are summarized more completely in the attached resume (Appendix A).

Jeffrey Adkins

I am a Senior Engineer/Partner in the firm of Sierra Research, an air quality consulting firm located in Sacramento, California. I have a Bachelor of Science degree in Chemical Engineering from Pennsylvania State University. I have worked on numerous projects evaluating the combustion and dust impacts from the construction and operations activities at power plant facilities, boilers, biomass boilers, printing presses, internal combustion engines, and other stationary sources. My qualifications are summarized more completely in the attached resume (Appendix A).

- A. Prior Filings:** In addition to the statements herein, this testimony includes by reference the documents submitted in this proceeding that are listed in Attachment 1 to our testimony.

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The proposed licensing conditions related to air quality include those identified in the Final Determination of Compliance issued by the Bay Area Air Quality Management District (Air District), and in the Staff Assessment (and related addenda) for air quality (additional conditions related to mitigation and facility construction). The Applicant has reviewed these conditions, and has substantive concerns with several. These concerns are described in more detail below. Except for the concerns identified below with respect to conditions AQ-25 and AQ-SC1 through AQ-SC7, the Applicant has no objections to the proposed air quality conditions of certification.

III. SUMMARY

Air pollutant emissions from the proposed East Altamont Energy Center will be controlled through the use of the best available pollution control technology. These controls will make the East Altamont Energy Center one of the cleanest power generation facilities in the United States. The project will be located in the eastern portion of Alameda County, where air quality levels are within most (but not all) air quality standards. The air quality impacts of the East Altamont Energy Center project were evaluated and shown to satisfy all state and

federal air quality requirements. This conclusion has been confirmed after extensive reviews by both the Bay Area Air Quality Management District (BAAQMD) and San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). Emissions from the project result from operation of the gas turbines used to generate electricity, and from additional supporting equipment.

A. Existing Air Quality

The U.S. Environmental Protection Agency (EPA) and California Air Resources Board have each established ambient air quality standards to protect public health and welfare. Both state and national ambient air quality standards consist of two parts: an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of pollutants on human health, crops and vegetation. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance), or to a relatively lower average concentration over a longer period.

Air quality standards have been set for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate sulfates, and fine particulate matter (PM10). Three ambient air monitoring stations were used to characterize air quality at the project site. These stations were used because of their proximity to the project site and because they record area-wide ambient conditions rather than the localized impacts of any particular facility. All of the ambient air quality data that we relied upon were taken from publications and data sources prepared by the California Air Resources Board (CARB). Ambient concentrations of NO₂ and ozone are recorded at a monitoring station located at 24371 Patterson Pass Road in Tracy, approximately 7 km south-southeast of the project site. The nearest monitoring station that records ambient concentrations for CO and PM10 is located at Hazelton Street in Stockton, approximately 32 km northeast of the project site. Sulfur dioxide readings are from Fresno, the closest SO₂ monitoring station that has data for the most recent three years.

All three monitoring stations are located in the San Joaquin Valley Air Basin. Although the project is located within the San Joaquin Valley, the project is technically within the Bay Area Air Basin and therefore is subject to the air quality regulatory jurisdiction of the Bay Area Air Quality Management District.

Ozone is formed in the atmosphere as a result of complex reactions between reactive organic gases and oxides of nitrogen in the presence of sunlight. Consequently, peak ozone levels are seen during the summer months, when there is the most sunlight. The state ozone standard has been exceeded on 5 to 24 days each year at Tracy since monitoring began at that station in 1995. On a three-year running average basis, the number of violations of the state ozone standard has declined from 12.7 in 1997 to 9.0 for the three years ending 2001. There have been only three exceedances of the federal ozone standard in Tracy during the last seven years: two in 1996, and one in 1999. In general, ozone levels in the Tracy area have been relatively constant over the last several years, or have improved slightly, despite the tremendous growth in the areas in Tracy and in the upwind areas within the Bay Area. Ozone levels at the project site are expected to be comparable to, or slightly lower than, the levels observed at Tracy.

Carbon Monoxide (CO) results from inefficient combustion, principally from motor vehicles and other mobile sources of air pollution. In many areas of California, CO emissions from wood-burning stoves and fireplaces can also be measurable contributors. Industrial sources typically contribute less than ten percent of ambient CO levels. Peak CO levels are usually seen during winter months. There have been no violations of state or federal CO standards measured in Stockton since 1991.

Nitrogen Dioxide (NO₂) is formed primarily in the air from reactions between nitric oxides and oxygen or ozone. Nitric oxide is formed during high temperature combustion, when nitrogen and oxygen in the air combine. Although nitric oxide is much less harmful than nitrogen dioxide, it can be converted to nitrogen dioxide in the atmosphere within a matter of hours, or even minutes, under certain conditions. There have been no violations of state or federal nitrogen dioxide standards measured in Tracy during the last seven years.

Sulfur Dioxide (SO₂) is produced when any sulfur-containing fuel is burned. It is also emitted by chemical plants that treat or refine sulfur or sulfur-containing compounds. Natural gas contains negligible amounts of sulfur. Sulfur dioxide levels are not measured in Tracy because there are no significant sources of this pollutant in the area. Sulfur dioxide levels measured at the nearest monitor, in Fresno, have been well below state and federal air quality standards during the last twelve years.

Particulate sulfates result from the further oxidation of sulfur dioxide in the atmosphere. Sulfate levels have also been well below state standards. (There are no federal standards for sulfates.)

Fine Particulate Matter (PM₁₀) in the air is caused by a combination of wind-blown fugitive dust; particles emitted from combustion sources, including wood stoves and fireplaces (usually carbon particles); organic, sulfate and nitrate aerosols formed in the air from emissions of gaseous pollutants, and natural aerosols (such as salts from sea sprays). PM₁₀ levels have been below the federal standards since 1990, but above the state standards, in the Tracy and Stockton areas over the last twelve years. Although the trend in peak PM₁₀ concentrations have been erratic, the three-year moving average peak PM₁₀ levels have dropped slightly, from 119 µg/m³ to 100 µg/m³, between 1994 and 2001. During this same period, the three-year moving average number of violations of the state 24-hour average PM₁₀ standard has dropped from 82 days per year to 52 days per year. Both of these measures indicate a slight, positive trend in PM₁₀ levels in the project area.

This positive trend in PM₁₀ air quality in the San Joaquin Valley Air Basin is confirmed by conclusions of the California Air Resources Board:

“The available PM₁₀ data show some variation during the trend period, but overall, there has been a downward trend. Part of the variation can be attributed to meteorology. Long periods of stagnation during the winter months allow PM₁₀ to accumulate over many days with resulting high

concentrations. The maximum annual geometric mean shows a decrease of about 24 percent from 1988 to 2000. The calculated number of days exceeding the State and national 24-hour standards also shows a decrease.”¹

Although implementation of the new, federal PM_{2.5} standard has not yet begun, unofficial data for this pollutant have been collected in Stockton since at least 1990. The data indicate that national 24-hour average standard of 65 µg/m³ based on the three-year average 98th percentile value has not been exceeded in Stockton since 1994. The most recent three-year national average PM_{2.5} concentration is 16.4 µg/m³, just above the federal standard of 15 µg/m³.

In the San Joaquin Valley, peak PM_{2.5} levels are dominated by secondary ammonium nitrate, wood smoke, vehicle exhaust, and other carbon sources.

B. Environmental Impacts

Air emissions will result from the operation of the combined cycle gas turbines, fired heat recovery steam generators, cooling tower, gas-fired emergency generator, and emergency Diesel fire pump. Air pollutant emissions from the East Altamont Energy Center project are shown in the Final Determination of Compliance issued by the Air District, and in the Staff Assessment. These emissions have been calculated based on the maximum capacity of the equipment, consistent with operating limits expected to be imposed as permit conditions, and thus represent a worst case. Actual emissions during plant operation are expected to be much lower than the levels shown in the Staff Assessment.

C. Regulatory Requirements

The project’s emissions and air quality impacts are required to comply with various local, state, and federal laws, regulations, and standards. In addition to the California Energy Commission’s review, the air quality impacts of the East Altamont Energy Center have been reviewed by the Bay Area Air Quality Management District and the San Joaquin Valley Unified Air Pollution Control District.

The requirements applicable to the East Altamont Energy Center include new source review (NSR) and Prevention of Significant Deterioration (PSD) requirements, as well as a number of prohibitory rules. The NSR and PSD programs apply to the facility as a whole, and are designed to ensure that new projects are developed in a manner that will not interfere with meeting health- and welfare-based ambient air quality standards. Prohibitory rules apply to specific pieces of equipment, rather than to the facility as a whole. They impose specific limits on emissions, including opacity and odors, and are enforced through permit conditions. Compliance with all of these rules is demonstrated in the Application for Certification, and has been confirmed in the Final Determination of Compliance issued by the Air District.

¹ “The 2002 California Almanac of Emissions and Air Quality”. California Air Resources Board. April 2002 (p. 167)

The main air quality requirements applicable to the East Altamont Energy Center are summarized below.

- **Best Available Control Technology (BACT):** Emissions of all pollutants will be kept as low as possible by using clean natural gas as the fuel for all equipment. Because natural gas is a clean-burning fuel, emissions of sulfur dioxide (SO₂), precursor organic compounds (POC, or hydrocarbons), and particulate matter (PM₁₀) will be very low. To minimize emissions of oxides of nitrogen (NO_x) and carbon monoxide (CO), the gas turbines will use special combustion systems, known as advanced dry low-NO_x combustors. To further reduce NO_x emissions, the gas turbines and heat recovery steam generators will also use selective catalytic reduction (SCR) technology. To further reduce carbon monoxide emissions, the gas turbines and heat recovery steam generators will use oxidation catalysts.
- **Offsets:** Both Air District and Energy Commission rules require that overall air quality does not deteriorate as a result of the project. This goal is achieved by using the best available pollution control technology, and then using emission reductions from other facilities to “offset” or mitigate most emission increases. Pursuant to Air District rules, the net emissions increase from the project is evaluated looking at the forecasted maximum future emissions from the new units. The emissions increases of precursor organic compounds, oxides of nitrogen and PM₁₀ from the East Altamont Energy Center will be mitigated (offset) in accordance with BAAQMD requirements by the purchase of emission reduction credits from offset holders within the Bay Area air district.
- **Ambient Air Quality Impacts:** The impact of the East Altamont Energy Center on ambient air quality was evaluated using dispersion models approved by the U.S. EPA. Worst-case ground-level impacts were assessed for various meteorological and operating conditions (flat terrain, elevated terrain/hillsides, fumigation, part-load and full-load operations, and startups). The worst-case ground-level impacts were added to existing (background) concentrations from nearby monitoring stations to determine the total ambient concentrations. These total concentrations were then compared with the ambient air quality standards. As confirmed in the Final Determination of Compliance and Staff Assessment, the project will result in concentrations well below the most stringent air quality standards. Even when combined with existing background levels, the proposed project will not cause a new violation of any state or federal air quality standard. The project will add a small amount (less than five percent) to existing PM₁₀ concentrations at the point of maximum impact. As discussed further below, although the East Altamont Energy Center believes that the ozone and PM₁₀ impacts from the project are less than significant, the East Altamont Energy Center will provide additional mitigation to address the concerns raised by the SJVUAPCD, CEC staff, and members of the community to further address these impacts.
- **Screening Health Risk Assessment:** A screening level health risk assessment was performed to evaluate the potential impact of emissions of potentially toxic compounds that result from the combustion of natural gas. This assessment

demonstrated that the facility will not pose a significant health risk. The worst-case cancer risk for the plant is below the level of 10 in one million that is considered significant, and is below the level of 1 in one million that triggers additional control technology requirements.

- Three analyses were performed of the cumulative air quality impacts of the East Altamont Energy Center, in conjunction with other existing and proposed air pollution sources in the area. The first analysis, prepared by the applicant in accordance with a protocol contained in the AFC and filed on August 27, 2001, indicated that there were no projects, at that time, likely to result in cumulative air quality impacts. The second analysis was filed on conjunction with the Application for Certification for the Tracy Peaker Project on August 16, 2001, and included the Tracy Peaker Project and the Tesla Power Project; the East Altamont Energy Center was not included in this analysis because the applicant (with the apparent concurrence of the CEC, who accepted the analysis for data adequacy purposes on October 17, 2001) concluded that there would not likely be a significant overlap in the air quality impacts of the East Altamont Energy Center with the other two projects. The third analysis, also filed in conjunction with the Tracy Peaker Project, included the emissions from the East Altamont Energy Center, Tracy Peaker Project, Tesla Power Project, and the new Mountain House community. All of these analyses concluded that these projects would contribute to existing violations of state air quality standards for ozone and PM₁₀, but that there were no significant localized, cumulative air quality impacts associated with the East Altamont Energy Center.

D. Additional Mitigation

In addition to complying with all applicable regulatory requirements, the East Altamont Energy Center will provide additional mitigation for ozone and PM₁₀ impacts. This mitigation is in the form of an agreement with the SJVUAPCD to pay an Air Quality Mitigation Fee of \$1,002,480 (one million two thousand four hundred eighty dollars) in funds to be used for emission reduction projects within the Northern Region of the San Joaquin Valley Air Basin. Under the terms of the East Altamont Energy Center's agreement with the SJVUAPCD, the air district will determine precisely which mitigation measures will be implemented. However, the agreement commits the air district to use the Air Quality Mitigation Fee exclusively to establish specific programs that create real time air quality benefits within the District. The agreement also commits the District to give preference to programs in or near the city of Tracy, San Joaquin County, and the Northern Region of the San Joaquin Valley Air Basin, in that order. The agreement requires that the emission reduction programs include one or more of the programs set forth in an Air Quality Mitigation Measures Plan to be approved by the California Energy Commission upon licensing of the East Altamont Energy Center. Finally, the agreement provides that the air district may request the California Energy Commission's Compliance Project Manager to approve expenditures for measures not included in the original Air Quality Mitigation Measures Plan.

The East Altamont Energy Center anticipates that the Commission will impose a condition on the East Altamont Energy Center requiring that the terms of this agreement be fulfilled

and, as a consequence, the East Altamont Energy Center believes that this mitigation should address any remaining concerns the Commission may have with respect to the significance of the project's air quality impacts. Proposed language for such a condition is as follows:

“AQ-nn In order to enhance air quality in the northern San Joaquin Valley Air Basin in general, and in the vicinity of the project in particular, the project owner shall fund a program designed to achieve reductions in emissions of ozone and PM10 precursors. These emission reductions may be generated through a combination of mobile and/or stationary source emission reduction programs. This condition is agreed to in order to address concerns raised by the public, the CEC staff, and the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), and is not imposed to mitigate a significant impact under CEQA.

“Emission reductions will be obtained through implementation of measures identified in the Air Quality Mitigation Measure Plan for the East Altamont Energy Center. Prior to the commencement of construction, the project owner shall pay to the SJVUAPCD the sum of \$1,002,480, which funds shall be deposited by the SJVUAPCD into an account dedicated to the implementation of emission reduction measures designed to mitigate the impacts of the East Altamont Energy Center project within the San Joaquin Valley Air Basin. The SJVUAPCD shall expend the funds in a manner designed to maximize the emission reductions achieved through such expenditures, and shall give preference to cost-effective measures which reduce emissions in or near the city of Tracy, San Joaquin County, and the Northern Region of the San Joaquin Valley Air Basin.

“Verification: Within thirty (30) days after physical delivery of the first combustion turbine generator to the project site, the project owner shall submit to the CPM evidence of payment to the SJVUAPCD. Not more than 60 days after the end of each calendar year, commencing with the calendar year in which the mitigation payment is made, the East Altamont Energy Center shall, with the support of SJVUAPCD, submit to the CPM a report containing the following information:

- List of all projects funded through the East Altamont Energy Center air quality mitigation program during the prior calendar year
- Incentive payments and/or costs for each project funded during the prior calendar year
- Estimated annual emission reductions for each project funded during the prior calendar year
- Estimated cumulative annual emission reductions for all projects funded through the end of the prior calendar year

“Such reports shall continue to be filed at the end of each calendar year, with the last report due after the end of the calendar year in which the last of the available mitigation funds have been expended.

“At any time during the implementation of this program, the SJVUAPCD may request that the CPM approve expenditures for measures not included in the original Air Quality Mitigation Measure Plan for the East Altamont Energy Center submitted pursuant to this condition. Such request shall be accompanied by a description of the additional emission reduction measures and their anticipated costs and emission reductions, with a level of detail comparable to that contained in the original Air Quality Mitigation Measure Plan for the East Altamont Energy Center submitted pursuant to this condition.”

E. Additional Issues

Local Impacts vs. Regional Mitigation; Adequacy of Mitigation Provided

Notwithstanding the fact that both the Bay Area AQMD and San Joaquin Valley APCD have concluded that the East Altamont Energy Center project has fully and adequately mitigated all air quality impacts, the CEC staff has taken the position that the air quality mitigation provided is inadequate (AQ page 5.1-26). In particular, the staff asserts that the project will result in significant, localized air quality impacts. (AQ pages 5.1-8, 11, 20, 26, and 38)

The East Altamont Energy Center project has to demonstrate that the project's air quality impacts will not be significant on either a local or regional level. Localized air quality impacts are mitigated through the use of best available control technology; the performance of an air quality modeling analysis that demonstrates that the project will not cause any new violations of state or local ambient air quality standards at any location, under any meteorological conditions expected at the site, and under any operating conditions; and the performance of a health risk assessment that demonstrates that the health risks associated with the project will be insignificant, at any location, under any meteorological conditions expected at the site, and under any operating conditions. In our opinion, the analyses performed for this project make that demonstration; consequently, We do not believe that there are any localized air quality impacts that are significant, and hence warrant mitigation. We are not aware of any factual, technically supported evidence in the record of this proceeding which would contradict this opinion.

In addition to demonstrating that the project's air quality impacts are not significant on a local level, the East Altamont Energy Center project must demonstrate that the project's impacts are not significant on a regional level. This demonstration is made through the use of best available control technology; a cumulative air quality impacts analysis that shows that the project, in combination with other existing or proposed facilities, will not cause a violation of any state or federal air quality standard; and through the provision of emission offsets in accordance with BAAQMD regulations. In our opinion, the analyses performed for this project make this demonstration; consequently, We do not believe that there are any regional air quality impacts that are significant, and hence warrant further mitigation.

As can be seen from the preceding discussion, emission offsets (or similar mitigation measures) play no role in ensuring that localized air quality impacts are not significant. Consequently, we do not believe that the location of these emission offsets is relevant to the question of whether there are localized air quality impacts. Emission offsets are required, and provided, to ensure that there are no significant regional, or cumulative, air quality impacts associated with a proposed project – and not to mitigate significant localized air quality impacts, of which there are none for this project.

In addition, we believe it is important to note that the significance of the project's air quality impacts, particularly as related to PM₁₀, were expressly addressed by the BAAQMD in the Preliminary Determination of Compliance (PDOC) issued for the East Altamont Energy Center. In particular, the District addressed the question of whether the emission reduction credits provided for the project's PM₁₀ impacts would result in a net air quality benefit. In Appendix C to the PDOC, the BAAQMD set forth a rational procedure for evaluating the air quality impacts of both the project and the emission reduction credits in determining whether a net air quality benefit resulted. The BAAQMD concluded that the reductions in SO₂ emissions provided by the East Altamont Energy Center as ERCs resulted in a significant air quality improvement, while the increases in PM₁₀ emissions as a result of the operation of the East Altamont Energy Center would not result in a significant adverse impact. As a result, the BAAQMD concluded that the East Altamont Energy Center project would not result in any significant, localized adverse PM₁₀ impacts, and that the ERCs provided by the East Altamont Energy Center to address PM₁₀ impacts would result in a net air quality benefit on a regional basis. We believe that the BAAQMD's approach to this issue is rational and well founded technically, and that the Commission should use a similar approach to evaluating the significance of project air quality impacts and the need for additional mitigation.

The CEC Staff's mitigation analysis purports to address localized project impacts related to ozone and PM₁₀. (AQ pages 5.1-8 and 11) We believe that the Staff's analysis is misguided initially because it claims to address localized air quality issues when in fact ozone and, to a lesser extent, PM₁₀, are both regional air quality problems.²

With respect to ozone, the Staff indicates that "the area" experienced 5 to 22 days per year of violations of the state 1-hour average ozone standard between 1992 and 2000. (AQ page 5.1-8) The Staff further goes on to suggest that there is no clear trend or indication that ozone air quality is improving in the project area. (Ibid.) However, although the Staff proceeds to additional mitigation measures specifically intended to reduce emissions in the San Joaquin Valley air basin, the ozone data relied upon by the Staff are taken from the Livermore monitoring station, within the Bay Area air basin. Furthermore, the Staff fails to note that the Livermore monitoring station has recorded not more than two hours of violations of the federal ozone standard per year since 1999, and that the Tracy monitoring station has

² Although PM₁₀ impacts can be localized under certain conditions, such as when emissions of fugitive dust are involved or when severe inversions trap pollutants from low-level emissions sources such as fireplaces, the PM₁₀ emissions associated with operation of the East Altamont Energy Center project do not involve either of these situations.

recorded not more than two hours of violations of the federal ozone standard per year since the station began operation in 1995. While additional progress is certainly needed to achieve the state ozone standard, as well as the new federal 8-hour average ozone standard, it would be inappropriate to characterize the project area as having a severe ozone problem.

With respect to particulate matter, the Staff notes that most of the observed PM₁₀ violations occur in the wintertime, and are attributable to emissions from residential wood combustion, combustion of fossil fuels, and entrained dust from motor vehicles and construction activities. (AQ page 5.1-11) While perhaps factually accurate, these statements are not an indication of the severity of the PM₁₀ air quality problem. The only comment that the Staff makes regarding the severity of the particulate air quality problem is that “the PM_{2.5} concentrations measured in Livermore were among the highest in all the counties of the Bay Area District air basin.” (AQ page 5.1-13)

As in the case of the Staff’s comments with respect to ozone, the Staff is referring to a measurement in Livermore, and not to a measurement made in the San Joaquin Valley. Further, the Staff is referring to a single measurement taken in Livermore on January 7, 2001, which recorded PM_{2.5} concentrations 70% higher than the next highest value measured during the three years in which PM_{2.5} has been measured at Livermore. In addition, during the two other years in which PM_{2.5} was measured at Livermore, 1999 and 2000, that station did not experience the highest PM_{2.5} concentrations in the Bay Area. Finally, the single high level in 2001 is the only recorded level in excess of the federal 24-hour average PM_{2.5} standard, and does not constitute a violation of that standard (which is evaluated based on the 3-year average of 98th percentile values, rather than on a single measured maximum). In fact, in the three years that PM_{2.5} has been measured at Livermore, there have been no violations of the federal 24-hour or annual average PM_{2.5} standards, and no violations of the recently adopted state annual average PM_{2.5} standard.

At the monitoring station in the San Joaquin Valley where PM_{2.5} is measured nearest to the project site, in Stockton, there have been up to five days per year in which PM_{2.5} has been measured at levels in excess of the federal 24-hour average standard; however, there has not been a recorded violation of that standard, which, as noted above, is based on a three-year average of the 98th percentile value measured. The three-year annual average PM_{2.5} level at Stockton has recently been recorded at slightly above the federal standard, 16.4 µg/m³ as compared with the federal standard of 15 µg/m³. Once again, it is inappropriate to characterize the project area as having severe air quality problems related to this pollutant.

The CEC Staff bases its claim that the East Altamont Energy Center’s impacts will be significant if further mitigation is not provided on their general conclusions regarding existing air quality in the project area (discussed above), and on their concern that the emission reduction credits provided by the East Altamont Energy Center “may not fully mitigate the project impacts on the local ambient ozone and PM₁₀ air quality” due to the “distance between the source of offsets and the proposed facility.” (AQ page 5.1-26) Thus, the Staff reaches its conclusion regarding significance without regard to the project’s emission rates or modeled air quality impacts; merely the existence of air quality levels in excess of state or federal air quality standards and the distance between the project site and the location of the emission reduction credits is sufficient, in the Staff’s opinion, to justify its

concern. We believe that such a position is technically insupportable, and is inconsistent with the staff's position in two recent cases.

First, in the Morro Bay case, the staff evaluated maximum modeled PM₁₀ air quality impacts that are numerically greater than those modeled for the East Altamont Energy Center, and yet concluded that the PM₁₀ impacts from the Morro Bay project were not significant.

“First, staff witnesses testified that they evaluated the modeled [PM₁₀] impacts and found them to be insignificant. (2/6/02 RT, p. 76)” {Staff Opening Brief, Morro Bay, Group III Topics, p. 8}

Furthermore, the staff's opening brief on air quality in the Morro Bay proceeding looked specifically at the relationship between modeled air quality impacts and the need for (and adequacy of) additional mitigation. The staff concluded in the Morro Bay case, as we have in the East Altamont Energy Center case, that PM₁₀ is a regional pollutant:

“Finally, because PM₁₀ tends to be a regional pollutant (3/12/02 RT, p. 48), there is no basis for distinguishing between PM₁₀ ERCs that are generated from primary sources and those from secondary sources. Both the project PM₁₀ impacts and the benefits provided by the ERCs will be regional in nature. (id. at 47)” {Staff Opening Brief, Morro Bay, Group III Topics, p. 8}

Finally, the staff dismissed the idea of using air quality models to evaluate the benefits of air quality mitigation measures:

“In addition, attempting to model the reductions in ambient concentrations and compare them to the modeled increases in ambient concentrations created by the proposed project would be a meaningless exercise. As staff testified, there will never be a situation in which decreases in ambient concentrations from ERCS will match increases in ambient concentrations caused by a project on a one-to-one basis. (2/6/02 RT, p. 83) Sources operate differently, and are configured differently, leading to differences in their effect on ambient concentrations. (ibid.) In fact, a new facility may cause both higher and lower ambient concentrations than those caused by the ERC source at the same location, but at different times, depending on operating profile and meteorological conditions at any given time.

“Moreover, such a requirement ignores the function of air quality strategies implemented by air districts. These strategies are designed to ensure that the air quality in a basin improves over time, even as new sources are added. (id. at 84)” {Staff Opening Brief, Morro Bay, Group III Topics, pp. 8-9}

In the Morro Bay case, the project's PM₁₀ air quality impacts were modeled to be substantially higher than those modeled for the East Altamont Energy Center (24.2 µg/m³ for Morro Bay, as compared with <5.0 µg/m³ for the East Altamont Energy Center), and while the Morro Bay project's PM₁₀ offsets were provided from the same facility, 43% of the required PM₁₀ offsets for that project were provided in the form of secondary pollutant

reductions (reductions of SO₂ emissions.) The staff's position in the Morro Bay case on the regional nature of PM₁₀ from power plants, and on the lack of any connection between dispersion modeling results and the adequacy of mitigation measures, applies equally to the East Altamont Energy Center case.

In addition to the Morro Bay case, a comparison of the facts in the East Altamont Energy Center case with those in the case of the Tracy Peaker Project (TPP) is illuminating on this point as well.

Figure 1 (attached) shows the locations of the East Altamont Energy Center and TPP projects relative to the locations where each project's ERCs were created. The East Altamont Energy Center project and its ERC locations are shown with green/bold labels on this map, and the TPP project and its ERC locations are shown with red/italic labels on the same map. As can be clearly seen, the locations of the East Altamont Energy Center ERCs are substantially and consistently closer to the East Altamont Energy Center project site than are the TPP ERCs to the TPP project site.

Although the CEC Staff may argue that this is an unfair comparison because the East Altamont Energy Center ERCs are derived from sources located in the Bay Area Air Basin, this argument is misguided. State law³, local air district regulations⁴, and CEC Staff opinions⁵ have long recognized that emission reduction credits obtained in adjoining air basins can provide real benefits in the area impacted by proposed new projects. In the case of the East Altamont Energy Center, the new source review rule of the SJVUAPCD expressly provides for the use of offsets in adjoining air districts if the source of the offsets is within 50 miles of the SJVUAPCD boundary and other specified conditions of state law (requiring approval of both Districts) are satisfied. While these other conditions do not apply (as the East Altamont Energy Center project and its offsets are, in fact, located within the same air district), the distance criteria in SJVUAPCD Rule 2201, Section 4.13.2, are a clear indication that this air district believes that nearby credits from adjoining districts can be used for projects in the San Joaquin Valley. All of the ERCs proposed for use by the East Altamont Energy Center are located within 50 miles of the SJVUAPCD boundary.

In fact, as shown in the attached Table 1, the weighted-average distances of the East Altamont Energy Center project's ERCs are consistently and substantially lower than the distances between the TPP project location and the ERCs provided for that project. The data in Table 1 demonstrate that the ERCs provided for the East Altamont Energy Center project average between 34 and 42 miles from the project site, depending on the pollutant; in contrast, the ERCs provided for the TPP project average between 46 and 213 miles from the project site, depending on the pollutant.

³ See, for example, H&SC Section 40709.6.

⁴ See, for example, SJVUAPCD Rule 2201, Section 4.13.2.

⁵ See, for example, the Commission's decision for the High Desert Power Project:

Furthermore, the Staff's position on this point with respect to the East Altamont Energy Center is in direct opposition to the conclusion reached by the Staff in the Tracy Peaker Project (TPP) case recently decided by the commission. In that proceeding, the CEC Staff concluded that the provision of emission reduction credits from locations as far as 200 miles from the project site was adequate to ensure that there were no significant unmitigated air quality impacts. Although the CEC Staff may be quick to cite the local mitigation program proposed by the TPP project developer, in doing so the Staff overlooks the language in PMPD condition AQ-78 that deals with the TPP local mitigation program. This condition reads as follows:

“This condition is agreed to in order to address concerns raised by the public, and is not imposed to mitigate a significant impact under CEQA.”

Thus, the CEC's conclusions regarding the significance of air quality impacts for TPP rest solely on that project's provision of emission reduction credits – without regard to the distance between the project site and the location of the ERCs.

Although the Staff Assessment in the TPP project does not clearly set forth the calculations that led the Staff to its conclusion regarding the significance of the air quality impacts, based on our participation in and review of CEC Staff assessments in other proceedings, we believe that the calculation was simply based on a comparison of project emissions with emission reduction credits, ensuring that the quantity of emission reduction credits provided is at least as great, on a 1:1 basis, as the project emissions requiring mitigation.

Table 1 shows this comparison for both the East Altamont Energy Center and TPP projects. For TPP, as expected, the analysis demonstrates that the ERCs provided by the project applicant are at least as great as the project's emissions, on a one-for-one basis, without regard to the benefits of the local mitigation program. The comparable analysis for the East Altamont Energy Center reaches the same conclusion, except for CO and SO₂ emissions. With respect to CO emissions, the CEC Staff has never alleged that a power project would result in significant CO air quality impacts that require further mitigation, and no such allegation has been made in this case. With respect to SO₂ emissions, the CEC Staff has been inconsistent in requiring mitigation for the trace levels of SO₂ emissions associated with natural gas combustion.⁶ However, even if one were to conclude that the SO₂ increases, if not mitigated, represented a significant air quality impact due to their potential contribution to ambient PM₁₀ levels, the CEC Staff has, in past cases, accepted reductions in other PM₁₀ precursors (such as direct PM₁₀ emissions, oxides of nitrogen emissions and, in some cases, POC emissions) as suitable mitigation.⁷ Because the East Altamont Energy Center is providing more than 1:1 mitigation for NO_x, the net decrease in NO_x emissions shown in Table 1 for the East Altamont Energy Center will be in excess of the unmitigated SO₂ increase, and hence we believe that there are no significant, unmitigated emissions associated

⁶ See, for example, the East Altamont Energy Center's response to CEC Data Request 27 on this subject.

⁷ See, for example, CEC Staff assessments in the cases of Delta Energy Center, Metcalf Energy Center, Moss Landing Power Plant, and Morro Bay Power Plant.

with the East Altamont Energy Center project, even if mitigation of SO₂ emissions were considered necessary.

It is also important to note that the CEC Staff has historically, and correctly, taken the position that when it comes to evaluating impacts for significance under CEQA, it is appropriate to look at reasonable worst-case scenarios and not absolute worst-case scenarios. The previous context in which the CEC addressed this issue was in the manner used to determine worst-case daily emissions from a project to evaluate the need for, and adequacy of, mitigation. For example, even if the air permit for a project would have allowed the operation of duct burners for all 24 hours in a day, the CEC staff evaluated whether that was a likely worst-case scenario and, in some cases, concluded that, for example, only 16 hours of duct firing operation would occur on a “reasonable worst case day”.

The CEC staff presently evaluates project impacts looking at annual emissions, and not daily emissions; however, the “reasonable worst case” concept still applies. We believe that with respect to PM₁₀ emissions from East Altamont Energy Center, this issue is particularly relevant. The CEC Staff is in receipt of source test data from comparable facilities that demonstrate that expected PM₁₀ emission rates will be approximately one-half, or less, of the maximum PM₁₀ emission rates shown in Table 1, even if the East Altamont Energy Center operates to the maximum level allowable under the BAAQMD permit. An evaluation of the East Altamont Energy Center emissions based on this “reasonable worst case” emission rate for PM₁₀ lends further credence to the position that the East Altamont Energy Center project’s PM₁₀ impacts are fully mitigated through the provision of emission reduction credits provided to satisfy BAAQMD offset requirements.

Finally, if one were to reject all the above arguments but still apply the reasoning used in the TPP PMPD, the quantity of emissions that remain unmitigated is simply the allowable SO₂ emission rate of 21.33 tons per year. This quantity of emissions is more than mitigated through the \$1,002,480 Mitigation Fee Payment required to be paid to the SJVUAPCD – representing a mitigation fee of approximately \$47,000 per ton.⁸

In conclusion, we believe that the project will not result in significant, unmitigated air quality impacts if the project is evaluated in a manner consistent with either the BAAQMD’s technical approach, the SJVUAPCD’s analysis of its mitigation agreement with the East Altamont Energy Center, or the CEC’s treatment of other, contemporaneous, nearby projects. Therefore, the staff’s proposed mitigation measures AQ-SC5 and AQ-SC7 should be deleted or revised to reflect the additional mitigation that will be provided by the East Altamont Energy Center to the SJVUAPCD in the form of an Air Quality Mitigation Fee.

Ammonia Emissions

Staff has proposed to modify Condition AQ-25 to include a 5 ppm ammonia slip limit, as opposed to the proposed 10 ppm limit, as a mitigation measure to lessen the contribution of

⁸ SJVUAPCD mitigation fee payment of \$1,002,480 divided by 21.33 tons = \$46,999/ton.

ammonium nitrate to the PM₁₀ and PM_{2.5} impacts on the local area. (AQ page 5.1-22) However, we believe that the formation of ammonium nitrate from turbine ammonia slip will be insignificant, and, accordingly, there is no basis for reducing the ammonia slip limit from 10 ppm to 5 ppm.

To determine the potential for ammonia emissions from the East Altamont Energy Center to contribute to particulate formation in the area, we have investigated the ambient monitoring data from nearby Livermore to establish whether the area can be characterized as ammonia-rich. Available monitoring data suggests that the East Altamont project area is mostly ammonia-rich, suggesting that ammonia emissions will not contribute significantly to particulate nitrate formation or deposition in the area.

Adding more ammonia to the ambient air will result in the immediate formation of ammonium nitrate particulate only if the area is ammonia-limited; that is, if there are excess acidic nitrates and sulfates available for reaction, the addition of ammonia to the atmosphere will result in the formation of ammonium nitrate and sulfate compounds. However, if the area is ammonia-rich, adding more ammonia to the air will not automatically result in more ammonium nitrate formation because the area is NO_x and SO_x limited. An examination of 1997 PM₁₀, PM₁₀ nitrate and PM₁₀ sulfate concentrations for the Livermore monitoring station indicates that the project area probably can be characterized as mostly ammonia-rich.

Because data on ambient ammonia concentrations are not available, it is necessary to deduce ammonia concentrations indirectly based on available data regarding nitrate and sulfate concentrations. Ammonium nitrate concentrations are low to non-existent under ammonia-poor conditions. In general, if no nitrates are present, the conditions are clearly ammonia-poor. Under ammonia-rich conditions, fairly large amounts of nitrates are found, since all available sulfuric acid has been neutralized. The 1997 Livermore data show occasional episodic nitrate events, during which the aerosol mass becomes predominantly composed of nitrates, such as occasionally occur in major urban areas of California.

Studies of secondary PM₁₀ formation in the San Joaquin Valley (Chow et al, 1993; Sonoma Technologies⁹) also conclude that the San Joaquin Valley is generally ammonia-rich during the winter season when ambient PM₁₀ levels are highest. In combination with the Livermore data described above, this data suggests that the East Altamont project area is NO_x/SO₂ limited, so that nitrate formation will be most effectively controlled by minimizing NO_x and SO₂ emissions from the turbines. The proposed 2 ppm NO_x emission limit (on an annual basis) and the use of natural gas fuel will achieve this objective.

Finally, although there is no BACT requirement for ammonia, we note that in the Moapa Paiute (Nevada) case EPA concluded that there was no technical basis for requiring further control of ammonia from that gas turbine facility as a corollary environmental impact associated with the use of SCR to control NO_x. EPA's determination in that case was based on the same rationale as that proposed by the BAAQMD in the East Altamont Energy Center

⁹ Cited in the Elk Hills FSA at p. 50.

case, i.e., given the available data regarding the role of ammonia in PM₁₀ formation in the project area, there is no basis for requiring further reductions in ammonia emissions. An ammonia slip limit of 10 ppm was proposed for the Moapa Paiute project, as is the case for the East Altamont Energy Center.

Therefore, we believe that ammonium nitrate formation as a result of ammonia slip from the turbines will not be significant, and that nitrate formation is better controlled by reducing NO_x and SO₂ emissions from the turbines. Thus, the ammonia slip level should remain at 10 ppm as proposed by the BAAQMD.

Construction Impacts and Mitigation

The following are our comments on the staff's proposed construction mitigation conditions.

AQ-SC1 – AQ-SC1 as proposed by the CEC staff includes the preferred experience needed for the Air Quality Construction Mitigation Manager (AQCMM) position. According to the condition, the AQCMM shall have a minimum of eight years of experience as well as the following:

- Five years construction experience as a subcontractor or general contractor.
- An engineering degree or an additional five years construction experience.
- One year construction project management experience.
- Two years air quality assessment experience.
- While the condition does require that all resumes submitted for the AQCMM position be considered regardless of experience, the experience for the AQCMM position should be tailored to the requirements of the job, namely environmental compliance experience and a current certification for visible emission evaluation. In addition, because one or more individuals will be responsible for not only air quality related mitigation duties but also water quality mitigation and other mitigation related activities, the AQCMM position should be referred to as a Construction Mitigation Manager rather than strictly an Air Quality Compliance Mitigation Manager. The changes discussed above are incorporated in the revised condition included at the bottom of this section.

AQ-SC2 – AQ-SC2 as proposed by the CEC staff includes a number of elements required for a monthly fugitive dust mitigation report. One of the required elements of the monthly report is a summary of the construction operations planned for the following two months which may result in the generation of fugitive dust. Each description must include a schedule, on-site location of construction activity, and a list of proposed fugitive dust mitigation measures. Due to the dynamic nature of a construction site where construction activities can change daily, it would be difficult to accurately summarize construction operations two months in advance. Consequently, this element of the monthly report should be removed. In the revised language for this condition that is included at the bottom of this section, the elements of the monthly report have been changed to focus on mitigation measures implemented for actual

construction activities that occurred during the past month rather than focusing on future expected activities that may or may not occur. In addition, in the revised language the requirement for a summary of ambient air monitoring data collected as been removed from the elements of the monthly report since there is no requirement for ambient air monitoring in the CEC staff's construction conditions. The revised language also clarifies the specific objectives of the dust mitigation program (i.e., prohibit 20% opacity at any location, prohibit a visible dust plume from extending more than 100 yards from activity, and prohibit a visible dust plume from extending beyond the property boundary). Furthermore, the revised language clarifies that the fugitive dust mitigation monthly report needs to include a summary of complaints received by either the owner/operator, the CPM, or the Air Pollution Control District related to construction activities and the actions taken to address each compliant.

The condition should be revised to refer to a CMM rather than an AQCM. In addition, to clarify that the project owner is ultimately responsible for the timely submittal of all documents and reports required by the construction conditions of certification, the condition has been revised to require the project owner to submit the monthly compliance report to the CPM rather than this being the responsibility of the CMM. These changes are reflected in the revised condition included at the bottom of this section.

AQ-SC3 – AQ-SC3 as proposed by the CEC staff includes several elements required for a Fugitive Dust Mitigation Plan (FDMP). One of the required elements of the FDMP is a schedule of each operation planned for the first two months of the project that may result in the generation of fugitive dust, including the location of the construction activity, source of fugitive dust, and proposed mitigation measure. As discussed above with regards to condition AQ-SC2, a construction site is comprised of a number of construction activities that can occur simultaneously at different locations on the site. Since these activities can change daily depending situations that can arise at the site, it would be difficult to accurately forecast future construction activities and their locations on the site. Therefore, this requirement for the FDMP should be removed from the condition.

The condition should also be revised to identify the objectives of the dust mitigation program, namely to prohibit visible plumes in excess of 20% at any location, prohibit visible dust plumes from extending more than 100 yards from an activity, and prohibit visible dust plumes from extending beyond the property line. In addition, the condition should be revised to require notification of the residents within one-half mile of the project site of the commencement of construction and provide a phone number for use by the public to report any undesirable dust conditions associated with the construction project.

The condition also includes a list of construction mitigation measures that should be addressed in the FDMP. The list of construction mitigation measures includes the suspension of all earth moving activities under windy conditions. The revised construction mitigation measure included at the end of this section clarifies that suspension of all earth moving activities under windy conditions should occur if standard and additional mitigation measures are not effective. Furthermore, the condition also refers to on site monitoring devices. Since the CEC staff's construction conditions do not require on site monitoring, the reference to on site monitoring devices should be removed from the condition. The condition should also be

revised to refer to a CMM rather than an AQCM and require the project owner to submit the fugitive dust plan to the CPM. The revised condition included at the bottom of this section reflects these changes as well as the other changes discussed above.

AQ-SC4 – AQ-SC4 should be revised to refer to a CMM rather than an AQCM. These changes are reflected in the revised condition included at the bottom of this section.

F. Conclusion

The East Altamont Energy Center has been designed to have extremely low emission rates and minimal environmental impacts. It will be one of the cleanest power plants in the United States, with state-of-the-art design features and emission control capabilities. Remaining increases in emissions of NO_x, hydrocarbons and PM₁₀ will be offset at a ratio of at least one to one, and emissions of these pollutants plus sulfur dioxide will be mitigated at a ratio of at least one to one. The emission reductions provided as mitigation will be greater than the project's emission increases, thus ensuring a net benefit to regional air quality.

With the implementation of the above mitigation measures, and in combination with the proposed conditions of certification contained in the Staff Assessment (as proposed to be amended above), the project will comply with all applicable federal, state and local laws, ordinances, regulations and standards, and remaining potential impacts, if any, are mitigated to a level that is less than significant.

**APPLICANT'S PROPOSED CHANGES TO AQ
CONDITIONS OF CERTIFICATION**

AQ-SC1 The project owner shall submit the resume(s) **of their selected Construction Mitigation Manager(s) (CMM)** ~~each individual proposed to fill the designated Air Quality Construction Mitigation Manager (AQACMM) position to the CEC Compliance Project Manager (CPM) for approval. One or more individuals may hold this~~ **perform the duties associated with this** position. ~~The owner shall be responsible for funding the costs of the AQACMM, however the AQACMM shall be allowed to report directly to the CPM. The AQACMM~~ **CMM** shall preferably have a ~~minimum of eight years~~ experience as follows, however the CPM shall consider all resumes submitted regardless of experience:

- ~~• five years construction experience as a subcontractor or general contractor.~~
- ~~• An engineering degree or an additional five years construction experience.~~
- ~~one year~~ **e**Construction project management, **safety compliance or environmental compliance** experience.
- ~~• two years air quality assessment experience.~~
- **Current certification by the California Air Resources Board for Visible Emission Evaluation (VEE), or a commitment to obtain certification prior to the commencement of construction.**

The ~~AQACMM~~ **CMM** shall be responsible for implementing all mitigation measures related to construction equipment combustion emissions, construction monitoring and enforcing the effectiveness of construction mitigation measures as outlined in Conditions of Certification **AQ-SC3** and **AQ-SC4**. The ~~AQACMM~~ **CMM** shall be onsite during all construction activities, until no longer deemed necessary by the CPM. The ~~AQACMM~~ **CMM** shall be granted access to all areas of the main and linear facility construction sites. The ~~AQACMM~~ **CMM** shall have the authority to stop specific construction activities on either the main or the linear facility construction sites as specified in Condition **AQ-SC3** (3) below. The ~~AQACMM~~ **CMM** may not be terminated prior to the cessation of construction activities unless approval is granted by the CPM.

Verification The project owner shall submit the ~~AQACMM~~ **CMM** resume(s) to the CPM for approval at least 60 days prior to site mobilization.

AQ-SC2 The project owner shall **submit** ~~ensure that the AQACMM submits directly to the CPM for approval (as part of the Monthly Compliance Report)(and a copy to the project owner)~~ a report **prepared by the CMM** of all compliance actions taken germane to Conditions of Certification **AQ-SC3** and **AQ-SC4**. The report shall include, at a minimum, the following elements:

Fugitive Dust Mitigation Monthly Report

(see Condition of Certification AQ-SC3)

- ~~a. A summary of each of the operation(s) planned for the following two months which may result in the generation of fugitive dust. Each description shall include a schedule, on-site location details and a list of proposed fugitive dust mitigation measures.~~
- b. A summary of all mitigation activities implemented for each fugitive dust generating operation identified in a previous report **during the preceding month**. This report should provide a summary description of the operation, the mitigation measures implemented and the estimated effectiveness of each mitigation measure.
- c. Details of all operation(s) requiring fugitive dust mitigation that are not identified in the previous report or the FDMP. Details shall include (at a minimum) a description of the operation, the date, duration, mitigation measures implemented, and an explanation for not reporting the operation in a previous report (or in the FDMP).
- d. Identification of any failures of mitigation measures and details of the actions taken to reduce the identified impacts and prevent future failures of those mitigation measures.
- Identification of any observation by the AQCMM **CMM** of dust plumes beyond the property boundary of the main construction site or beyond an acceptable distance from the linear construction site and what actions (if any) were taken to abate the plume **which exceed any of the following criteria:**
 - **Opacity of the dust plume exceeded 20% at any location;**
 - **A visible dust plume extended more than 100 yards from the dust generating activity;**
 - **For activities at the facility site, a visible dust plume extended beyond the fenced property boundary.**

For each identified plume, the report shall identify the actions (if any) taken to abate the plume.

- ~~a. A summary of all ambient air monitoring data collected.~~
- b. A list of all complaints received by either the Owner/Operator, the CPM, or the Air Pollution Control District related to construction activities during the preceding month, and a list of actions taken to address each complaint received.

Diesel Construction Equipment Mitigation Monthly Report

(see Condition of Certification AQ-SC4)

- a. Identification of any changes, as approved by the CPM, to the Diesel Construction Equipment Mitigation Plan from the initial report or the last monthly report including any new contractors and their diesel construction equipment.

- b. A Copy of all receipts or other documentation indicating types and amounts of fuel purchased, from whom, where delivered and on what date for the main and related linear construction sites.
- c. Identification and verification of all diesel engines required to meet EPA or CARB 1996 off-road diesel equipment emission standards.
- d. The suitability of the use of a catalyzed diesel particulate filter for a specific piece of construction equipment is to be determined by a qualified mechanic or engineer who must submit a report through the ~~AQCMM~~ **CMM** to the CPM for approval. The identification of any suitability report initiated or pursued, or the completed report, should be included in the monthly report (in the month that it was completed) as should the verification of any subsequent installation of a catalyzed diesel particulate filter.
- e. Identification of any observation by the ~~AQCMM~~ **CMM** of **dark** exhaust plumes emanating from diesel-fired construction equipment beyond the property boundary of the main construction site or beyond an acceptable distance from the linear construction site and what actions (if any) were taken to abate the plume or future expected plumes.

Verification: The project owner shall ~~ensure that the AQCMM~~ submits directly to the CPM for approval (~~and a copy to the project owner~~), in the MCR, all compliance actions taken germane to Conditions of Certification **AQ-SC3** and **AQ-SC4**. The report is due within ten working days after the end of each reporting month.

AQ-SC3 The project owner shall ~~ensure that the AQCMM prepares and submits to the CPM for approval, a Fugitive Dust Mitigation Plan (FDMP) prepared by the CMM~~ that specifically identifies all fugitive dust mitigation measures that will be employed during the construction of the facility and related linears. The FDMP shall be administered on site by the **CMM** ~~full-time AQCMM~~.

~~The FDMP shall include a schedule of each operation planned for the first two months of the project that may result in the generation of fugitive dust, including location, source(s) of fugitive dust, and proposed mitigation measures specific to each operation/source.~~

The FDMP shall be designed to achieve all of the following objectives:

- **The opacity of fugitive dust plumes shall not be in excess of 20% at any location;**
- **There shall not be a visible dust plume that extends more than 100 yards from the activity that causes the dust plume to be generated; and**
- **For construction at the facility site, there shall not be a visible dust plume that extends beyond the fenced property boundary.**

The FDMP shall include provisions for notifying residents within one-half mile of the project site of the commencement of construction, and of a phone number for use by the public to

report any undesirable dust conditions associated with project construction activities. These provisions, and the related notice and phone number, may be combined with the notice and phone number required by condition NOISE-1.

The construction mitigation measures that shall be addressed in the FDMP include, but are not limited to, the following:

- Identification of the employee parking area(s) and surface composition of those parking area(s)
- The frequency of watering of unpaved roads and all disturbed areas
- Application of chemical dust suppressants
- Gravel in high traffic areas
- Paved access aprons
- Sandbags to prevent run off
- Posted speed limit signs
- Wheel washing areas prior to large trucks leaving the project site
- Methods that will be used to clean tracked-out mud and dirt from the project site onto public roads
- For any transportation of solid bulk material
 1. Vehicle covers
 2. Wetting of the transported material
 3. Appropriate freeboard
- Methods for the stabilization of storage piles and disturbed areas
- Windbreaks at appropriate locations
- Additional mitigation measures to be implemented at the direction of the ~~AQCMM~~ **CMM** in the event that the standard measures fail to completely control dust from any activity and/or source
- The suspension of all earth moving activities under windy conditions **if standard and additional mitigation measures are ineffective**
- ~~On site monitoring devices~~

In monitoring the effectiveness of all mitigation measures included in the FDMP, the ~~AQCMM~~ **CMM** shall take into account the following, at a minimum:

- a. Onsite spot checks of soil moisture content at locations where soil disturbance, movement and/or storage is occurring; and
- b. Visual observations of all construction activities.

The ~~AQCMM~~ CMM shall implement the following procedures for additional mitigation measures if the ~~AQCMM~~ CMM determines that the existing mitigation measures are not resulting in effective mitigation:

1. The ~~AQCMM~~ CMM shall direct more aggressive application of the existing mitigation methods within fifteen (15) minutes if standard mitigation measures are not effective.
2. The ~~AQCMM~~ CMM shall direct implementation of additional methods of mitigation if step #1 specified above fails to result in adequate mitigation within thirty (30) minutes of the original determination.
3. The ~~AQCMM~~ CMM shall **have the authority to** direct a temporary shutdown of the source of the emissions if step #2 specified above fails to result in adequate mitigation within one ~~(1)~~ (1) hour of the original determination. The activity shall not restart until circumstances leading to the problem have been addressed.

Verification: At least 30 days prior to site mobilization, the project owner shall provide the CPM with a copy of the FDMP for approval. Site mobilization shall not commence until the project owner receives approval of the FDMP from the CPM.

AQ-SC4 The project owner shall ensure that the ~~AQCMM~~ CMM prepares and submits to the CPM for approval, a Diesel Construction Equipment Mitigation Plan (DCEMP) that will specifically identify diesel engine mitigation measures that will be employed during the construction phase of the main and related linear construction sites. The project owner shall ensure that the ~~AQCMM~~ CMM will be responsible for directing implementation of and compliance with all measures identified in the DCEMP. The DCEMP shall address, at a minimum, the following mitigation measures:

- Catalyzed diesel particulate filters (CDPF)
- CARB certified ultra low sulfur diesel fuel, containing 15 ppm sulfur or less (ULSD)
- Diesel engines certified to meet EPA and/or CARB 1996 or better off-road equipment emission standards
- Restricting diesel engine idle time, to the extent practical, to no more than ten minutes

The DCEMP shall include the following:

1. A list of all diesel-fueled, off-road, stationary or portable construction-related equipment to be used either on the main or the related linear construction sites. This list will initially be estimated and then subsequently be updated as specific

contractors become identified. Prior to a contractor gaining access to the main or related linear construction sites, the project owner shall ensure that the ~~AQCMM~~ **CMM** submits to the CPM for approval, an update of this list including all of the new contractor’s diesel construction equipment.

2. Each piece of construction equipment listed under item #1 of this condition must demonstrate compliance according to the following mitigation requirements, except as noted in items #3, #4 and #5 of this condition:

Engine Size (BHP)	1996 CARB or EPA Certified Engine	Required Mitigation
< 100	NA	ULSD
> or = 100	Yes	ULSD
> or = 100	No	ULSD and CDPF, if suitable as determined by the AQCMM CMM

1. If the construction equipment is intended to be on-site for ten days or less, then none of the mitigation measures identified in item #2 of this condition are required.
2. The CPM may grant relief from the mitigation measures listed in item #2 of this condition for a specific piece of equipment if the ~~AQCMM~~ **CMM** can demonstrate that they have made a good faith effort to comply with the mitigation measures and that compliance is not possible.
3. Any implemented mitigation measure in item #2 of this condition may be terminated immediately if one of the following conditions exists, however the CPM must be informed within ten working days of the termination:
 - 5.1 The measure is excessively reducing normal availability of the construction equipment due to increased downtime for maintenance, and/or reduced power output due to an excessive increase in back pressure.
 - 5.2 The measure is causing or is reasonably expected to cause significant engine damage.
 - 5.3 The measure is causing or is reasonably expected to cause a significant risk to workers or the public.
 - 5.4 Any other seriously detrimental cause which has approval by the CPM prior to the termination being implemented.
4. All contractors must agree to limit diesel engine idle time on all diesel-powered equipment to no more than ten **(10)** minutes, to the extent practical.

Verification: The project owner shall ensure that the ~~AQCMM~~ CMM submits a DCEMP to the CPM for approval at least thirty (30) days prior to site mobilization. The ~~AQCMM~~ CMM will update the initial DCEMP (if necessary), no less than ten (10) days prior to a specific contractor gaining access to either the main or related linear construction sites. The project owner shall ensure that the ~~AQCMM~~ CMM notifies the CPM of any emergency termination within ten (10) working days of the termination.

ATTACHMENT 1
Testimony of Gary Rubenstein
PRIOR FILINGS

Application for Certification and Supplemental Filings

- Exhibit ____ AFC Chapter 8.1 (Air Quality) (Docket #19334)
- Exhibit ____ AFC Appendix 8.1 (Air Quality) (Docket # 19334)
- Exhibit ____ Supporting air quality analyses related to nitrogen deposition for AFC Chapter 8.2 (Biological Resources) (Docket # 19334)
- Exhibit ____ Supporting air quality analyses for AFC Chapter 8.6 (Public Health) (Docket # 19334)
- Exhibit ____ Supporting information related to plume visibility for AFC Chapter 8.11 (Visual Resources) (Docket # 19334)
- Exhibit ____ Letter dated March 29, 2001 from Ellison, Schneider & Harris to CEC (Steve Larson) transmitting request for confidential treatment of emission reduction credit information. (Docket # 19411)
- Exhibit ____ Letter dated March 30, 2001 from Sierra Research to CEC Dockets Office transmitting compact disks containing air quality modeling files and topographic maps. (Docket # 19726)
- Exhibit ____ Letter dated April 3, 2001 from Calpine (B. McBride) to Bay Area Air Quality Management District (BAAQMD; B. deBoisblanc) transmitting the Application for Determination of Compliance and Authority to Construct to the BAAQMD. (Docket # 19439)
- Exhibit ____ Data Adequacy Response Set 1 (May 1, 2001), Section 2.1 (Air Quality), and the portion of Section 2.12 (Visual Resources) that addresses visible water vapor plumes. (Docket # 20109)
- Exhibit ____ Supplement A to the AFC (May 3, 2001), portions related to air quality. (Docket # 20035)
- Exhibit ____ Supplement B to the AFC (October 9, 2001), portions related to air quality. (Docket # 22629)
- Exhibit ____ Supplement C to the AFC (February 6, 2002), portions related to air quality. (Docket # 24419)
- Exhibit ____ Comments on the Preliminary Staff Assessment in the area of air quality, filed January 14, 2002. (Docket # 24087)

Data Responses

- Exhibit _____. Responses to CEC Data Requests, Set 1, filed July 9, 2001: responses 6 and 7 (visible water vapor plumes) (Docket # 21369)
- Exhibit _____. Responses to CEC Data Requests, Set 2, filed August 17, 2001: responses 13 – 45 (air quality), 114-120 (visible water vapor plumes) (Docket # 21868)
- Exhibit _____. Responses to CEC Data Requests, Set 2C, filed September 14, 2001: responses related to air quality and visible water vapor plumes. (Docket # 22291)
- Exhibit _____. Responses to CEC Data Requests, Set 3, filed October 9, 2001: responses related to visible water vapor plumes. (Docket # 22630)
- Exhibit _____. Responses to CEC Data Requests, Set 2G, filed October 12, 2001: responses 13, 14, 44 (air quality); 116, 119, 120 (visual water vapor plumes). (Docket # 22649)
- Exhibit _____. Responses to CEC Data Requests, Set 2H, filed October 31, 2001: responses 117 and 119 related to visible water vapor plumes. (Docket # 23085)

Correspondence

- Exhibit _____. Letter dated May 16, 2001 from Sierra Research (N. Matthews) to BAAQMD (D. Jang) responding to a request for additional information.
- Exhibit _____. Letter dated June 4, 2001 from Sierra Research (N. Matthews) to BAAQMD (D. Jang) requesting data needed to perform a cumulative air quality impacts analysis.
- Exhibit _____. Letter dated June 4, 2001 from Sierra Research (N. Matthews) to SJVUAPCD (J. Swaney) requesting data needed to perform a cumulative air quality impacts analysis.
- Exhibit _____. Letter dated July 13, 2001 from Sierra Research (N. Matthews) to BAAQMD (R. Walker) requesting data needed to perform a cumulative air quality impacts analysis.
- Exhibit _____. Letter dated August 28, 2001 from Sierra Research (N. Matthews) to CEC Dockets Office providing responses to informal comments from the Air Resources Board staff regarding the screening health risk assessment. (Docket # 22074)

- Exhibit ____ Letter dated August 28, 2001 from Sierra Research (N. Matthews) to BAAQMD (B. deBoisblanc) requesting data needed to perform an air quality increments analysis.
- Exhibit ____ Letter dated August 28, 2001 from Sierra Research (N. Matthews) to SJVUAPCD (J. Swaney) requesting data needed to perform an air quality increments analysis.
- Exhibit ____ Letter dated November 9, 2001 from Sierra Research (G. Rubenstein) to CEC Staff (T. Ngo) transmitting information regarding ammonia slip levels.
- Exhibit ____ Letter dated November 13, 2001 from Sierra Research (G. Rubenstein) to CEC Dockets Office transmitting information related to visible water vapor plume modeling. (Docket # 23040)
- Exhibit ____ Letter dated November 29, 2001 from Sierra Research (G. Rubenstein) to CEC Staff (T. Ngo) transmitting information regarding turbine startup and shutdown emission rates.
- Exhibit ____ Letter dated November 29, 2001 from Sierra Research (N. Matthews) to BAAQMD (B. deBoisblanc) transmitting revised air quality impact analysis. (Docket # 23274)
- Exhibit ____ Letter dated December 6, 2001 from Sierra Research (G. Rubenstein) to CEC Staff (T. Ngo) transmitting corrected information regarding turbine startup and shutdown emission rates.
- Exhibit ____ Letter dated December 20, 2001 from Sierra Research (G. Rubenstein) to CEC Staff (T. Ngo) transmitting miscellaneous equipment brochures.
- Exhibit ____ Letter dated December 21, 2001 from Sierra Research (N. Matthews) to BAAQMD (D. Jang) transmitting emission reduction credit summary.
- Exhibit ____ Letter dated December 21, 2001 from Sierra Research (G. Rubenstein) to CEC Staff (T. Ngo) transmitting fuel sulfur data.
- Exhibit ____ Letter dated April 3, 2002 from CH2M Hill (J. Salamy) to CEC Staff (C. Davis) transmitting revised visible water vapor plume analysis. (Docket # 25132)
- Exhibit ____ Letter dated May 17, 2002 from Sierra Research (G. Rubenstein) to BAAQMD (D. Jang) transmitting comments on the Preliminary Determination of Compliance.

- Exhibit ____ Letter dated July 8, 2002 from Sierra Research (G. Rubenstein) to SJVUAPCD (S. Sadredin) regarding mitigation fee agreement with the SJVUAPCD.
- Exhibit ____ Letter dated July 12, 2002 from Sierra Research (G. Rubenstein) to CEC Staff (C. Davis) providing comments on the CEC staff's air quality mitigation proposal. (Docket # 26190)
- Exhibit ____ Letter dated July 19, 2002 from Sierra Research (G. Rubenstein) to CEC Staff (C. Davis) transmitting draft consensus air quality mitigation plan. (Docket # 26234)
- Exhibit ____ Letter dated July 24, 2002 from CH2M Hill (J. Salamy) to CEC Staff (C. Davis) transmitting the Final Determination of Compliance issued by the BAAQMD. (Docket # 26296)
- Exhibit ____ Letter dated August 29, 2002 from Sierra Research (G. Rubenstein) to CEC Staff (C. Davis) transmitting revised construction air quality impact analysis.

Additional Materials Prepared by Others

- Exhibit ____ Letter dated April 23, 2001 from Bay Area Air Quality Management District (D. Jang) to CEC (S. Larson), concluding that the AFC contains sufficient information for the BAAQMD to undertake its Determination of Compliance review.
- Exhibit ____ Letter dated June 22, 2001 from SJVUAPCD (J. Swaney) to Sierra Research (N. Matthews) indicating that there are no sources within that District for inclusion in the cumulative air quality impact analysis.
- Exhibit ____ Letter dated October 17, 2001 from BAAQMD (D. Jang) to Sierra Research (N. Matthews) regarding the status of the PDOC review. (Docket # 22793)
- Exhibit ____ Letter dated October 23, 2001 from BAAQMD (G. Willner) to Sierra Research (N. Matthews) providing information related to the air quality increments analysis.
- Exhibit ____ Letter dated March 4, 2002 from URS (D. Stein) to the CEC Dockets Office (Docket # 01-AFC-16) transmitting a cumulative air quality impacts analysis for the Tracy Peaker project. (Docket # 24808)
- Exhibit ____ Letter dated April 12, 2002 from BAAQMD (E. Garvey) to the East Altamont Energy Center (A. Torre) transmitting the Preliminary Determination of Compliance. (Docket 25375)

Exhibit ____ Letter dated April 16, 2002 from BAAQMD (D. Jang) to CEC Staff (T. Ngo) correcting an error in the Preliminary Determination of Compliance.

Figure 1

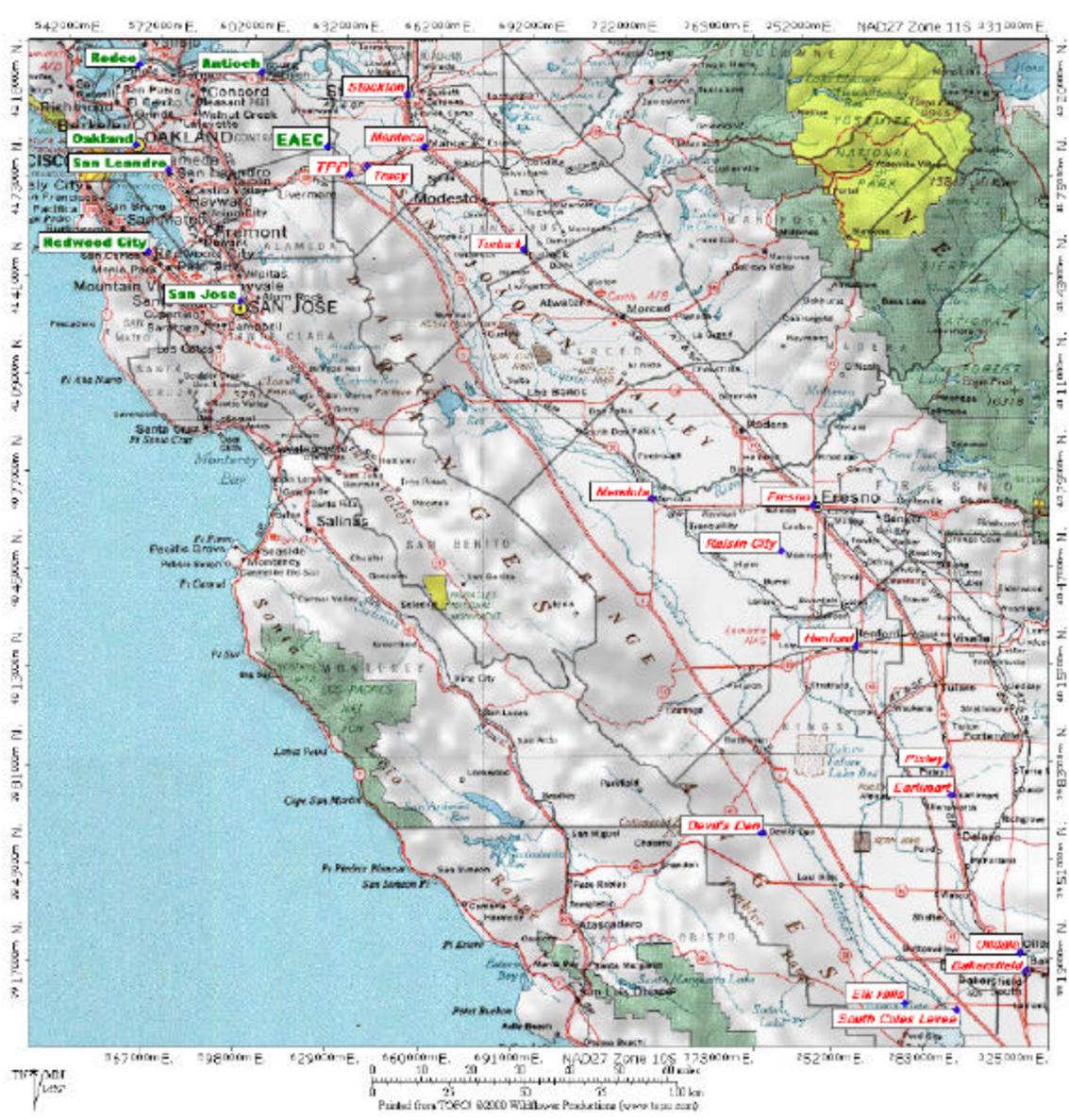


Table 1.

East Altamont Energy Center CEC Mitigation Summary - Tracy Peaker Project Formulation								
Certificate Number	Offsets Location	Nominal Distance to EAEC (mi)	Emissions (tpy)				PM10	PDOC Condition 35
			POC	CO	NOx	SOx		
		Project Emissions	73.70	793.60	263.00	21.33	148.00	
749	Antioch	20			13.67			PDOC Table 8
645	San Leandro	32			107.90			PDOC Table 8
687	San Leandro	32	43.82		0.58			PDOC Table 8
661	San Jose	36	31.75					PDOC Table 8
602	Oakland	38	8.99		2.14			PDOC Table 8
662	Oakland	38			73.62	46.30		PDOC Table 8
741	Rodeo	41			96.81	395.65		PDOC Table 8
716	Redwood City	42	0.20		7.72	0.04	0.67	PDOC Table 8
		Totals	84.76	0.00	302.45	441.99	0.67	
		Interprecursor SOx->PM10				-441.99	147.33	3.00 interprecursor ratio
		Net Increase (Decrease)	-11.06	793.60	-39.45	21.33	0.00	
		Weighted Average Distance from EAEC to ERCs	34	NA	36	41	42	

Tracy Peaker Project CEC Mitigation Summary								
Certificate Number	Offsets Location	Nominal Distance to TPP (mi)	Emissions (tpy)				PM10	SA Air Quality
			VOC	CO	NOx	SOx		
		Project Emissions	13.37	71.62	153.46	5.60	82.40	SA Air Quality: Table 23
N-244-2	Tracy	3.9			19.10			SA Air Quality: Table 24
N-289-3	Manteca	16.0		84.84				SA Air Quality: Table 28
N-130-5	Stockton	20.0				33.25		SA Air Quality: Tables 25, 27
N-256-5	Stockton	20.0				50.00		SA Air Quality: Table 25
N-282-4	Stockton	20.0					36.60	SA Air Quality: Table 25
N-226-4	Turlock	38.3					7.14	SA Air Quality: Table 25
C-278-2	Mendota	90.0			13.69			SA Air Quality: Table 24
C-382-4	Fresno	116.0					6.15	SA Air Quality: Table 25
C-394-4	Raisin City	117.0					5.84	SA Air Quality: Table 25
C-392-5	Hanford	140.0				1.04		SA Air Quality: Table 25
C-413-5	Hanford	140.0				11.18		SA Air Quality: Table 25
C-442-5	Hanford	140.0				5.66		SA Air Quality: Table 25
C-445-5	Hanford	140.0				4.83		SA Air Quality: Table 25
S-1505-4	Devil's Den	158.0					0.50	SA Air Quality: Table 25
S-1452-4	Pixley	171.0					6.19	SA Air Quality: Table 25
S-1442-4	Earlimart	176.0					2.54	SA Air Quality: Table 25
S-1615-2	Elk Hills	203.0			37.24			SA Air Quality: Table 24
S-1618-2	Elk Hills	203.0			80.00			SA Air Quality: Table 24
Source A	Elk Hills	203.0			27.22			SA Air Quality: Table 24
S-1624-3	Oildale	210.0		1.06				SA Air Quality: Table 28
S-1623-2	South Coles Levee	211.0			7.29			SA Air Quality: Table 24
S-1623-3	South Coles Levee	211.0		0.32				SA Air Quality: Table 28
S-1538-1	Bakersfield	213.0	20.05					SA Air Quality: Table 26
S-1626-2	Bakersfield	213.0			25.87			SA Air Quality: Table 24
		Totals	20.05	86.22	210.41	105.96	64.94	
		Interprecursor SOx->PM10				-34.92	17.46	2.00 interprecursor ratio
		Net Increase (Decrease)	-6.68	-14.60	-56.95	-65.44	0.00	
		Weighted Average Distance from TPP to ERCs	213	19	179	46	61	

Note: This comparison excludes carbon monoxide emissions, for which the CEC has never historically required mitigation, and which is not at issue in the EAEC case. The CO ERCs voluntarily provided by TPP are located an average of 19 miles from the TPP project site.

BIOLOGICAL RESOURCES

I. INTRODUCTION

A. Name: E.J. Koford

B. Purpose: This testimony addresses the Biological Issues associated with the proposed project.

C. Qualifications: Mr. Koford has over 20 years experience in biological resource evaluation and analysis issues. He has conducted 21 biological resources investigations for power plants and electrical energy transmission projects. His qualifications are summarized more completely in the attached resume (Appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.2 of the AFC
- Appendix 8.2 to the AFC
- Data Adequacy Response Set #1, Filed May 1, 2001
- Data Adequacy Response Set #2, Filed May 3, 2002
- Supplement A, Filed May 3, 2001
- Data Requests and Responses Set#1, Filed
- Data Requests and Responses Set #2, Filed August 17, 2001
- Requests/Responses #46-62
- Data Requests and Responses Set #2A, Filed August 31, 2001
- Requests/Responses #53
- Data Requests and Responses Set #2D, Filed September 28, 2001
- Requests/Responses #59
- Data Requests and Responses Set #3, Filed October 9, 2001 Request/Responses #124-127
- Supplement B, Filed on October 10, 2001
- Data Requests and Responses Set #2I, Filed November 9, 2001 Request/Response #61

- PSA Comments Set 1, Filed January 14, 2002
- Supplement C, Filed February 6, 2002
- Biological Assessment, Filed March 7, 2002
- Response from the National Marine Fisheries Service, Filed April 3, 2002
- Responses to Issues Raised at the 1/23/03 Workshop on the Conceptual Landscape Plan, Filed April 3, 2002
- Biological Resources, Cultural Resources, Transmission System Engineering Data Request Responses, Biological Resources Data Requests #153 and 154, Filed April 22, 2002
- June 5, 2002 Letter from the National Marine Fisheries Service, Filed June 12, 2002
- Biological Mitigation Proposal, Filed July 1, 2002
- USFWS Biological Opinion, Filed September 19, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that Conditions of Certification be adopted to address Biological Resources. These conditions are BIO-1 through BIO-15 and are described on pages 5.2-42 and 5.2-53 of the FSA. Implementation of the Conditions of Certification will ensure that the facility will be in compliance with the applicable federal, state, and local laws, ordinances, regulations, and standards (LORS) and any potential impacts will be mitigated to a level of insignificance. I have reviewed the Staff's proposed Conditions of Certification set forth in the FSA and find them acceptable with a minor modifications to Conditions BIO-1, 2, 3, 4, 5,11, 12,13 and 15, located at the end of this testimony. The modifications are primarily based upon new condition language in the FSA or concern the Applicant's comments on the PSA that were not addressed by Staff in the FSA.

Condition BIO-1, pertains to the selection of the Designated Biologist. The minor modification to the condition adds a provision for the selection of an emergency replacement for the Designated Biologist, if one is necessary.

Condition BIO-2 identifies the duties of the Designated Biologist and Biological Monitors. One responsibility is to respond directly to inquiries of the CEC's Compliance Project Manager (CPM) regarding biological resource issues. The proposed modification requires the

BIOLOGICAL RESOURCES

Designated Biologist, and the Project Owner to respond directly to the CPM's biological resource inquiries.

Currently Condition BIO-3 states that construction can be halted "if there is an adverse impact to a biological resource." The proposed modification to Condition BIO-3 clarifies that the Designated Biologist and Biological Monitors may halt constructions if there is a "significant" adverse impact to "sensitive" biological resources." In addition, the modification includes the Project Owner in the notification to the CPM of any non-compliance.

Condition BIO-4 pertains to the Worker Environmental Awareness Program. The modification includes a provision that the training may be presented in the form of a video. This is consistent with the Cultural Resources training. The Applicant also proposes to modify the timing for when the Applicant must submit the training program to the CPM.

Condition BIO-5 identifies requirements for the contents of the final Biological Resources Mitigation and Implementation Plan. The Applicant proposes minor clarifying word changes to this condition.

Condition BIO-11 requires that the project design be modified to incorporate "all feasible measures that avoid or minimize impacts to the local biological resources." The Applicant believes this is too broad and is proposing clarifying language to ensure that the modifications do not conflict with other regulations, standards, and objectives. Another modification deletes the requirement that intake pipes using natural waterway be screened to avoid entrainment. There are no natural waterways proposed to be used on the East Altamont Energy Center.

Condition BIO 12 pertains to construction mitigation management. The Applicant proposes several minor modifications to this condition. Specifically, one proposed modification is the deletion of the requirement that U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) protocol level pre-construction surveys be conducted. USFWS and CDFG protocol level surveys can require multiple year surveys and/or seasonal constraints that could not reasonably be accomplished under various circumstances. The objective of the condition is to see that no sensitive species are directly affected by construction. Generally a reconnaissance survey is sufficient to establish this. USFWS and CDFG protocol surveys have other objectives and are not always appropriate.

Another modification pertaining to surveys clarifies that the timing of the surveys be based on the season in which the construction activities will occur, since some sensitive species are not present at certain times of the year. Currently the Condition requires surveys to occur "14 days prior to the commencement of any construction activities," regardless of when the construction activities will occur and whether the species are present.

Another modification to Condition BIO-12 removes the requirement that the Project Owner be responsible for maintaining revegetated construction areas. The Applicant commits to revegetating appropriate areas after construction; however, it should not be responsible for maintaining the revegetated areas indefinitely.

The remaining modification to BIO-12 removes the requirement that the 134 acres of land surrounding the project be leased for use in wildlife friendly agriculture. Although the Applicant intends to keep the remaining 134 acres on the project parcel “available for continued farming,” as specified in Supplement B to its Application for Certification, it is not part of the biological mitigation for the project and therefore should not be included in a Condition of Certification. Removing this condition is in alignment with Staff’s analysis where Staff correctly states that the project’s biological impacts are fully mitigated by the Gomes Parcel, and concludes that “staff has not written a biological Condition of Certification regarding this agricultural easement” (FSA, page 5.2-38).

Lastly, the modifications to BIO-13 and 15 simply provide clarification for when information should be submitted to the CPM.

III. SUMMARY

A. Affected Environment

Project Site - The East Altamont Energy Center site is located on 43.5 acres of agricultural land in Alameda County, east of Tracy Pumping Station on the Delta-Mendota Canal, approximately 8 miles northwest of the City of Tracy, California. The general project region has a Mediterranean climate and supports a mosaic of pastures, dairies, alfalfa fields, hay, row crops, orchards, annual grasslands, and landscape tree communities. An irrigation ditch runs the length of the eastern boundary of the project site, providing a narrow band (less than 5 feet) of wetland vegetation. The remaining area of the parcel is agricultural habitat, planted in an alfalfa-oat rotation. Principal land uses in the region are row and field crops, pastures, and vineyards. These land uses remain prevalent in the county although housing and industrial land uses are becoming more common. Habitat types potentially affected in the project area comprise agricultural, annual grassland, alkaline meadows, emergent marsh and irrigation ditches, riparian shrub, and landscape and urban.

Wildlife that use the mixed agricultural and pasture habitat on the project site tend to occur across all habitat types rather than only a single habitat. Species that commonly use the patchwork of changing crops include California ground squirrel (*Spermophilus beecheyi*), voles (*Microtus californicus*), mice (*Mus musculus*), coyote (*Canis latrans*), red fox (*Vulpes fulva*), opossum (*Didelphis virginianus*), striped skunk (*Mephitis mephitis*), killdeer (*Charadrius vociferus*), and long-billed curlew (*Numenius americanus*). Typical raptors include red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and American kestrel (*Falco sparverius*). Reptiles and amphibians that are likely to occur include gopher snake (*Pituophis melanoleucus*), racer (*Coluber constrictor*), Western fence lizard (*Sceloporus occidentalis*), and Pacific tree frog (*Hyla regilla*).

Because the habitat is highly disturbed, most of the species in this area occur widely and are relatively common. Some sensitive and potentially rare species could also use this habitat. The more general habitat community, however, is not rare or limited in distribution. The location of the proposed project does not support any unique habitat features that are likely to support unique species or communities.

The proposed project site is under intensive agricultural use and does not appear to have any undisturbed habitat or potential habitat for special-status plant species that could occur in the area. No natural drainages or ponds are evident, other than maintained irrigation channels. Specifically, the project site is crossed by three irrigation ditches, two of which are concrete lined. These ditches are seasonally dry and support no wetland vegetation.

Two federally listed species (San Joaquin kit fox and California red-legged frog) and one state-listed species (Swainson's hawk) may occur on the project site and along project linears. However, during biological surveys conducted in 2001, none of these species was observed. There is also the potential for tiger salamander (a federal candidate for listing) burrowing owl and western pond turtle (state species of special concern) to occur on the project site or along the project linears. Tiger salamander and western pond turtle were not observed during the biological surveys conducted in 2001. A burrowing owl was observed approximately 200 feet east of the gas pipeline route during a site visit in 2002.

The Applicant, in surveying the project site and linears, providing a review of historical siting records and surveys, evaluating the uses of the project site and surrounding uses has provided substantial evidence supporting a conclusion that the project would not "take" endangered species. Although species such as San Joaquin kit fox, red legged frog or tiger salamander may have once occurred on the site, or could possibly occur there at some time in the future with appropriate habitat restoration, the proof "that a take will occur or is reasonably certain to occur." has not been established.¹

Throughout the Biological Opinion issued by the USFWS for the East Altamont Energy Center, the USFWS acknowledges the uncertainty of "take" by stating "to minimize the potential for harm, harassment, or mortality to... Western shall ensure the ...following." The Applicant believes that this is the appropriate manner in which to discuss potential biological impacts attributed to the East Altamont Energy Center.

Project Linears – In selecting potential linear alignments, minimizing impacts to biological resources was a key selection criterion. The project gas pipeline, water pipelines, and transmission line will cross several drainages in the project vicinity, including the Delta-Mendota Canal, BBID Canals 45, 70, 120, and 155, Mountain House Creek and a few unnamed drainages. Each of these features would be identified and avoided by project construction, or an appropriate permit for alteration would be secured from ACOE or CDFG, if necessary. Therefore, the project is not anticipated to adversely affect wetlands. The habitat crossed by the project linears is similar to that on the project site, and support the same or similar species to those described for site impacts.

¹ In the decision, (*Arizona Cattlegrowers Assn. v. U.S. Fish and Wildlife Service*, 273 F.3d 1229, 9th Cir. 2001) the Ninth Circuit determined that the U.S. Fish and Wildlife Service (USFWS) may not issue an incidental take authorization unless it can prove that a take will occur or is reasonably certain to occur. Furthermore the court held that the USFWS can only prove that a take will occur when there is evidence that the listed species occupies the specific area of land to which the incidental take authorization applies. Finally, the Court stated that the mere "potential" for harm was insufficient basis to conclude take would occur.

Water Supply Lines—There are two water supply linears to provide process makeup and reclaimed water (when available) to the project site.

The process makeup water will be conveyed from the new pump station at Bruns Road and Canal 45 to the site by a buried pipeline. The alignment will cross primarily pastureland, a gravel farm road, and vineyards. It will cross the existing Canal 45 in the roadbed, and will cross under the Delta-Mendota Canal by the Horizontal Directional Drill construction method, thus avoiding impacts to this waterway. Impacts to pastureland and open agricultural fields will be similar to those described for the project site. The alignments will be surveyed for potential occurrence of special-status plant and animal species, but based on the dominant habitat type (vineyards, row crops, and pasture) and field surveys in 2000 and 2001, the potential for their occurrence is low.

Recycled water, when available, will be conveyed to the site by a buried pipeline from the Mountain House Community Services District Wastewater Treatment Plant. The pipe will be sited in the already disturbed land in agricultural fields south of Byron Bethany Road. The habitat in this area is similar to that described for the project site and supports similar species. The route was cleared of nearly all vegetation during waterline installation for the Mountain House community in 2001, and therefore lacks significant natural features. There are two wetland areas in this alignment where Mountain House Creek and an unnamed drainage cross Byron Bethany Road. The portion of Mountain House Creek within the alignment has been substantially modified by the Mountain House community infrastructure construction. The unnamed drainage is an abandoned farmpond that would be crossed by the Horizontal Directional Drill or jack and bore construction method and therefore be left undisturbed.

The biological resources that could potentially occur along the water supply linear alignments are the same as those that could occur on the project site. Site-specific surveys of these alignments in 2001 and 2002 did not detect sensitive species. Additional pre-construction survey will be implemented prior to construction to confirm that sensitive species are not present, , and implement measures to avoid impacts if necessary.

Gas Line—Natural gas supply to the plant will be conveyed via buried pipeline between the project site and PG&E's main line, located approximately 1.8 miles southwest of the project. The proposed alignments will run under or adjacent to existing paved roads (Mountain House and Kelso), adjacent to the buried portion of the Delta-Mendota Canal and across an annual grassland pasture to the new metering station and interconnection to PG&E's main line. The portion of the alignment along the road and buried part of the Delta-Mendota Canal are in soils that were excavated, graded and filled during local construction, and do not retain the characteristics of the native soils. Plants that invaded and now dominate these areas are a mix of annual grassland species common to ruderal environments. Wildlife can use this habitat for foraging, nesting, and cover, but the habitat type is common and widespread. Common animals using this habitat include pocket gophers, California ground squirrel, California vole, western meadowlark, savannah sparrows, and Brewer's blackbirds. Burrowing owls and San Joaquin kit foxes could possibly use this area, particularly on the berm slopes west of the pipeline alignment and where burrows are abundant, but none have been recorded or observed.

The portion of the new gas pipeline route that crosses open pasture is dominated by Mediterranean annual grasses common throughout the foothills and Central Valley. The same species present here are also present elsewhere throughout the project.

With respect to special status species, the southern portion of the pipeline crosses through an area that was previously defined as critical habitat for the California red-legged frog. On July 2, 2002, Judge Richard J. Leon vacated the final designation of critical habitat for the California red-legged frog, except for units 5 and 31, and remanded a new rulemaking to the Service for revision. This area of habitat along the gas pipeline route is marginal, in that it lacks permanent water and vegetative cover required by the red-legged frog to complete its life cycle. Tiger salamanders are recorded to occur within 0.5 mile and could potentially disperse across this area or aestivate in upland burrows during summer months, although none was observed.

The gas pipeline will cross three canals (Canals 70, 120, and 155) operated by the Byron Bethany Irrigation District that could contain red-legged frog and western pond turtle. These canals are packed-earth or concrete-lined, are seasonally dry and lack aquatic or riparian vegetation that would support fish or wildlife year round. Constructing in these areas when flow is not present in the canal or use of the Horizontal Directional Drill construction method, and preventing adverse impacts to water quality will be sufficient to avoid significant adverse impacts to sensitive species. In addition, the Biological Resources Mitigation Monitoring and Implementation Plan will require pre-construction surveys and monitoring to minimize potential impacts from pipeline construction.

Transmission Lines—Power from the new plant will be conveyed to the adjacent Tracy substation via an extension of the 230-kV lines that run south of Kelso Road, south of the project site. The connection will consist of approximately eight towers in two parallel rows, with new wire that runs across the southern portion of the 174-acre parcel. Habitat affected by the new transmission towers will be row crop agricultural habitat. There is a small (0.1) acre tailwater pond south of Kelso Road that will be avoided by transmission towers.

B. Construction Impacts

Construction of the East Altamont Energy Center Project will result in the following permanent and temporary impacts to biological resources on the 43.5-acre project site and linear facilities:

- Permanent impacts from construction of the project site.
- Permanent loss of 43.5 acres of agricultural field habitat under the plant footprint.
- Permanent impacts from natural gas, water supply, and transmission lines.
- Permanent loss of 0.5 acre of pasture land for the gas metering station, where the pipeline interconnects to PG&E's main line.
- Permanent loss of 0.2 acre of annual grassland to develop the water supply pump station at Canal 45.

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- Permanent loss of 0.5 acre of agricultural land for footprint of up to eight new transmission towers.
- Temporary impacts from the construction laydown area, natural gas, water supply, and transmission lines.
- Temporary disturbance of approximately 29.1 acres of agricultural field for the construction laydown area. This area will be restored to agricultural use after construction.
- Temporary disturbance of the natural gas line construction area, 75 feet wide by 1.8 miles long, half of which is under or along existing roads with no habitat impact (8.2 acres of temporary disturbance).
- Temporary disturbance of surface water supply line construction area, 75 feet wide by 2.1 miles long, minus the 0.3 mile horizontal directional drill under the Delta-Mendota Canal, minus the area under the existing gravel road (1.2 miles x 30 feet), and minus the portion of the route under the construction laydown area. (2.2 acres of temporary disturbance).

The recycled water pipeline is not included because the route has already been disturbed due to the installation of infrastructure associated with the Mountain House community.

C. Operational Impacts

Power Plant—To minimize potential impacts to kit fox due to raptors perching in the project landscaping and preying on kit fox, the Applicant has developed a landscape plan in consultation with the U.S. Fish and Wildlife Service, California Department of Fish and Game, and the California Energy Commission biology staff. The landscape plan uses tree species with a branch structure which is not conducive to perching by raptors. The landscape plan also incorporates the use of several native plant species.

The project water supply will be provided by the Byron Bethany Irrigation District (BBID) from BBID's pre-1914 water rights, which will be diverted from the California Aqueduct. Recycled water from the wastewater treatment plant associated with the Mountain House community will be used when it is available.

Pursuant to the federal Endangered Species Act, the Western Area Power Administration (Western) requested consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) regarding the project's potential impacts to federally listed species, including Delta fish species, due to the project's use of fresh water. In Western's letter requesting consultation, Western concluded that the project is not likely to adversely affect federally listed species including the Central Valley steelhead, Central Valley spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, Sacramento splittail, Delta smelt, or their critical habitat.

NMFS concurred with Western's conclusion for the species for which it has jurisdiction (Central Valley steelhead, Central Valley spring-run Chinook salmon, Sacramento River

winter-run Chinook salmon). In addition, the USFWS stated in its Biological Opinion that the project “is not likely to adversely affect” the delta smelt and the Sacramento splittail, federally listed fish species for which the USFWS has jurisdiction.

The NMFS and USFWS conclusions were reached for several reasons. First, the raw water obtained for the project will be diverted downstream of the Skinner Fish Facility located on the Clifton Court Forebay. This water will have already been screened for fish prior to its diversion at BBID’s Canal 45. Second, the amount of water used by the project is small compared to the amount of water diverted by the State. Specifically, NMFS states that “the effects would be insignificant or discountable when trying to separate them from the overall effects of the State’s diversions.” Third, the Byron Bethany Irrigation District holds pre-1914 water rights, and thus is a senior water right holder. The Biological Opinions and Biological Accords with the Department of Water Resources and the Central Valley Project require that any impacts to species are accommodated by changes in diversion by the junior water rights holders (in this case, the State and Central Valley Water Projects).

Natural Gas Pipeline—Operation of the natural gas pipeline is not expected to cause impacts to biological resources. Maintenance of the gas pipeline may remove annual grassland along the gas pipeline route.

Electric Transmission Line—Operation of the electric transmission line is not expected to cause a significant increase in avian collisions with the conductor wires, causing electrocution or collision death, because the lines are not located in a major flyway and transmission lines are designed to “raptor proof” guidelines.

Water Supply Pipelines—Operation of the water supply pipelines are not expected to cause impacts to biological resources because they will be underground and will not affect significant natural habitat.

D. Cumulative Impacts

The East Altamont Energy Center will convert up to 43.5 acres of disturbed habitat under intense agricultural use to utility uses. The incremental loss is slight in this case, as the habitats onsite are in a degraded condition and provide low to moderate habitat value for most species in the area.

The increase in vehicle traffic as a result of the proposed East Altamont Energy Center will increase incrementally the number of wildlife that will be killed on roadways leading to and from the site.

The East Altamont Energy Center will not result in significant impacts to special-status plants, natural plant communities, wetlands, and associated habitat values for wildlife. The project proposes to mitigate potential adverse impacts to wildlife through avoidance, minimization and compensation for special-status species such as San Joaquin kit fox, California red-legged frog, California tiger salamander, burrowing owl, and migratory birds. The project is not expected to cause any significant cumulative impacts to biological resources.

E. Mitigation: The Applicant developed mitigation measures during informal and formal consultations with the U.S. Fish and Wildlife Service, California Department of Fish and Game, and the CEC to reduce impacts to biological resources to less than significant. A Biological Opinion was issued by the USFWS and docketed on September 19, 2002. The Project Owner will comply with the mitigation measures identified in the Biological Opinion for the federally listed species (San Joaquin Kit Fox and California red-legged frog). The Applicant has also applied to the CDFG for a 2081 permit for state special status species affected by the project (Swainson Hawk, California red-legged frog, western pond turtle, California tiger salamander, and burrowing owl). A brief description of some of the major mitigation measures with which the Project Owner will comply are listed below.

To mitigate for temporary and permanent impacts associated with the construction of the East Altamont Energy Center, the Applicant has obtained and will preserve in perpetuity 151 acres of mitigation land (referred to as the Gomes Farms property) located approximately one mile from the project site. This land possesses many invaluable biological characteristics, which make it ideal mitigation property. These characteristics include: 1) habitat suitability, 2) connectivity, 3) rare or unique habitat features, 4) adequate size and 5) diversity of habitats and communities. The parcel is adjacent to land owned or under the control of the California Department of Fish and Game, which it operates as preserves or refuges for burrowing owls, tiger salamander, and red-legged frog. The parcel obtained by the Applicant will significantly increase the size of the preserve already created by CDFG. The USFWS, CDFG, and CEC concur that the 151 acre Gomes Farms Property mitigates temporary and permanent impacts associated with the East Altamont Energy Center.

Additional mitigation measures for construction of the East Altamont Energy Center will be implemented. Some of the major mitigation measures include:

Provide worker environmental awareness training for all construction personnel that identifies the sensitive biological resources and measures required to minimize project impacts during construction and operation.

Provide mitigation construction monitoring by a qualified Designated Biologist during construction activities near sensitive habitats.

Prepare a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) that outlines how the Project Owner will implement the mitigation measures developed to ensure that any action authorized, funded, or carried out by state or federal lead agencies is not likely to jeopardize the continued existence of endangered or threatened species.

Avoid sensitive habitats and species during construction by developing construction exclusion zones and silt fencing around sensitive areas.

Conduct additional preconstruction surveys for sensitive species in impact areas during the spring before construction begins, especially near the Delta-Mendota Canal.

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Prepare construction monitoring and compliance reports that analyze the effectiveness of the mitigation measures.

- F. Compliance with Laws, Ordinances, Regulations, and Standards:** The Project Owner will comply with laws, ordinances, regulations, and standards by completing preconstruction surveys for biological resources and monitoring during earth disturbing activities.

With the implementation of the above mitigation measures, in combination with the proposed Conditions of Certification contained in the FSA as modified, the project will comply with the applicable federal, state, and local laws, ordinances, regulations, and standards, and potential impacts, if any will be mitigated to a level of less than significant.

**Applicant's Proposed Modifications to
CONDITIONS BIO-1, BIO-2, BIO-4, BIO-5, BIO-11, BIO-12, BIO-13, and
BIO-15**

Selection of the Designated Biologist

BIO-1 The project owner shall submit the resume, including contact information, of the proposed Designated Biologist to the CPM for approval.

Verification: The project owner shall submit the specified information at least 60 days prior to the start of any site (or related facilities) mobilization. Site and related facility activities shall not commence until an approved Designated Biologist is available to be on site.

The Designated Biologist must meet the following minimum qualifications:

- Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field;
- Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
- At least one year of field experience with biological resources found in or near the project area; and
- An ability to demonstrate to the satisfaction of the CPM the appropriate education and experience for the biological resources tasks that must be addressed during project construction and operation.

If a Designated Biologist needs to be replaced, then the specified information of the proposed replacement must be submitted to the CPM at least ten working days prior to the termination or release of the preceding Designated Biologist. Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of the proposed replacement specialist.

Duties of the Designated Biologist and Biological Monitors

BIO-2 The Designated Biologist shall perform the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and closure activities. These duties also pertain to the Biological Monitors.

- Advise the project owner's Construction/Operation Manager, supervising construction and operations engineer on the implementation of the biological resources Conditions of Certification;
- Be available to supervise trained and approved Biological Monitors, supervise or conduct mitigation, monitoring, and other biological resources compliance efforts,

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particularly in areas requiring avoidance or containing sensitive biological resources, such as wetlands and special status species or their habitat;

- The Designated Biologist and Biological Monitors shall be thoroughly familiar with the Biological Conditions of Certification and the BRMIMP;
- Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
- Inspect active construction areas where animals may have become trapped prior to construction commencing each day in those areas. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (parking lots) for animals in harms way;
- Notify the project owner and the CPM of any non-compliance with any biological resources Condition of Certification; and
- Respond directly, with the Project Owner, to inquiries of the CPM regarding biological resource issues-

Verification: The Designated Biologist shall maintain written records of the tasks described above, and summaries of these records shall be submitted in the Monthly Compliance Reports. Qualified Biological monitors shall be approved by the CPM and training shall be verified according to procedures established in the BRMIMP including familiarity with the Conditions of Certification. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report.

Authority of the Designated Biologist and Biological Monitors

BIO-3 The project owner's Construction/Operation Manager shall act on the advice of the Designated Biologist and Biological Monitors to ensure conformance with the biological resources Conditions of Certification.

If required by the Designated Biologist or Biological Monitors, the project owner's Construction and Operation Manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas identified as sensitive by the Designated Biologist.

The Designated Biologist and Biological Monitors shall:

- Require a halt to all activities in any area when determined that there would be significant adverse impact to sensitive biological resources if the activities continued;
- Inform the project owner and the Construction/Operation Manager when to resume activities; and

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- Notify the CPM if there is a halt of any activities, and advise the CPM of any corrective actions that have been taken, or will be instituted, as a result of the halt.

Verification: The Designated Biologist and/or Biological Monitors along with the Project Owner must notify the CPM immediately (and no later than the following morning of the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure will be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

Worker Environmental Awareness Program

BIO-4 The project owner shall develop and implement a CPM approved Worker Environmental Awareness Program (WEAP) in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or any related facilities during site mobilization, ground disturbance, grading, construction, operation and closure are informed about sensitive biological resources associated with the project. The training may be presented in the form of a video.

The WEAP must:

- Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material is made available to all participants;
- Discuss the locations and types of sensitive biological resources on the project site and adjacent areas;
- Present the reasons for protecting these resources;
- Present the meaning of various temporary and permanent habitat protection measures;
- Provide an understanding of the duties and authority of the Designated Biologist and Biological Monitors;
- Identify whom to contact if there are further comments and questions about the material discussed in the program;
- Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines; and

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- The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Verification: At least ~~60~~ 45 days prior to the start of any site (or related facilities) mobilization, the project owner shall provide to the CPM two (2) copies of the WEAP and all supporting written materials prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. The signed training acknowledgement forms from the construction phase of the project shall be kept on file by the project owner for a period of at least six months after the start of commercial operation.

During project operation, signed statements for active project operational personnel shall be kept on file for six months, following the termination of an individual's employment.

Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)

BIO-5 The project owner shall submit to the CPM for review and approval a copy of the BRMIMP and shall implement the measures identified in the approved BRMIMP. Any changes to the approved BRMIMP must also be approved by the CPM in consultation with CDFG, the USFWS and appropriate agencies to insure no conflicts exists.

The final BRMIMP shall identify:

- All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
- All Biological Resource Conditions of Certification identified in the Commission's Final Decision;
- All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion ;
- All biological resources mitigation, monitoring and compliance measures required in other state agency terms and conditions, such as those provided in the CDFG Take Permit and Streambed Alteration Agreement and ACOE permits;
- All biological resources mitigation, monitoring and compliance measures required in local agency permits, such as site grading and landscaping requirements;
- All sensitive biological resources to be ~~impacted~~ affected, avoided, or mitigated by project construction, operation and closure;
- All required mitigation measures for each sensitive biological resource;

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- Required habitat compensation strategy, including provisions for acquisition, enhancement, and management for any temporary and permanent loss of sensitive biological resources;
- A detailed description of measures that will be taken to avoid or mitigate temporary disturbances from construction activities;
- All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
- Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities - one set collected prior to any site or related facilities mobilization disturbance and one set collected subsequent to completion of mitigation measures. Include planned timing of aerial photography and a description of why times were chosen;
- Duration for each type of monitoring and a description of monitoring methodologies and frequency;
- Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
- All performance standards and remedial measures to be implemented if performance standards are not met;
- A discussion of biological resources related facility closure measures;
- A process for proposing plan modifications to the CPM and appropriate agencies for review and approval; and
- A copy of all biological resources obtained permits.

Verification: At least 60 days prior to start of any site or related facility mobilization activities, the project owner shall provide the CPM with two copies of the BRMIMP for this project, and provide copies to the CDFG and the USFWS.

The CPM, in consultation with the CDFG, the USFWS and any other appropriate agencies, will determine the BRMIMP's acceptability within 45 days of receipt.

The project owner shall notify the CPM no less than 5 working days before implementing any modifications to the approved BRMIMP to obtain CPM approval.

Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written report identifying which items of the

BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which mitigation and monitoring items are still outstanding.

If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to the CPM, CDFG, and USFWS as addendum to the BRMIMP within 10 days of their receipt.

Preventative Design Mitigation Features

BIO-11 The project owner shall modify the project design to incorporate all practicable feasible measures that do not conflict with other regulations, standards, and objectives, that avoid or minimize impacts to the local biological resources.

Measures that shall be implemented as appropriate include:

- Design transmission line poles, access roads, pulling sites, and storage and parking areas to avoid identified sensitive resources;
- ~~Screen the water intake pipes that use natural waterways in a manner to avoid entrainment;~~
- Avoid loss of wetland and riparian habitats; and
- Design and construct transmission lines and all electrical components to reduce the likelihood of electrocutions of large birds.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP.

Construction Mitigation Management to Avoid Harassment or Harm

BIO-12 The project owner shall manage their construction site, and related facilities, in a manner to avoid or minimize impacts to the local biological resources.

Biological Mitigation Measures Proposed by Staff

The project owner shall comply with the following measures:

- Appropriate avoidance and minimization measures shall be in place before site mobilization of a particular area, or activity that may impact sensitive biological resources;
- Conduct pre-construction surveys for special status plant and animals according to USFWS, and CDFG ~~protocols and~~ recommendations, and in consultation with the CEC and Western. The Applicant has explicitly listed some surveys, that are listed below and detailed in the text of the FSA. The timing and duration of the surveys shall be reviewed, agreed upon and provided in the BRMIMP;

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- Clearly mark construction area boundaries with stakes, flagging, silt fencing, and/or rope or cord to minimize inadvertent degradation or loss of adjacent habitat during facility construction/modernization;
- All equipment storage shall be restricted to designated construction zones or as approved by the CPM;
- Traffic is restricted to existing roads, designated access roads, construction storage and staging areas, and parking areas;
- Daytime construction at all drainages and natural drains to avoid impacts to special status reptiles, amphibians, and mammals;
- There shall be temporary fencing and wildlife escape ramps for construction areas that contain steep walled holes, or trenches if outside of an approved, permanent exclusionary fence. The temporary fence shall be hardware cloth or similar materials that are approved by USFWS and CDFG;
- Open trenches shall be inspected for wildlife each morning prior to start of daily construction activities. Inspect all construction pipes, culverts, or similar structures with a diameter of 4-inches or greater for sensitive species (such as kit foxes) prior to pipe burial. Any wildlife observed shall be allowed to escape on its own if possible prior to commencement of construction in that area. Otherwise, the Designated Biologist shall contact the appropriate agency for assistance;
- To prevent entrapment of listed species, or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep shall either be covered at the close of each working day by plywood or provided with one or more escape ramps (3:1) constructed of earth fill or wooden planks. For all open trenches, an escape ramp shall be constructed at a minimum of every 0.25-mile;
- Setbacks and buffers shall be established for the protection of special-status wildlife species. Distances shall be determined through consultation with the USFWS and CDFG prior to construction;
- Pipes to be left in trenches overnight shall be capped;
- Use of rodenticides shall be according to USDA label standards on-site, at the construction laydown area, and along linears. Use of rodenticides that are enclosed or otherwise protect kit fox, birds of prey, and other non-target species from becoming inadvertently poisoned;
- Report all inadvertent deaths of sensitive species to the appropriate project representative. Injured animals shall be reported to CDFG, and the Project Owner shall follow instructions that are provided by CDFG;
- Revegetate ~~and maintain~~ all linears, construction, staging, temporary parking, and equipment storage areas with CPM-approved plant species;

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- Implement pre-construction surveys raptor nests and all sensitive and special status species of animals and plants that are potentially on the project site, along linears, and at the construction laydown area. within 14 days prior to commencement of any construction activities, if applicable. . The timing of the surveys shall be based upon the season in which the construction activities are to occur; and
- Implement a monitoring program for avian electrocution and collisions for 12 months to determine if mitigation, such as the installation of bird-flight diverters, is necessary. The monitoring plan shall be included in the BRMIMP and developed in consultation with the USFWS, Western, and CDFG.

Specific Mitigation Measures Proposed by the Applicant

- Implement pre-construction surveys for big tarplant;
- Implement nest surveys for Swainson's hawk within ½ mile of project features to determine use by Swainson's hawk. If project features are within ½ mile of Swainson's hawk nesting, avoid construction within ½ mile during nesting season if feasible. If construction cannot avoid active nests by ½ mile, an incidental take agreement (CDFG Section 2080.1) shall be obtained;
- Implement pre-construction surveys for burrowing owl on the East Altamont Energy Center site, along linears, and the construction laydown area, followed by avoidance or passive relocation (per 1993 California Burrowing Owl Consortium Guidelines), if owls are observed;
- Perform surveys at the appropriate time of year to identify locations of potential California Horned Lark nests within 100 feet of project features. Construction shall be avoided in the vicinity of nests;
- Implement pre-construction surveys for tricolored blackbird within 100 feet of project features, and avoid construction in the vicinity of nests;
- Conduct pre-construction surveys for California red-legged frog and California tiger salamander and implement mitigation measures to avoid impacts to habitats for these species;
- For San Joaquin kit fox: Obtain and comply with the conditions of a section 7 authorization for incidental take of this species. Conduct pre-design surveys for all areas potentially affected by the project. Set and enforce speed limits in the construction area at 20 miles per hour or less;
- Implement the pre-construction surveys for San Joaquin kit fox, and construction practices and mitigation measures as outlined in *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 1999);

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- Provide safety lighting that points downward on the HRSG stacks to reduce avian collisions; and
- ~~26. Lease the 134 acres of land surrounding the East Altamont Energy Center for use in wildlife friendly agriculture (per USFWS and CDFG guidelines);~~
- Implement a red fox control program.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP. The Project Owner shall provide a post-construction compliance report, within 30 calendar days of completion of the project, to the Energy Commission CPM.

Compensation for Loss of Habitat

BIO-13 Prior to the start of site mobilization for the project and any related facilities, the project owner shall provide a conservation easement on the 151-acre Gomes Farms parcel. The Gomes Farms habitat provides suitable habitat for the San Joaquin kit fox, burrowing owl, Swainson's hawk, California tiger salamander, and California red-legged frog. If the project owner causes impacts to additional acres of habitat during construction or operation of the project they shall be required to mitigate for those impacts with additional habitat compensation, at a ratio of 3:1 for permanent impacts and 1:1 for temporary impacts, at the Haera mitigation bank or other location to be approved by the CPM in consultation with the USFWS, CDFG, and Western.

The conservation easement on the Gomes Farms parcel shall be approved through CDFG or an entity approved by CDFG and will remain in effect in perpetuity. CDFG or an entity approved by CDFG will hold the conservation easement and the endowment. The project owner shall provide a Property Assessment Report (PAR) analysis for establishment of an endowment to provide for the long-term management of the habitat lands. The third party management agency shall receive the endowment funds through CDFG or an entity approved by CDFG. Selection of the third party management agency and management procedures for the conservation easement lands must be approved by the CPM in consultation with the USFWS, CDFG, and Western.

Verification: At least 30 days prior to the start of site mobilization on the project site or any related facilities, the project owner shall provide the CPM with a copy of the complete conservation easement agreement pursuant to this Condition of Certification. Upon completion of the acquisition and transfer, if applicable, of the habitat lands (include county parcel #) to the approved recipient(s), the project owner shall provide the CPM with copies of all title transfer records or records verifying other approved transactions. The Project Owner must provide to the CPM for approval, the name of the management entity, and written verification that the appropriate endowment fund (determined by the PAR analysis) has been received by the approved management entity.

Each month during construction, the project owner shall provide information on additional planned or unplanned impacts to habitats that will be permanently or temporarily by the project. The project owner shall provide information at least 30 days prior to incurring the

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impacts for planned impacts and within 30 days of incurring the impacts for unplanned impacts. Each month, the Designated Biologist shall prepare, as part of the monthly compliance report, a detailed description and evaluation of any additional habitat impacts. The report shall include appropriately scaled and detailed maps, the number of acres to be impacted or already impacted, the types of habitat(s) impacted and any impacts to special status species. Within 30 days of the completion of construction, the project owner shall submit a final report on all additional acres impacted, if any. In this report, the project owner shall provide evidence of consultation with the CPM, USFWS, and CDFG to confirm the location and acreage of habitat compensation to be provided at the approved mitigation ratio. If no additional habitat acres are impacted, then no additional habitat mitigation shall be required.

Wetland Assessment per Title 10, Code of Federal Regulations, Section 1022

BIO-15 Upon final design of the project linear facilities, the need for a Wetland Assessment, per the requirements in Title 10, Code of Federal Regulations, section 1022 , shall be determined by Western. The project owner shall provide a final copy of the Wetland Assessment that shall be reviewed and approved by Western. The biological resources related terms and conditions contained in the Wetland Assessment shall be incorporated into the project's BRMIMP. If the Wetland Assessment is not required, the project owner shall provide the CPM with a letter from Western stating that the assessment is not required.

Verification: At least 45 days prior to the start of mobilization activities of the linear projects, the project owner shall submit to the CPM a copy of the Wetland Assessment, or a letter from Western stating that the Wetland Assessment is not necessary.

TO BE REPLACED BY CALPINE WITH SIGNED DECLARATION

**DECLARATION OF
EJ Koford**

I, EJ Koford, declare as follows:

1. I am presently employed by CH2MHILL as a scientific specialist.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Biological Resources for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ **DATE** _____

Signed: **SIGN** _____

At: Sacramento, California

CULTURAL RESOURCES

I. INTRODUCTION

A. Name: James C. Bard, Ph.D., ROPA

B. Purpose: This testimony addresses the Cultural Resources Management issues associated with the proposed project.

C. Qualifications: James C. Bard has over 24 years experience in cultural resource management planning issues. He has conducted cultural resources investigations for power plants and electrical energy transmission projects. His qualifications are summarized more completely in the attached resume (appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.3 of the AFC.
- Appendix 8.3 of the AFC.
- Responses to CEC Data Request Set 2 - Numbers: 63, 64, 65, 66, and 68, Filed August 17, 2001
- Responses to CEC Data Request Set 2A - Number: 66, Filed August 31, 2001
- Responses to CEC Data Request Set 2C - Number: 64, Filed September 14, 2001
- Responses to CEC Data Request Set 2F - Number: 67, Filed October 9, 2001
- Responses to CEC Data Request Set 5A - Numbers: 142-152, Filed February 22, 2002
- Responses to CEC Data Request Set 5B - Numbers: 149-151, Filed April 3, 2002
- Responses to CEC Data Request Set 6 - Number: 155, Filed April 22, 2002
- Supplement A to the AFC, Filed on May 3, 2001
- Supplement B to the AFC, Filed on October 9, 2001
- Supplement C to the AFC, Filed on February 6, 2002
- Historic Resources Information, Filed on June 11, 2002
- Comments on the Preliminary Staff Assessment, Filed January 14, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions,

such opinion is my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The FSA for the project filed by the CEC recommends nine Conditions of Certification be adopted to address cultural resources management issues. These conditions, Conditions CUL-1 to CUL-9, described on pages 5.3-26 through 5.3-35 the FSA, address applicable federal, state, and local laws, ordinances, regulations, and statutes and minimize the project's cultural resources management impacts. I have reviewed the Conditions of Certification set forth in the FSA and have the following suggestions for clarification or minor modification of these conditions:

- Applicant requests clarification on Conditions of Certification CUL-1, Item 2. It appears some words might be missing in this item. Furthermore, Applicant recommends that language be added to the Verification regarding emergency replacement of the Cultural Resource Specialist (CRS) as shown on the attached revision to this Conditions of Certification.
- Applicant recommends that the Verification on Condition of Certification CUL-2 be modified such that the project owner shall provide the designated Cultural Resource Specialist and the Compliance Project Manager (CPM) with maps and drawings showing the footprint of the site and linear routes 45 days prior to the start of ground disturbance rather than 75 days prior to the start of ground disturbance as shown on the attached revision to this Condition of Certification. Applicant maintains that at 45 days prior to the start of ground disturbance, more accurate maps and drawings will be available and will therefore be of more value to the CRS and CPM.
- Applicant recommends that the Verification of Condition of Certification CUL-5 be modified such that the project owner rather than the CRS notifies the CPM within 24 hours of a significant find. This change will make the Verification language consistent with the Condition language.
- Applicant recommends that Condition of Certification CUL-6, Item 3 of the Condition as well as the Verification be modified to indicate that notification of a noncompliance to the CPM be made by either the CRS or the project owner rather than just the CRS. It is Applicants recommendation that the primary line of communication should be between the Applicant's Compliance Manager and the CPM and that making the recommended change will foster that communication.
- The Applicant provided a work scope for conducting the Ethnography study in its response to Data Request Set 6 #155 (Docket Log #25376), in addition to presenting a schedule for initiating/completing this study. The time frame specified in the Applicant's response to Data Request #155 was work on the ethnographic study would be initiated within three months (90 days) of the commencement of construction and the study will completed within 6 months (180 days) of initiation of the study. This schedule was based on discussions with the Department of

Anthropology, California State University, Fresno. Therefore, the Applicant requests that the proposed schedule for initiating and completing the ethnographic study contained in Condition of Certification CUL-6 be adopted as shown on the attached revision to this Condition of Certification.

III. SUMMARY

- A. Affected Environment:** The project site is located within the unincorporated area of Alameda County. Land use in the surrounding area is primarily agricultural with several nearby infrastructure facilities. Research and fieldwork completed for this project noted no archaeological resources within or immediately adjacent to the proposed project site. However, one known cultural resource site is located near the termination point of the recycled water pipeline (the former town of Wickland). Presence/Absence testing conducted in response to Data Request 151 (Data Request Response Set #5B) indicated that no cultural resources from the town of Wickland were present in the area associated with the recycled water pipeline.

The Applicant conducted a field survey of the proposed site and linear facilities routes. The survey yielded no significant findings. No significant prehistoric archaeological remains were detected from surface examination of exposed soils.

The CEC and Applicant conducted historic resources surveys during the East Altamont Energy Center licensing process. The results of these surveys indicated that several infrastructure features appear eligible for listing with the National Register of Historic Places and the California Register of Historical Resources (Delta Mendota Canal Intake Structure and the Westside Irrigation District Complex).

- B. Construction Impacts:** Construction generally entails surface and sub-surface disturbance of the ground. Direct impacts are those that result from immediate disturbance of resources while indirect impacts are those that might result from increased erosion due to site clearance and preparation, or from inadvertent damage or vandalism to exposed resource materials due to improved accessibility. The potential for the East Altamont Energy Center project to cause impacts to cultural resources correlates with the likelihood that such resources are present and whether they are encountered during construction. As described in the AFC, there are no previously recorded cultural resource sites present within the project site or its associated laydown area and linear facilities. Therefore, there exists a very low probability of significant prehistoric archaeological remains being found during construction.

Construction impacts to the two potential historic resources, Delta Mendota Canal Intake Structure and the Westside Irrigation District Complex are expected to be insignificant. The construction of a power plant in an area near the Delta Mendota Canal Intake Structure, containing significant electrical and other infrastructure projects, will not significantly alter the character of the area sufficiently to degrade the historic setting of this potential resource as noted in Data Request Response Set #5B, Data Request 150. Furthermore, the construction of the recycled water line will occur on the east side of Wickland Road and is not expected to impact the Westside Irrigation District Complex (through ground shaking), nor is it expected

to alter the character of the area after construction is completed and the area restored to its preconstruction condition.

- C. Operational Impacts:** There should be no operational impacts to cultural or historic resources.
- D. Summary of the Cumulative Impacts:** The potential for cumulative impacts is often correlated with the degree of prehistoric and historic sensitivity. As revealed in the AFC, there are other projects within the immediate vicinity of the East Altamont Energy Center site. Proposed developments such as the East Altamont Energy Center and its associated linear features, in combination with other development projects increase the amount of land exposed to public access and potential removal or damage to cultural resources. The combined effects of such developments can speed up the potential for continued disturbance of archaeological sites. The level of cumulative impact would grow as more development opens up currently undisturbed land and eventually exposes highly sensitive cultural sites.
- E. Mitigation:** The East Altamont Energy Center intends to implement measures recommended in the AFC to mitigate potential project impacts to cultural resources:
- Preconstruction assessment and construction training
 - Construction monitoring
 - Site recording and evaluation
 - Mitigation planning
 - Curation
 - Report of findings
- F. Compliance with Laws, Ordinances, Regulations and Standards:** The East Altamont Energy Center will comply with laws, ordinances, regulations and standards by completing preconstruction surveys for cultural resources, completing test excavations for cultural resources that are not visible on the surface, and monitoring during earth disturbing activities.

With the implementation of the above mitigation measures, in combination with the proposed Conditions of Certification contained in the FSA and as modified by Applicant, the project will comply with the applicable federal, state, and local laws, ordinances, regulations, and standards, and potential impacts, if any, are mitigated to a level of less than significant.

Proposed Changes to CUL Conditions of Certification

CUL-1 Prior to the start of ground disturbance, the project owner shall provide the California Energy Commission Compliance Project Manager (CPM) and Western Area Power Administration (Western) with the name and resume of its Cultural Resources Specialist (CRS), and one alternate CRS, if an alternate is proposed, who will be responsible for implementation of all cultural resources conditions of certification.

1. The resume for the CRS and alternate, if an alternate is proposed, shall include information that demonstrates that the CRS meets the minimum qualifications specified in the U.S. Secretary of Interior Guidelines, as published in the Code of Federal Regulations, Title 36, section 61 (2000).
 - a. The technical specialty of the CRS shall be appropriate to the needs of this project and shall include a background in anthropology, archaeology, history, architectural history or a related field
 - b. The background of the CRS shall include at least three years of archaeological or historic, as appropriate, resource mitigation and field experience in California;
 - c. and at least one year's experience in each of the following areas:
 - i. principal investigator for archeological field surveys;
 - ii. principal investigator for site mapping and recording;
 - iii. principal investigator for site testing and data recovery, including sampling for dating and botanical studies and small artifact recovery;
 - iv. principal investigator for laboratory studies of collected materials; and
 - v. preparing reports for a curation repository, the State Historic Preservation Officer, and the appropriate regional archaeological information center(s).
2. Familiar with the CRS's work on referenced projects.
3. The resume shall also demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the cultural resource tasks that must be addressed during project ground disturbance, construction and operation.
4. The CRS may obtain qualified cultural resource monitors (CRMs), as necessary, to monitor on the project. CRMs shall meet the following qualifications.
 - a. A BS or BA degree in anthropology, archaeology, historic archaeology or a related field and one year experience monitoring in California; or
 - b. An AS or AA in anthropology, archaeology, historic archaeology or a related field and four years experience monitoring in California; or

- c. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historic archaeology or a related field and two years of monitoring experience in California.
5. The project owner shall ensure that the CRS completes any monitoring, mitigation and curation activities necessary to this project and fulfills all the requirements of these conditions of certification. The project owner shall also ensure that the CRS obtains additional technical specialists, or additional monitors, if needed, for this project. The project owner shall also ensure that the CRS evaluates any cultural resources that are newly discovered or that may be affected in an unanticipated manner for eligibility to the California Register of Historic Resources (CRHR).

Verification: At least 90 days prior to the start of ground disturbance, the project owner shall submit the name and resume of its CRS and alternate CRS, if an alternate is proposed, to the CPM for review and approval. At least 10 days prior to the termination or release of the CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. **Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of the proposed replacement specialist.**

At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated monitors for the project and stating that the identified monitors meet the minimum qualifications for cultural resource monitoring required by this condition. If additional monitors are obtained during the project, the CRS shall provide additional letters to the CPM, identifying the monitor and attesting to the monitor's qualifications. The letter shall be provided one week prior to the monitor beginning on-site duties.

At least 10 days, prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions of certification.

- CUL-2** (1) Prior to the start of ground disturbance, the project owner shall provide the CRS and the CPM with maps and drawings showing the footprint of the power plant and all linear facilities. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting individual artifacts. If the CRS request enlargements or strip maps for linear facility routes, the project owner shall provide them with copies to the CPM. If the footprint of the power plant or linear facilities changes, the project owner shall provide maps and drawings reflecting these changes, to the CRS and the CPM. Maps shall identify all areas of the project where ground disturbance is anticipated.
- (2) If construction of this project will proceed in phases, maps and drawings may be submitted in phases. A letter identifying the proposed schedule of each project phase shall be provided to the CPM.
- (3) If not previously submitted, prior to implementation of additional phases of the project, current maps and drawings shall be submitted to the CPM.

(4) At a minimum, the CRS shall consult weekly with the project superintendent or construction field manager to confirm area(s) to be worked during the next week, until ground disturbance is completed. A current schedule of anticipated project activity shall be provided to the CRS on a weekly basis during ground disturbance and provided to the CPM in each Monthly Compliance Report (MCR).

Verification: At least ~~75~~ **45** days prior to the start of ground disturbance, the project owner shall provide the designated CRS and the CPM with the maps and drawings. If this is to be a phased project, a letter identifying the proposed schedule of construction phases of the project shall also be submitted. If not previously submitted, at least 30 days prior to the start of ground disturbance on each phase of the project, following initial ground disturbance, copies of maps and drawings reflecting additional phases of the project, shall be provided to the CPM for review and approval. (4) If there are changes to the scheduling of the construction phases of the project, a letter shall be submitted to the CPM within 5 days of identifying the changes.

CUL-5 The CRS, alternate CRS and the CRM(s) shall have the authority to halt or redirect construction if previously unknown cultural resource sites or materials are encountered or if known resources may be impacted in a previously unanticipated manner.

If such resources are found, the halting or redirection of construction shall remain in effect until all of the following have occurred:

- a. the CRS has notified the CPM and the project owner of the find and the work stoppage;
- b. the CRS, the project owner, the CPM and Western have conferred and determined what, if any, data recovery or other mitigation is needed; and
- c. any necessary data recovery and mitigation has been completed.

If data recovery or other mitigation measures are required, the CRS and/or the alternate CRS and CRM(s), including Native American monitor(s), shall monitor these data recovery and mitigation measures, as needed.

For any cultural resource encountered, the project owner shall notify the CPM within 24 hours after the find.

All required data recovery and mitigation shall be completed expeditiously unless all parties agree to additional time.

Verification At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM with a letter confirming that the CRS, alternate CRS and cultural resources monitor(s) have the authority to halt construction activities in the vicinity of a cultural resource find and stating that the ~~CRS~~ **project owner** will notify the CPM ~~and project owner~~ within 24 hours after a find.

CUL-6 Cultural resource monitoring shall be conducted full time during ground disturbance necessary for construction of the reclaimed water line along a portion of Byron-Bethany

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Road and along Bethany Road. Monitoring should begin 1,000 feet northwest of the intersection of Byron-Bethany Road and Mountain House Creek and end at the intersection of Bethany Road and Wicklund Road.

1. Cultural resources monitoring shall be conducted during initial ground disturbance at the plant site and all linear components. The potential for encountering cultural resources shall be assessed by the CRS based on the initial ground disturbance observations. If the initial assessment indicates a potential for encountering cultural resources, then full time monitoring shall continue until the CRS concludes and justifies to the CPM that full time monitoring is no longer necessary. If the CRS determines that encountering cultural resources are unlikely, all spoils from ground disturbance shall be examined every other day as ground disturbing project activities continue. If the CRS determines that full-time monitoring or spoil examination is not necessary in certain locations, a letter or e-mail providing a detailed justification for the decision to reduce the level of monitoring shall be provided to the CPM for review and approval prior to any reduction in monitoring.
2. Monitors shall keep a daily log of any monitoring or cultural resource activities and the CRS shall prepare a weekly summary report on the progress or status of cultural resources-related activities providing an update that may include information that no monitoring activities have occurred. The CRS may informally discuss cultural resource monitoring and mitigation activities with Energy Commission technical staff.
3. The CRS shall notify the project owner and the **project owner or the CRS shall notify the** CPM, by telephone, of any incidents of non-compliance with any cultural resources conditions of certification within 24 hours of becoming aware of the situation. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the conditions of certification. A report detailing resolution of the issue shall be provided to the CPM in the MCR no earlier than two weeks following the incident.
4. A Native American monitor shall be obtained to monitor ground disturbance in the area of the reclaimed water line where cultural resources monitoring shall occur full time, per this condition. Native American monitoring shall also occur during any cultural resource monitoring for the project, including investigation of initial ground disturbance and spoils and data recovery, if data recovery is necessary. Informational lists of concerned Native Americans and Guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that will be monitored.
5. ~~At least 30 days prior to ground disturbance~~ **No later than 3 months after commencement of construction**, the project owner shall ensure that an ethnography is initiated on behalf of Native Americans at the Santa Rosa Rancheria. The ethnography, shall include, but not necessarily be limited to the proposed scope of the study, provided as a response to Data Request Responses Set No. 6, Cultural Resources No.155. The scope of the study will focus on lands within a 3-mile radius surrounding the project area. Consideration of a larger area shall be included to allow discussion of historic interaction between Bay Miwok and Northern Valley Yokuts people. Primary tasks will include preparation of an ethnographic report for the project area. Consultation with Nototomne Yokuts, Tachi

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Yokuts/Santa Rosa Rancheria and other interested groups as identified through the consultation with the Native American Heritage Commission. The report shall also provide recommendations, if applicable. A copy of the scope of work and a summary of achieved objectives shall be provided to the CPM and Western for review and approval. A copy of the completed ethnography shall be provided to Western and the CPM for review and approval.

Verification: During the ground disturbance phases of the project, if the CRS wishes to reduce the level of monitoring occurring at the project, a letter identifying the area(s) where the CRS recommends the reduction and justifying the reductions in monitoring shall be submitted to the CPM for review and approval.

During the ground disturbance phases of the project, the project owner shall include in the MCR to the CPM copies of the weekly summary reports prepared by the CRS regarding project-related cultural resources monitoring activities. Copies of daily logs shall be retained and made available for audit by the CPM as needed.

Within 24 hours of recognition of a non-compliance issue, the **CRS shall notify the project owner and the project owner or the** CRS shall notify the CPM by telephone of the problem. Daily logs shall include forms detailing any instances of non-compliance with conditions of certification. In the event of a non-compliance issue, a report written no sooner than two weeks after resolution of the issue shall be provided in the next MCR.

One week prior to ground disturbance in areas where there is a potential to discover Native American artifacts, the project owner shall send notification to the CPM identifying the person(s) retained to conduct Native American monitoring. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM who will initiate a resolution process.

No later than **3 months** ~~30 days after the start of ground disturbance~~ **commencement of construction**, a copy of the scope of work of the ethnography and a summary of achieved objectives shall be submitted to the CPM and Western for review and approval. No later than **9 months after the commencement of construction** ~~90 days after the initial ground disturbance~~, a copy of the completed ethnography shall be provided to Western and the CPM for review and approval.

**DECLARATION OF
James Bard**

I, James Bard, declare as follows:

1. I am presently a.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Cultural Resources for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

HAZARDOUS MATERIALS

I. INTRODUCTION

A. Name: Jerry Salamy

B. Purpose: This testimony addresses the hazardous materials that will be used at the East Altamont Energy Center, the potential impact of the hazardous materials on human health and the environment and how the probability of a significant effect on human health and the environment from the hazardous materials will be reduced to an insignificant level.

C. Qualifications: Mr. Salamy has over 16 years of experience preparing environmental documentation for power plants and over 10 years preparing Applications for Certification. His qualifications are summarized more completely in the attached resume (Appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.12 of the AFC
- Supplement A to the AFC, Filed on May 3, 2001
- Supplement B to the AFC, Filed on October 9, 2001
- Supplement C to the AFC, Filed on February 6, 2002
- Applicant's comments on the Preliminary Staff Assessment, Set 1, Filed on January 14, 2002
- Applicant's comments on the Preliminary Staff Assessment, Set 2, Filed on May 1, 2002
- Data Requests and Responses, Set 2, Numbers 69-73, Filed on August 17, 2001
- Data Requests and Responses, Set 3, Numbers 128 and 129, Filed on October 9, 2001
- Data Requests and Responses, Set 5A, Number 142, Filed on February 22, 2002
- Informal Hazardous Materials Handling Data Request Response, Filed July 3, 2002
- May 22, 2002 Workshop Data Requests and Responses, Filed June 18, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions,

such opinions are my own. I make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that Conditions of Certification be adopted to address Hazardous Material Handling issues. These conditions: HAZ-1 through HAZ-12 are described on pages 5.4-21 through 5.4-23 of the Final Staff Assessment. Incorporation of mitigation measures in accordance with the requirements of these Conditions of Certification would ensure that the routine use and transport of hazardous materials would not significantly impact the public or environment and that the facility would be in compliance with the applicable federal, state, and local laws, ordinances, regulations, and statutes.

I have reviewed the Conditions of Certification that were proposed in the FSA. Based upon my review of the FSA, I have the following recommendations for modifications to the Conditions of Certification.

Applicant is recommending changes to Condition of Certification HAZ –4 to make this condition consistent with Article 80 of the Uniform Fire Code. Applicant is not aware of a technical basis for providing secondary containment volume that is 50% greater than the volume of the tank contained.

With regard to Condition of Certification HAZ-5, Applicant is not aware of any LORS that require 100 feet of clearance for storage of sulfuric acid. Reducing the clearance to 50 feet would provide adequate protection and would be consistent with the spacing indicated in HAZ-11 for hydrogen storage. The recommended changes to the Verification section are intended to make this section consistent with the condition, which pertains to the clearance from locations where flammable and combustible materials are stored, not the transportation routes for delivery of these materials or the piping containing these materials.

Applicant is recommending that the Verification section of Condition of Certification HAZ-11 be modified to make this Verification consistent with Applicant's proposed changes to Condition of Certification HAZ-5. Specifically, Applicant is recommending changes to the Verification section make this section consistent with the condition, which pertains to the clearance from locations where flammable and combustible materials are stored, not the transportation routes for delivery of these materials or the piping containing these materials.

III. SUMMARY

- A. Affected Environment:** The project site is located in the far eastern corner of Alameda County, approximately 8 miles northwest of the City of Tracy, 12 miles east of Livermore, 5 miles south of Byron, and less than 1 mile from the San Joaquin County border. Land use in the surrounding area includes agriculture, low-density residential, and public recreational uses. Large infrastructure projects in the area include the Western Area Power Administration (Western) substation; two pumping stations for the Delta-Mendota Canal and the California Aqueduct; PG&E's gas compressor station; numerous windfarms; and several

high-voltage transmission lines. The East Altamont Energy Center site is not located within a FEMA-designated 100-year flood plain.

There are few sensitive receptor facilities (such as schools, daycare facilities, convalescent centers, or hospitals) in the vicinity of the project site. The nearest sensitive receptor is an elementary school located approximately 1 mile south of the project site. There are also a few residences (primarily farmers) in the vicinity of the site. Sensitive receptors within a 3-mile radius of the project site are shown on Figure 8.6-1 of the AFC.

Hazardous materials to be used at the East Altamont Energy Center during construction and operation were evaluated for hazardous characteristics. Some of these materials will be stored at the generating site continuously. Others will be brought onsite for the initial startup and periodic maintenance (every 3 to 5 years). Some materials will be used only during startup. Hazardous materials will not be stored or used in the gas supply line, water supply line, or electric transmission line corridors during operations. Figure 8.12-1 of the AFC illustrates storage locations for the hazardous materials that will be used at the East Altamont Energy Center.

- B. Construction Impacts:** During construction of the project and linears, acutely hazardous materials, as defined in California's Health and Safety Code, Section 25531, will not be used.

Hazardous materials to be used during construction of the project and its associated linear facilities will be limited to gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to motor fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and by the manufacturers' requirements for coating.

The quantities of hazardous materials that will be onsite during construction are small relative to the quantities used during operation. Construction personnel will be trained to handle the materials properly. The most likely possible incidents will involve the potential for fuels, oil, and grease dripping from construction equipment. The small quantities of fuel, oil, and grease that might drip from construction equipment will have relatively low toxicity and will be biodegradable. Therefore, the expected environmental impact is minimal.

Small oil spills may also occur during onsite refueling. Equipment refueling will be performed away from water bodies to prevent contamination of water in the event of a fuel spill. Therefore, the potential environmental effects from fueling operations are expected to be limited to small areas of contaminated soil. If a fuel spill occurs on soil, the contaminated soil will be placed into barrels or trucks for offsite disposal as a hazardous waste.

The quantities of hazardous materials that will be handled during construction are relatively small and BMPs will be implemented by contractor personnel. Therefore, the potential for environmental effects is expected to be small.

B. Operational Impacts: During the East Altamont Energy Center operation, some hazardous and acutely hazardous materials will be stored onsite. Listed below are management and mitigation measures for minimizing the risks of hazardous material handling during facility operation.

Anhydrous Ammonia. The anhydrous ammonia storage and handling facilities will be equipped with continuous tank level monitors, temperature and pressure monitors and alarms, excess flow and emergency block valves, and a vapor suppression system. Containment will be provided. If there is an inadvertent release from the storage tank, the liquid will be contained within the secondary containment structure. Vapor detection equipment will be installed to detect escaping ammonia and activate alarms.

Cyclohexylamine. Cyclohexylamine in the form of neutralizing amines will be fed into the condenser hotwell or condensate piping to control corrosion. The feed equipment will consist of a storage tank, pumps, leak detection system, alarm system, and fire detection and protection system. The chemical will be stored in 200- to 400-gallon totes located in the Water Treatment Facility. The totes will be located above concrete containment areas with sufficient capacity to contain the full quantity of a tank in the event of a spill or tank rupture.

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Sulfuric acid will be fed into the circulating water system in proportion to makeup water flow for alkalinity reduction; this will be done to control the scaling tendency of the circulating water within an acceptable range. The acid feed equipment will consist of an acid storage tank, chemical metering pumps, a leak detection system, and an alarm system. Two 8,000-gallon storage tanks will be located near the cooling tower circulating water pumps above a concrete containment area; the area will have sufficient capacity to contain the 8,000 gallons (a single tank) of sulfuric acid plus accumulated rainfall for 24 hours during a 25-year storm.

Of the other hazardous materials that are continuously onsite, one merits additional discussion because of the quantity of material stored. Sodium hypochlorite will be added to the circulating water as a biocide. The system will consist of an 8,000-gallon storage tank, chemical metering pumps, a leak detection system, and an alarm system. The sodium hypochlorite tank will be located above a concrete containment area with sufficient capacity to contain the full tank contents plus accumulated rainfall for 24 hours during a 25-year storm.

All hazardous materials will be handled and stored in accordance with applicable codes and regulations. All containers used to store hazardous materials will be inspected at least daily for signs of leaking or failure. Incompatible materials will be stored in separate storage and containment areas. Areas susceptible to potential leaks and/or spills will be paved and bermed. Containment areas may drain to a collection area, such as an oil/water separator or a waste collection tank. Piping and tanks will be protected from potential traffic hazards by concrete or pipe-type traffic bollards and barriers.

If a spill involves hazardous materials equal to or greater than the specific reportable quantity all federal, state, and local reporting requirements will be followed. The California Water

Code (Section 13272(f)) establishes a reportable quantity of 42 gallons for spills of petroleum products in water bodies. However, the California Water Quality Control Board Region 5 has jurisdiction for the project site and they would like all oil spills on surface water to be reported.

A worker safety plan, in compliance with applicable regulations, will be implemented. It will include training for contractors and operations personnel. Training programs will include safe operating procedures, the operation and maintenance of hazardous materials systems, proper use of Personal Protective Equipment, fire safety, and emergency communication and response procedures. All plant personnel will be trained in emergency procedures, including plant evacuation and fire prevention. In addition, designated personnel will be trained as members of a plant hazardous material response team; team members will receive the first responder and hazardous material technical training to be developed in the Hazardous Materials Business Plan. However, in the event of an emergency, plant personnel will defer to Alameda County Fire Station No. 8 (1617 College Avenue, Livermore) or the Alameda County HazMat Support Unit at Fire Station No. 4 (20336 San Miguel Avenue, Castro Valley).

D. Cumulative Impacts: The construction and operation of the East Altamont Energy Center will not produce any significant negative cumulative impacts. The primary potential cumulative impact from the use and storage of hazardous materials would be from a simultaneous release from two or more sites of a chemical or chemicals that would migrate offsite. Potentially, the two or more migrating releases could combine and thereby pose a greater threat to the offsite population than would a single release by any one site. The only hazardous material that has the potential to migrate offsite from the East Altamont Energy Center is ammonia vapor released from spilled anhydrous ammonia. Based on the results of the Off-Site Consequence Analysis (OCA), the distance to an expected ammonia concentration of 75 ppm is 1,476 feet from the site of the ammonia storage tank. The 75-ppm benchmark is the level considered to be without serious adverse effects on the public for a one time exposure. Based on the OCA, the concentration of 75 ppm would primarily occur on open farmland under the control of the Applicant and slightly beyond Mountain House Road to the west of the East Altamont Energy Center. Applicant agrees with Staff in their FSA conclusion that “The probability of a tank failure occurring at the same time farm workers are present, with low winds blowing in the direction of the workers and F class atmospheric stability, is too low to be considered plausible.”

E. Mitigation: As outlined in the AFC, potential impacts during construction and operational phases will be mitigated through extensive implementation of engineered controls, training, best management practices, and the development of plans and procedures. With the implementation of the proposed project mitigation measures and the Conditions of Certification, the project will comply with all applicable federal, state, and local laws, ordinances, regulations, and standards (LORS).

All hazardous materials will be handled and stored in accordance with applicable codes and regulations. All containers used to store hazardous materials will be inspected at least daily

HAZARDOUS MATERIALS

for signs of leaking or failure. Incompatible materials will be stored in separate storage and containment areas. Areas susceptible to potential leaks and/or spills will be paved and bermed. Containment areas may drain to a collection area, such as an oil/water separator or a waste collection tank. Piping and tanks will be protected from potential traffic hazards by concrete or pipe-type traffic bollards and barriers.

The anhydrous ammonia storage and handling facilities will be equipped with continuous tank level monitors, temperature and pressure monitors and alarms, excess flow and emergency block valves, and a vapor suppression system. Secondary containment will be provided. If there is an inadvertent release from the storage tank, the liquid will be contained within the secondary containment structure. Vapor detection equipment will be installed to detect escaping ammonia and activate alarms.

Transportation of hazardous materials to the plant will comply with all Department of Transportation (DOT), EPA, California Department of Toxic Substances Control (DTSC), California Highway Patrol (CHP), and the California State Fire Marshal regulations for the transportation of hazardous materials. At the request of CEC Staff, Applicant performed an analysis of the potential hazardous materials handling impact due to the transportation of anhydrous ammonia. The results of this analysis demonstrated that the East Altamont Energy Center project would not result in a significant hazardous materials handling impact due to the transportation of anhydrous ammonia.

The proposed facility will comply with the requirements of the federal and state Risk Management Plan programs, which will include implementation of detailed engineering and administrative controls, and emergency response planning.

**Applicants Proposed Modifications to the
Hazardous Materials Conditions of Certification**

HAZ-4 The ammonia storage facility shall be designed to either the ASME Pressure Vessel Code (ANSI K61.6) or to API 620. In either case, a secondary containment basin capable of holding ~~150%~~ of the storage volume **of the largest tank shall** protect the storage tank plus the volume associated with 24 hours of rain assuming the 25-year storm, **if exposed to rainfall**. The final design drawings and specifications for the ammonia storage tank and secondary containment basins shall be submitted to the CPM.

At least sixty (60) days prior to delivery of ammonia to the facility, the project owner shall submit final design drawings and specifications for the ammonia storage tank and secondary containment basin to the CPM for review and approval.

HAZ-5 The project owner shall ensure that no combustible or flammable material is stored within ~~50~~**100** feet of the sulfuric acid tank.

At least sixty (60) days prior to receipt of sulfuric acid on-site, the Project Owner shall provide copies of the facility design drawings showing the location of the sulfuric acid storage tank and the locations **where** ~~of any tanks, drums, or piping containing any combustible or flammable materials will be stored and the route by which such materials will be transported through the facility.~~

HAZ-11 The project owner shall ensure that the hydrogen gas storage cylinders are stored in an area out of area potentially affected by a turbine over-speed accident and that no combustible or flammable material is stored within 50 feet of the hydrogen cylinders.

At least sixty (60) days prior to receipt of hydrogen gas on-site, the project owner shall provide copies of the facility design drawings showing the location of the hydrogen gas cylinders and the locations **where** ~~of any tanks, drums, or piping containing any combustible or flammable materials will be stored and the route by which such materials will be transported through the facility.~~

**DECLARATION OF
Jerry Salamy**

I, Jerry Salamy, declare as follows:

1. I am presently employed by CH2M Hill as a Project Manager.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Hazardous Materials for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____

Signed: _____

At: _____

LAND USE

I. INTRODUCTION

A. Name: Alicia Torre and Steven De Young

B. Purpose: This testimony addresses the Land Use issues associated with the proposed East Altamont Energy Center project.

C. Qualifications: Alicia Torre is the Project Development Manager for the East Altamont Energy Center project. She has 20 years experience in the power industry involving international and domestic power project development and acquisitions, regulatory analysis and marketing. Steven De Young is the Project Environmental Manager for the East Altamont Energy Center project. Mr. De Young has over twenty-two years experience in managing interdisciplinary environmental projects and participation in environmental investigation, permitting, regulatory reviews and mitigation activities. Copies of Ms. Torre's and Mr. De Young's resumes are included in Appendix A.

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.4 of the AFC
- Appendix 8.4 to the AFC
- Supplement A to the AFC, Filed on May 3, 2001
- Supplement B to the AFC, Filed on October 9, 2001
- Supplement C to the AFC, Filed on February 6, 2002
- Data Adequacy Responses Set 1, Filed on May 1, 2001
- Data Requests and Responses, Set 1, Numbers 8 and 9, Filed on July 9, 2001
- Data Requests and Responses, Set 2, filed on August 17, 2001
- Data Requests and Responses, Set 2A, Number 74, Filed on August 31, 2001
- Data Requests and Responses, Set 2I, Number 74, Filed November 9, 2001
- Letter from Adolph Martinelli, Alameda County Community Development Director, to Cheri Davis of August 15, 2001
- Letter from Adolph Martinelli, Alameda County Community Development Director, to Cheri Davis of December 17, 2001

- Letter from Adolph Martinelli, Alameda County Community Development Director, to Bob Haussler of April 26, 2002

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment for the project recommends that Conditions of Certification be adopted to address seven Land Use issues. These conditions, LAND-1 through LAND-7, are described on page 5.5-19 through page 5.5-21 of the Final Staff Assessment. The proposed Conditions of Certification were found adequate to mitigate any land use issues identified in the AFC.

We have reviewed the Conditions of Certification that were proposed in the Final Staff Assessment. Based upon our review of the Final Staff Assessment we do not believe that there are any outstanding disputes between the Staff and the Applicant regarding the Conditions of Certification for Land Use.

III. SUMMARY

- A. Affected Environment:** The project site is located in northeastern Alameda County, near the Contra Costa and San Joaquin county borders. The East County Area Plan (ECAP), as modified by "Measure D," is the planning document applicable to this site. Measure D (the Save Agriculture and Open Space Initiative) passed during the November 7, 2000 election and it amended the ECAP to modify the location and definition of land uses in East Alameda County. The pattern of land use in east Alameda County comprises the three cities in the Tri-Valley with various areas of hilly open space terrain surrounding them on all sides. The historical land use pattern has resulted in a concentration of parks and water and resource management in the southwest, while agricultural uses predominate in the eastern third of the planning area. In many cases, land uses are shared (e.g., grazing is permitted in some parks). The Mountain House area, northeast of the Altamont Pass, is a separate area from the Tri-Valley in its geology and topography, and economically it is more a part of the Central Valley than the central San Francisco Bay Area.

Major landmarks in the project vicinity include the Clifton Court Forebay approximately 2 miles to the north and Bethany Reservoir, approximately 2.5 miles to the southwest, and the Byron Airport, approximately 3 miles to the northwest. The site is located approximately 8 miles northwest of the city of Tracy, 12 miles east of Livermore, 5 miles south of Byron, and less than 1 mile from the San Joaquin County border and the Mountain House Community Service District (MHCS), a new town just starting Phase 1 construction. Large infrastructure projects dominate the landscape around the project. The Western Area Power Administration Tracy substation, two pumping stations for the Delta-Mendota Canal and the California Aqueduct, PG&E's gas compressor station, numerous windfarms, four 500-kV

transmission lines, nine 230-kV transmission lines and several lower voltage lines are located in the vicinity of the project.

The predominant land uses in the project vicinity are large parcel agricultural, electric utilities, highways, recreation, a mainline railroad, and water management projects. Major Public uses in the vicinity consist of the Tracy substation, located on Kelso Road west of Mountain House Road, comprising the substation and major transmission line corridors north of it. Bethany Reservoir is a major park, located approximately 2.5 miles to the southwest. The ECAP specifies goals for preserving viewsheds and other aesthetic characteristics of this area. Two major water projects, defined as “Water Management” features in the ECAP, are the California Aqueduct and the Delta-Mendota Canal, both located approximately 2 miles southwest of the project. The area comprising the two water projects, the reservoir, and the east slope of the coastal foothills is designated for “open space/ Resource Management; watershed protection” in Measure D. The project is outside the Urban Growth Boundary (UGB) designated in the ECAP.

B. Construction Impacts

Power Plant Site—With mitigation provided under the Amended and Restated East Altamont Energy Center Farmlands Mitigation Agreement, the East Altamont Energy Center will comply with the Alameda County East County Area Plan (as amended by Measure D) and will not have a significant impact under CEQA Guidelines, Appendix G.

Electric Transmission Line—With mitigation provided under the Amended and Restated East Altamont Energy Center Farmlands Mitigation Agreement, the East Altamont Energy Center electric transmission line will comply with the Alameda County East County Area Plan (as amended by Measure D) and will not have a significant impact under CEQA Guidelines, Appendix G. Furthermore, the transmission line will be compatible with the underlying zoning and surrounding land uses.

Natural Gas Pipeline—The natural gas pipeline route will not have a significant impact on land uses of the surrounding area. The natural gas supply pipeline will be underground, and therefore will not limit the continued uses of the areas on and adjacent to the pipeline route for the currently designated uses (e.g., agriculture). During the construction phase, however, there will be some disruption of traffic related to the portion of the gas supply pipeline adjacent to Kelso Road

Water Supply Pipelines—The raw water supply pipeline route will not have a significant impact on land uses of the surrounding area. The raw water supply pipeline will be underground, and therefore will not limit the continued uses of the areas on and adjacent to the pipeline route for the currently designated uses (e.g., agriculture). When the recycled water supply is made available to the East Altamont Energy Center, there will possibly be some minor disruption of traffic along portions of the route adjacent to Byron Bethany Road. However, the recycled water pipeline route will not have a significant impact on land uses of the surrounding area. Portions of the water supply lines are routed through Contra Costa and San Joaquin Counties; the pipelines do not conflict with any LORS of these two counties as well as Alameda County.

C. Operational Impacts

Power Plant—The East Altamont Energy Center is consistent with the Alameda County East County Area Plan (as amended by Measure D), and will not have a significant impact under CEQA Guidelines, Appendix G. With mitigation, operation of the project will not cause any significant noise, dust, public health, traffic or visual impacts to nearby land uses, nor will the operation of the East Altamont Energy Center contribute substantially to any cumulative land use impacts

Electric Transmission Line—Once operational, the electric transmission system will have no impacts on land use.

Natural Gas Pipeline—Once operational, the natural gas pipeline will have no impacts on land use.

Water Supply Pipelines—Once operational, the water supply pipelines will have no impacts on land use.

D. Cumulative Impacts: The development of the project is consistent with other major existing land uses in the vicinity, including the substations, transmission lines, and pumping stations located nearby. The project has been sited away from planned, residential development. Adequate buffering from residential developments is achieved through surrounding land use. The communities of Byron in Contra Costa County and the planned new town of Mountain House in San Joaquin County are at least 1 mile away, so the East Altamont Energy Center will not disrupt or divide the physical arrangement of any established community. Potential impacts to the aesthetic quality of the area are mitigated as discussed in Applicant’s Visual Resources testimony.

The project will convert approximately 40 acres of prime agricultural lands to public utility uses. Although the loss of less than 1 percent of agricultural lands in Alameda County is not individually significant, it does contribute to losses resulting from other developments and this is not consistent with ECAP Policies 75 and 76. However, the project will encourage the protection of agriculture by maintaining the remaining approximately 134 acres of the project parcel in agriculture. Because the East Altamont Energy Center will purchase water at industrial rates, it lowers the cost of water to agricultural users in BBID’s district, which encompasses 17,000 acres in Alameda, Contra Costa, and San Joaquin counties.

The parcel currently is designated as Large Parcel Agricultural in the ECAP and Measure D. Allowable uses within this category include public uses, quasi-public uses, wind farms, utility corridors and similar uses compatible with agriculture. Moreover, Alameda County has determined that “The East Altamont Energy Center falls within the definition of infrastructure allowable under Policy 14A of the ECAP, and the electricity produced by this facility would certainly be considered a public utility” (letter from Adolph Martinelli, Alameda County Community Development Director, to Bob Haussler, California Energy Commission, dated 4/26/2002). Although the project is anticipated to result in a minor loss of agriculturally productive lands, it avoids “leapfrogging” development that could result in the premature loss of agriculture because it is sited near similar existing and planned uses. The

project will not preclude or unduly restrict the conducting of agriculture on neighboring properties or the operation of the federal and state government facilities nearby. The reduction in agricultural land will be mitigated as noted below.

- E. Mitigation:** The East Altamont Energy Center site and related facilities may have an impact on the supply of agricultural farmlands and other open space in eastern Alameda County, the impact of which must be mitigated in compliance with the County's Policies 75 and 76 of the East County Area Plan of the Alameda County General Plan, Alameda County General Ordinance Section 17.060.010, and Alameda County Measure D (passed by countywide vote in November 2000), which protect the County's agricultural farmlands and other open space from speculative development. On September 17, 2002 the Alameda County Board of Supervisors unanimously passed an Amended and Restated Farmlands Mitigation Agreement (Agreement). As noted in the Final Staff Assessment, with implementation of Condition of Certification LAND-7 (pertaining to payment of mitigation fees as required by the Agreement), potential impacts to farmland will be mitigated to a level of less than significant.

**DECLARATION OF
Alicia Torre**

I, Alicia Torre, declare as follows:

1. I am presently a consultant contracted to Calpine Corporation as Project Development Manager for the East Altamont Energy Center.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Land Use for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: Dublin, California

**DECLARATION OF
Steven De Young**

I, Steven De Young, declare as follows:

1. I am presently a consultant contracted to Calpine Corporation as Project Environmental Manager for the East Altamont Energy Center.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Land Use for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: Dublin, California

NOISE

I. INTRODUCTION

- A. Name:** Robert Greene, James McLucas, Mark Bastasch, Steven De Young
- B. Purpose:** This testimony addresses noise issues associated with the proposed East Altamont Energy Center (EAEC).
- C. Qualifications:** The portion of this testimony related to project compliance with CEWA has been prepared and submitted by Mr. Rob Greene, INCE, Bd.Cert., Manager of Noise and Vibration, URS Corporation, in the capacity of Expert Witness in Acoustics acting on behalf of the East Altamont Energy Center, LLC. Mr. Greene is Board Certified (No. 84004) in the practice of noise and vibration engineering by the Institute of Noise Control Engineering of the United States. With his first analysis of an Environmental Impact Report Noise Section performed in 1974, he provides nearly 30 years of experience in environmental acoustics including analysis of potential impacts of project noise upon nearby sensitive receptors. Mr. Greene's practice of environmental acoustics, oftentimes called "community noise" includes the disciplines of physical acoustics (measurement and prediction), psychoacoustics (perception and response) and regulatory or political acoustics (noise/land use compatibility planning and regulations). He has conducted studies of numerous potential and active power plants in the United States and foreign countries. Mr. Greene is an active member of the noise control engineering and environmental acoustics profession, conducting ongoing research, preparing and presenting scientific papers, and engaging in continual interaction with a broad range of professionally recognized practitioners worldwide.

Steven De Young is an independent environmental consultant currently contracted to Calpine as Environmental Project Manager. Mr. De Young has over twenty-two years experience in managing interdisciplinary environmental projects and participation in environmental investigation, permitting, regulatory reviews and mitigation activities.

James McLucas is Calpine's project engineer for the East Altamont Energy Center project and is a registered mechanical engineer with twenty-one years of experience in the design and construction of energy and water and wastewater treatment facilities. For the East Altamont Energy Center, in the area of noise, Mr. McLucas supervised and coordinated the efforts of the Parsons Energy & Chemicals Group (the project A/E), Hessler Associates (the project design consultant for noise), Calpine's internal engineering, construction, and operations staff, and major equipment suppliers. In addition, Mr. McLucas prepared or contributed to a number of the design-related noise data responses and performed calculations of existing and cumulative L_{eq} 's, L_{dn} 's, and L_{90} 's.

Mark Bastasch is a registered Professional Engineer and a member of the Institute of Noise Control Engineers. He has authored numerous noise reports to satisfy NEPA and CEQA requirements. Mr. Bastasch authored portions of the AFC, prepared several data request responses and oversaw the noise monitoring efforts for the East Altamont Energy Center project.

Our qualifications are summarized more completely in the attached resumes (Appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.5 of the AFC
- Appendix 8.5 to the AFC
- Supplement A to the AFC, Filed on May 3, 2001
- Supplement B to the AFC, Filed on October 9, 2001
- Supplement C to the AFC, Filed on February 6, 2002
- Data Requests and Responses, Set 2, Numbers 77 through 80, Filed August 17, 2001
- Data Requests and Responses, Set 3, Numbers 130 and 131, Filed October 9, 2001
- Data Requests and Responses, Set 7, Number 161, Filed April 26, 2002
- Data Requests and Responses, Set 2, Supplemental Data Response to Noise Data Request 78, Filed August 30, 2002
- Revision to Figure 8.5-2R (Sensitive Noise Receptor Locations) and Transmittal of Letters to Three Homeowners Regarding Offer for Residential Soundproofing, Filed July 30, 2002
- Letter from Adolph Martinelli, Alameda County Community Development Agency, to Ms. Cheri Davis, CEC, dated August 15, 2001, Responses of Alameda County Community Development Agency (ACCCA) to Data Request Set No. 2
- Letter from Adolph Martinelli and Mee Ling Tung, County of Alameda to Ms. Cheri Davis, CEC, dated December 17, 2001, Comments on Discussion of Alameda County Noise Ordinance
- Staff Response to Applicant's First Set of Data Requests, Filed September 25, 2002

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinion, such opinions are our own. We make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that Conditions of Certification be adopted to address Noise and Vibration issues. These conditions, NOISE-1

through NOISE-9, are described on pages 5.6-22 through 5.6-22 of the Final Staff Assessment. We have reviewed the Conditions of Certification set forth in the FSA and find them acceptable with minor modifications to Conditions NOISE-4, NOISE-6, and NOISE-8. Proposed language modifications are located at the end of this testimony.

The proposed modifications for NOISE-4 are intended to clarify that high-pressure, intermittent steam blows will be performed between 7 a.m. and 7 p.m. on weekdays, whereas the low-pressure continuous steam blows will not have limitations on the time or days of the week they are performed.

The proposed modifications to NOISE-6 reflect the Applicant's intent of a project noise level of not more than 43 dBA at any residence. Although the Applicant maintains that 45 dBA is the correct plant noise level based on compliance with LORS and CEQA, the Applicant has offered and is willing to accept a Condition of Certification limiting the plant noise to 43 dBA at any residence. Also included is the addition of an alternate method for measuring the plant noise level. This method was included in the PMPD for the Pittsburg Power Plant (now the Los Medanos Energy Center). This alternate method of demonstrating compliance is intended to address the potential difficulty that could exist in the event that ambient noise levels increase between the time that the pre-project noise measurements were made and the time that the East Altamont Energy Center is operable.

The proposed modifications to NOISE-8 reflect the fact that directional drilling will be a continuous 24 hours per day operation. Once started, it is not prudent to suspend directional drilling operation, as there is then potential for the drill bit to become lodged in the hole. The Applicant believes that it is unnecessary to place additional restrictions on the directional drilling operation given that the operation will only last several weeks, at most, and will take place on the northern portion of the 174-acre parcel, far away from the majority of the noise-sensitive receptors. In the event that this activity results in a disturbance to any noise-sensitive receptors, provisions for dealing with such a disturbance are already addressed by condition NOISE-2.

III. SUMMARY

A. Affected Environment

The East Altamont Energy Center is proposed to be located on Mountain House Road south of Byron Bethany Road, near the northeast corner of Alameda County. The site is about 2,500 feet south of the Contra Costa County line and about 4,500 feet west of the San Joaquin County line. Noise-sensitive land uses closest to the site are primarily isolated residential buildings located in farmlands surrounding the site.

The AFC identified the closest sensitive receptor as Receptor A (Site 1), which is located approximately 0.5 miles from the East Altamont Energy Center site. As noted in the East Altamont Energy Center LLC filing of July 30, 2002, East Altamont Energy Center LLC has obtained an option on the parcel of land containing Receptor A (Site 1) and, upon exercise of

this option, will remove the residential structure on this parcel from residential use. By removing this sensitive receptor from residential use, the closest residential receptor, Receptor B (Site 2), is now located approximately 3,200 feet to the northeast of the East Altamont Energy Center site, across the heavily traveled Byron Bethany Road.

Other noise-sensitive locations include Receptor C (Site 3), a resident southeast of the East Altamont Energy Center, on the south side of Kelso Road and Receptor F, a resident south to the East Altamont Energy Center, on the west side of Mountain House Road. More distant noise-sensitive locations include a few homes and a school located south of Kelso Road (approximately 1 mile from the East Altamont Energy Center), residential structures at the Livermore Yacht Club located to the northeast, and scattered residential uses about one mile southwest and northwest of the site. In addition, due to County regulations pertaining to residential development on agricultural land, further residential development within one mile of the East Altamont Energy Center is not likely.

Sources of environmental noise in the vicinity of the site include vehicular traffic movements on the heavily traveled Byron Bethany Road and Mountain House Road, and other local roadways, Western's Tracy Substation, major pumping facilities for the Delta Mendota Canal, intermittent train traffic, occasional general aviation aircraft activity, and other distant aircraft over-flights.

B. Noise Study

A noise study was performed to ensure that noise from the proposed project would not produce significant or unacceptable impacts on area residents. Features of the study included:

- Identification of applicable laws, ordinances, regulations, and standards (LORS),
- Measurement of current noise levels in the area,
- Computer modeling of expected plant noise levels,
- Comparison of modeled levels with LORS and existing noise levels,
- Determination of an appropriate design noise level for the plant, and
- Development of mitigation measures necessary to achieve the design level.

Existing noise levels were measured at four locations in the project vicinity in January 2001 and October 2001. Noise measurements were conducted at these locations based on the direction of CEC staff during a site visit prior to filing the AFC. The January 2001 noise monitoring served as the basis for the AFC. As requested by Staff in Data Request 130, additional noise monitoring was conducted at the two closest sites in October 2001. The October data is representative of ambient noise conditions in the vicinity of the East Altamont Energy Center for most of the year, with the exception of the quietest winter period. The noise monitoring locations used are designated as Sites 1 through 4. Following are brief descriptions of each monitoring location:

- **Site 1 (Receptor A)** - This monitoring location is near the former closest residence southeast of the project site, located on Kelso Road (Franco Property). As noted above, Applicant has an option on this property that will result in the removal of the residence from residential use.
- **Site 2 (Receptor B)** - This site is located west of Lindeman Road next to the nearest residential structures northeast of the project site. With the removal of Site 1 from residential use, Site 2 becomes the nearest receptor.
- **Site 3 (Receptor C)** - This site is on Mountain House Road, next to the first residence south of Kelso Road.
- **Site 4 (Receptor D)** - This site is adjacent to the residential structures at the Livermore Yacht Club located northeast of the project site.

The January 2001 measurements consisted of continuous overnight noise monitoring, consisting of 10-minute intervals, at Sites 1 and 2, and three short-term (10-minute) samples each at Sites 3 and 4. For the October noise measurements, continuous overnight noise monitoring, consisting of 10-minute intervals, was conducted at Sites 1 and 2. The average noise levels (L_{eq})¹ were recorded concurrently with the L_{10} and L_{90} noise levels². While noise measurements were made at the above-described four sites, Receptor F, a residence located on the south side of Kelso Road, approximately 1,500 feet south of Site 1, is actually the fourth closest residence to the East Altamont Energy Center, not Receptor D (Site 4).

Table 1 presents the L_{dn} data for the four closest receptors (Receptors A, B, C, and F). L_{dn} is the energy average of the 24 hourly Equivalent Sound Levels (L_{eq}) where noise occurring during the nighttime (10:00 pm to 7:00 am) is penalized by the addition of 10 decibels. L_{dn} is one of the most widely used noise descriptors and, as will be explained in a later section, is the appropriate primary descriptor for CEQA analyses. Staff and Applicant concur that summertime noise levels should be used for judging potential noise impacts, thus Table 1 is based on the October 2001 noise measurements. As shown on Table 1, the most affected receptor, Receptor C, will experience only a 1.7 dBA increase in noise level.

¹ The L_{eq} represents the equivalent noise level, defined as the average A-weighted noise level during the measurement period.

² The L_{10} and L_{90} are percentile noise levels (L_n), which are noise levels exceeded during n % of the measurement period, where n is a number between 0 and 100.

Table 1
24-Hour Noise Levels Expressed as L_{dn}

Receptors	L _{dn} (dBA)			
	Existing ^{1,2}	Plant	Combined	Increase
A ³	52.5	N/A	N/A	N/A
B	56.2	48.4	56.9	0.7
C	52.5	49.4	54.2	1.7
F	52.5	47.7	53.6	1.2

Notes:

- Existing noise data is based on October 2001 measurements.
- Since 24-hour noise measurements were not made at Receptors C and F, the 24-hour noise measurements from the closest noise measurement site, Site 1, were used.
- Receptor A will be removed from residential use for the life of the East Altamont Energy Center project. It is included for its measurement of the existing noise level, but any increase would be irrelevant and therefore is not shown.

C. The Project Complies With LORS

The controlling criterion in the design of the noise control features of the project is generally the minimum, or most stringent, noise level required by any of the applicable LORS. In the Alameda County Community Noise Ordinance, the County of Alameda has set exterior noise standards to regulate noise generated within unincorporated areas of the county. The most stringent County noise level limit applicable to noise-sensitive uses, including residences, is a nighttime (10 p.m. to 7 a.m.) limit of 45 dBA L₅₀. In a letter dated December 17, 2001 from the County of Alameda to Ms. Cheri Davis of the CEC, in response to the Preliminary Staff Assessment Noise section, Alameda County states:

Based on review of the same information for the East Altamont Energy Center, the Director of Environmental Health and the Director of the Community Development Agency have found the source-specific noise levels predicted for the Calpine East Altamont Energy Center are in conformance with the requirements of the Alameda County Noise Ordinance (Alameda County Health and Safety Code, Title 6, Sections 6.60.010 through 6.60.120 inclusive).

The project will comply with the most stringent applicable noise level (45 dBA L₅₀) and, therefore, complies with all applicable LORS.

In fact, the project will more than satisfy LORS. Mr. Greene has reviewed the Applicant's study of the existing noise environment, the possible noise effects of the project, and the noise abatement and control features as currently proposed for inclusion in the East Altamont

Energy Center, and has determined that consistent with the AFC the plant is likely to achieve a plant sound level of 43 dBA L_{eq} at the nearest sensitive location.

D. The Project Complies With CEQA

1. Summary

The environmental noise evaluation, the plant equipment and the noise control measures proposed by the Applicant will ensure that the East Altamont Energy Center will not result in a significant adverse noise impact at any noise-sensitive location. As this testimony will demonstrate, the East Altamont Energy Center has been adequately designed to avoid or to reduce any significant noise impact to a less than significant level and further noise mitigation is not necessary.

2. The CEQA Requirements

Under the CEQA guidelines, the Commission must address four questions:

Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Both the Staff and Applicant agree that questions a, b and d can be answered in the negative. However, the Staff and Applicant disagree regarding question c. The Staff contends that the project will result in a substantial permanent increase in noise levels above levels existing without the project. The Applicant believes that the increase in ambient noise levels is clearly not substantial using noise assessment methodology consistent with CEQA and because the increased noise causes no adverse effects.

3. The Staff Analysis is Deeply Flawed

As the FSA concedes, there are only three noise-sensitive properties within the project's area of potential noise impact. The predicted plant noise levels at two of the three receptors (Receptors B and D), even under Staff's flawed methodology, are clearly not adverse. At the third residential receptor (Receptor C), the Staff contends that there will be a substantial change in the background noise levels. Based on the assumption that this single site is adversely impacted, the Staff recommends that the Commission adopt a new noise standard that is considerably lower than the applicable LORS and the Staff proposes that this stricter standard be applied even to those sites where the impacts are clearly not adverse. The Staff's assumption that there will be a substantial increase in noise at a single residence (Receptor C), leads the Staff to assert that the plant will need to be "further mitigated as described...in the proposed Conditions of Certification..." (*viz.*, Staff-proposed NOISE-6).

As will be shown by the testimony presented below, the "further mitigation" proposed by Staff would not be the outcome of a proper CEQA analysis and, importantly, would not provide a public or private benefit. This testimony will demonstrate that the plant will be audible at these three residential sites, but not at a level that would likely be disturbing or generate complaints as is asserted in the Staff's analysis. Thus, a scientifically based CEQA impact analysis would find no significant noise impact and no requirement for extra noise reducing mitigation.

4. The Appropriate Baseline Under CEQA is the "Ambient Noise Level", Not Background Noise

Under the CEQA guidelines, the question is whether the project will "increase substantially the ambient noise levels for adjoining areas; ...".³ The Staff's analysis commits a serious error by substituting the term "background" for the CEQA term "ambient".⁴

The terms "ambient" and "background" have distinct technical definitions that are mutually exclusive. "Ambient sound" is defined in the American National Standard Institute (ANSI) standard S12.9/Parts 1 & 3-1993 as "all-encompassing sound associated with a given environment, being usually a composite of sound from many sources near and far." The definition contains no limitation as to sound level magnitude or period or hours of occurrence. In the California Model Noise Ordinance, a reference cited in the FSA, (§2.2.3) the definition of "ambient noise level" as used in CEQA is given as: "The composite of noise from all sources near and far. (In this context, the ambient noise level constitutes) the normal or existing level of environmental noise at a given location." Except for the parenthetical words, this is the same definition of "ambient noise" provided in the FSA (Table A1 of the FSA Appendix A).

³ *Lewis v. Seventeenth Dist. Agricultural Assn.* (1985) 165 Cal.App.3d 823, 829, fn.7.

⁴ For example, see page 1-9 of the FSA: "Such increases in **background** noise levels would profoundly alter the noise regime in the project vicinity and would cause a significant impact." (emphasis added)

The Staff's definition of background noise is "When no traffic is driving by, no airplanes are flying overhead, no dogs are barking, no frogs are croaking, and no strong wind is blowing, what remains is background noise." (FSA p.5.6-13) This is obviously a far more restrictive measure of environmental noise than the ambient noise levels specified in the CEQA guidelines and does not represent the normal level of environmental noise at a given location.

Evaluation of the change in *ambient* noise level, not *background* noise level, constitutes the appropriate methodology in accord with CEQA. If CEQA required a limited analysis of noise environment changes that would affect *only* the background noise (as opposed to all or "ambient" noise), or directed concern *only* to the quietest noise periods in general, or to the quietest specific minutes of the day, these limits would have been explicitly stated in the Guidelines.

The Staff, seemingly oblivious to the distinction between ambient and background noise levels, uses the terms interchangeably in the FSA and even combines these two terms into essentially a single adjective (e.g., FSA p. 5.6-13). But when the Staff draws its ultimate conclusion that the project would cause a significant impact, the Staff clearly rests its finding on 1) the premise that the project would increase "background" noise levels (FSA, 1-9), and 2) that this occurs only for a very limited time.

5. Staff Conclusions Regarding the Increase in Noise Levels at Site 3 are Incorrect.

The FSA states that operation of the project will increase *background* noise levels at Site 3 (Receptor C) by 11 to 13 dBA. "Staff considers such an increase in *background* noise level to be clearly significant" (FSA, 5.6-13; emphasis added). Therefore staff proposes Condition of Certification NOISE-6 to require plant operation to not exceed 39 dBA L_{eq} at any sensitive receptor, so that the resulting change in background levels at this site would fall to 8 dBA. According to the Staff, an 8 dBA increase "would be noticeable, but not necessarily annoying in and of itself." (FSA 5.6-14)

The Staff's analysis of the increase in noise level at Site 3 (Receptor C) is not correct.

Staff begins its analysis in Table 3, by presenting data taken at four sites in January and October 2001. The noise readings at Sites 1 and 2 were 25-hour readings. However, the readings at Sites 3 and 4 were simply 10-minute samples in January 2001; there were two 10-minute samples at night and one 10-minute sample during the daytime at each site. Sound was measured at these locations based on the direction of CEC staff during a site visit prior to filing the AFC. Staff indicates the dates, January or October, for the Site 1 and Site 2 data, however, there are no dates indicated for the Site 3 and Site 4 data. While a footnote indicates that the Sites 3 and 4 data is derived from 10-minute samples, it is not made clear that the data represents a total of three 10-minute samples (one daytime and two nighttime) for each site.

In Table 3, for Sites 3 and 4, Staff indicated a range for the average L_{90} noise levels during the quietest nighttime hours. For Sites 3 and 4, each range represents the L_{90} values from the two 10-minute samples (30 and 32 dBA for Site 3, 32 and 33 dBA for Site 4). Staff falsely

represents these values of L_{90} as the “ambient” noise levels at Site 3 and Site 4. This is obviously not a presentation of ambient conditions, or even an “average during the quietest night-time hours”. This is instead, presentation of two data points, representing the quietest cumulative two minutes during 20 minutes of noise samples measured during the middle of one winter night at each site.⁵ Even as an indicator of *background* noise, these two 10-minute samples are statistically insufficient and immaterial because they are so brief.

Because people are more likely to be indoors with windows closed in the winter, Staff correctly considers winter noise levels less critical and “the summertime noise levels are used for judging potential noise impacts” (FSA 5.6-8). Therefore, Staff states “the October noise level measurement data were used to represent summer conditions” (FSA 5.6-12). However, in Table 5, Staff falsely presents the values based on the two 10-minute samples at Sites 3 and 4 as “*Summer Ambient*” Nighttime L_{90} levels. These values are neither “*summer*”, nor “*ambient*”, nor a representative sampling of L_{90} data. In fact, the samples were taken in January and are therefore winter samples, which Staff characterizes as less critical.

Even using Staff’s L_{90} descriptor, Table 5 shows that only Site 3 experiences an increase of more than the 8 dBA that Staff finds acceptable in this overall noise environment. As discussed above, Staff’s calculation of an 11 to 13-dBA increase is based on selecting the quietest 10 percent of two 10-minute nighttime samples from the winter not the summer period. No summer data exists for Site 3, but (based on the difference at Sites 1 and 2)⁶, the ambient noise levels would be expected to be 3 to 9 dBA higher than winter levels. Thus, the *increase* in ambient levels due to the East Altamont Energy Center would be 3 to 9 dBA *less* than Staff’s calculation.

In conclusion, there is no reliable data that supports a finding of an 11 to 13-dBA increase at Site 3 (Receptor C).

6. The Commission Should Consistently Use Well Defined, Professionally Accepted Noise Descriptors

The descriptor CEC Staff used for impact analysis of the East Altamont Energy Center is the L_{90} for the quietest consecutive four hours during the night. Previous Commission decisions have used several different noise descriptors to determine presence or absence of “noise impact” and the noise control design or mitigation necessary to avoid or eliminate significant impact. A few of the approaches to acceptable noise control were innovative and reasonably flexible. However, the inconsistent application of disparate and novel noise descriptors can result in arbitrary and discriminatory findings of significant noise impact from project to project.

⁵ The measurements at Sites 1 and 2, in contrast, are valid measurements of ambient conditions because they represent 25 hours of continuous monitoring.

⁶ Where both January and October data exists for the same site, the October data is 3 to 9 dBA higher on average, as reported in Staff’s Table 3 (FSA, 5.6-7).

A review of 17 previously approved AFC's (refer to Attachment A) reveals that 12 determinations of significant noise impact were made using several different versions of the centile noise descriptor L_{90} . These 12 include L_{90} for the average daytime hours, L_{90} for the average nighttime hours, L_{90} for the quietest hour and various L_{90} partial nighttime or daytime hour metrics. Of the five other AFC's, three used L_{eq} as the descriptor, one used L_{50} and one could not be determined from the record.

It is important to the public, to applicants, and to the integrity of the CEQA/AFC process that the Commission use defined, professionally accepted environmental noise terms and descriptors. It is also important that the Commission apply these terms and descriptors consistently to the same or similar time periods in order to determine the potential for noise impact and the necessity for noise mitigation. In doing so, all participants in the CEQA/AFC process will be afforded the opportunity to use readily available scientifically documented information as an aid to decision making. It will allow applicants to more accurately anticipate the degree of noise control that will be necessary to avoid significant impacts and support informed decisions regarding project viability at a much earlier point in the planning, development, and engineering process.

7. L_{90} is Not the Appropriate Descriptor for the Purposes of CEQA

To analyze the noise impacts of the East Altamont Energy Center, the Staff utilizes an *ad hoc* version of the centile descriptor L_{90} . The L_{90} descriptor, by definition, describes the decibel level that is exceeded 90 percent of the measurement period. In other words, the actual sound levels are higher (louder) 90 percent of the time and lower (quieter) than L_{90} for only 10 percent of the time. For example, this descriptor only describes the lower bound of the noise that is (or would be) present 54 minutes during a 60 minute period. Because the sound measuring instruments calculate the centile values second by second, the L_{90} only indicates the sound level that is not exceeded during a *cumulative* 10 percent of seconds that are not necessarily continuous during the measurement period.

Furthering their microscopic view, the Staff evaluates *background* noise level only during some limited number of the quietest minutes occurring during the nighttime (or daytime). For example, limiting the L_{90} data to only 4 hours of a typical day (FSA p.5.6-13) the Staff focuses on only 24 minutes out of 24 hours of ambient sound. The Staff basically disregards a total of 23.6 hours of daily ambient sound (98.3 % of the day) by their method of analysis. Using this variably modified L_{90} without any scientific foundation arbitrarily distorts the analysis of project noise.

One of the problems with the Staff's 4-hour L_{90} descriptor that utilizes a very small number of minutes in the day, is that the results obtained are highly variable. Although widely used professionally accepted measures such as the L_{dn} will vary somewhat from day to day, the unusual L_{90} descriptor, particularly when used for a narrow period, can be quite variable because it is examining such a statistically small portion of the ambient noise environment. As an example, in a Data Response received on September 26, 2002, Staff has just recently provided Applicant with data measurements Staff made on two consecutive 24-hour periods (2/13/02 to 2/15/02). The minimum consecutive 4 nighttime hourly L_{90} 's calculated from this data vary by 6 dBA from one day to the following day. In contrast the the minimum

consecutive 4-hour L_{eq} 's calculated from this data both vary by only 0.5 dBA from day to the next and the L_{dn} 's vary by only 2 dBA. This demonstrates that relying on a statistically narrow descriptor like the L_{90} subjects project analysis to chance conditions and will result in Commission decisions which are unintentionally arbitrary.

The available published literature does not support use of L_{90} (whether 24-hour or specially restricted) to evaluate the impacts on ambient noise levels. Regarding the relevance of outdoor background noise to indoor exposure, a quotation from a United States Air Force (USAF) publication authored by highly respected scientists is insightful:

“Indeed, it is questionable whether centile of outdoor noise distributions can be relied on at all to predict annoyance.”⁷

No recognized national standards-making organization recommends or supports the use of L_{90} for noise/land use compatibility determinations, noise compliance, or environmental impact assessment. No federal agencies, including those with recently revised noise standards, use L_{90} in any way. No other State of California agency uses L_{90} . None of the dozens of counties use L_{90} and none of the hundreds of cities in California use L_{90} for noise compatibility planning or nuisance noise enforcement. Table 2 lists the descriptors used by a number of state and federal agencies, and it demonstrates the uniqueness of Staff attachment to the L_{90} descriptor. Only one of the other 49 other states (Massachusetts) has used an increase in L_{90} as a standard for environmental compliance. The Massachusetts methodology was developed more than 30 years ago and has never been updated. They specify 10 dBA as an allowable increase and offer flexibility regarding compliance with their standard.

Table 2

Noise Metric/Descriptors Used by Numerous Federal and State Agencies

Agency: Noise Metric/Descriptor	CNEL	L_{dn}	L_{eq}	L_{10}	L_{50}	L_{90}
Federal						
Federal Energy Regulatory Commission		•				
Environmental Protection Agency		•				
Federal Highway Administration			•	• ¹		
Federal Transit Administration		•				

⁷ Fidell, Green, Schultz, Pearsons. August 1988. A Strategy for Understanding Noise-Induced Annoyance. Human Systems Division, Air Force Systems Command. HSD-TR-87-013

Agency: Noise Metric/Descriptor	CNEL	L _{dn}	L _{eq}	L ₁₀	L ₅₀	L ₉₀
Federal Rail Administration		•				
Federal Aviation Administration	• ²	•				
Housing and Urban Development		• ³				
State						
California Energy Commission			• ¹		• ¹	•
California Dept. of Health Services (CCR 65302(f))	•	•				
Streets and Highways Code (Section 216)			•			
Department of Transportation (Title 21, Subchapter 6, CCR) Airport Noise Regulations	•					
California Department of Transportation (Caltrans)			•			
Building Code (Part 2, Title 24, CCR)		•				
Regional						
Southern California Association of Governments	•	•				
San Diego Association of Governments	•	•				
San Bernardino Association of Governments	•	•				
Local						
Counties'/Cities' General Plan Noise Elements	• ⁴	• ⁴				
Counties'/Cities' Noise Ordinances ⁵			•	•	•	

Notes:

- 1. Rarely used.
- 2. Used in California.

Agency: Noise Metric/Descriptor	CNEL	L _{dn}	L _{eq}	L ₁₀	L ₅₀	L ₉₀
3. Prior to the 1980's, used L ₃₃ .						
4. Per guidance promulgated by the State of California (Guidelines for Preparation and Content of the Noise Element of the General Plan).						
5. A variety of descriptors are commonly used, including statistical descriptors such as L ₅₀ , L ₂₅ , L _{8.3} and so on, but not greater than L ₅₀ (i.e., not more than 30 minutes in any one hour period).						

Using L₉₀ as a descriptor to determine noise/land use compatibility and/or noise threshold level for significant impact is inappropriate for several reasons.

- The *ad hoc* special L₉₀ sound descriptor proposed by Staff does not have a published frame of reference for use by either technically experienced acoustical engineering professionals or for planners, land use permitting officials, or members of the general public.
- Because information related to L₉₀ is virtually nonexistent, use of L₉₀ is not consistent with CEQA guidance concerning the quality of information used as the basis for informed decision making.
- The environmental document must use the most appropriate methodology and present the “best available” information to the decisionmakers and the general public.
- The methods and criteria used to determine impact/mitigation should be supported by published scientific research, consistent with public policy and case law.

8. The Appropriate Descriptor for the Purpose of CEQA is L_{dn}

In the area of noise/land use compatibility and environmental impact assessment one of the most widely used descriptors that has withstood the test of time is the Day-Night Average Sound Level (DNL or L_{dn}). L_{dn} is the energy-average of the 24 hourly Equivalent Sound Levels (L_{eq,h}), where noise occurring during the nighttime (10:00 p.m. to 7:00 a.m.) is penalized by the addition of 10 decibels. The L_{dn} descriptor is based on voluminous, well documented, and readily available scientific research. Thus, it fulfills the direction provided by the Court in *Oakland*⁸ to use “*the most appropriate and useful descriptor*” of the particular sounds being evaluated with respect to the project. There are many substantive reasons for the CEC to adopt L_{dn}, an overwhelmingly accepted noise descriptor, as the primary noise evaluation benchmark for its evaluation of noise impacts under CEQA in this AFC proceeding.

⁸ *BERKELEY KEEP JETS OVER THE BAY COMMITTEE (and CITY OF SAN LEANDRO et al., and CITY OF ALAMEDA et al.) v. BOARD OF PORT COMMISSIONERS*, Court of Appeal, First Appellate District, Division Two, filed 8/30/01. p.39, The Court, quoting from the technical treatise provided in the EIR Appendix “Description of Noise and its Effects on People” added the italics for emphasis.

The L_{dn} is currently the most generally used descriptor of overall community noise environments in the United States and is broadly recommended, as is the need to harmonize disparate regulations and noise descriptors.⁹ All federal agencies use L_{dn} or Equivalent Sound Level (L_{eq}) based criteria for their noise regulations and compliance with NEPA.

The ANSI standard S12.9-1998/Part 5 *Quantities and Procedures for Description and Measurement of Environmental Sound – Part 5: Sound Level Descriptors for Determination of Compatible Land Use* specifies “...the yearly average adjusted or non-adjusted day-night average sound level as the acoustical measure...to be used in assessing compatibility between various land uses and an outdoor noise environment.” Determination of noise level compatibility, noise impacts (i.e., potential incompatibility) of the project with its surrounding land uses and the potential requirement for mitigation to achieve acceptable noise levels are primary functions of the AFC environmental document. The Environmental Noise Guidelines of the World Health Organization (WHO) provide “...it is recommended that $L_{Aeq, T}$ [A-weighted (dBA) L_{eq} with a specified period] be used to evaluate more-or-less continuous environmental noises.”¹⁰ Based on review of the scientific literature and national practice, the most appropriate primary noise descriptor for determination of environmental impact and noise/land use compatibility is the L_{dn} , or alternatively the basic L_{eq} .

L_{dn} or L_{eq} presents the “best available” information to the decision-makers and the general public, and both are supported by published scientific research, consistent with public policy and case law. We believe L_{dn} or L_{eq} are better descriptors (than L_{90}) to use for noise/land use compatibility evaluations such as the East Altamont Energy Center AFC. A quotation regarding the selection of the “perfect” noise descriptor from a previously cited USAF publication is instructive:

“It is now generally acknowledged that adoption of any reasonable noise metric for regulatory purposes would have been more productive than decades of research devoted to refining an optimal measure. It is for this reason that, a decade ago, all U. S. federal agencies concerned with environmental noise assessment agreed on the DNL [L_{dn}] for use as a general purpose measure of environmental noise exposure.”¹¹

The Staff point out in a footnote that various noise metrics may have utility in conducting a comprehensive noise evaluation (FSA p. 5.6-14). We agree, but metrics other than L_{dn} or L_{eq} should:

- Be supplemental and secondary,

⁹ Brooks, B.M. *The Need for a Unified Community Noise Policy*, Harris, A.S. *The Use of Other Descriptors to Supplement DNL for Airport Environmental Studies*; Schomer, P.D. *Criteria for Assessment of Noise Annoyance*; Barnes, J.D. and Fullerton, J.L. *Planning to Avoid Land Use Conflicts and Potential Noise Problems*. all papers from Proceedings of NOISE-CON 2001. Portland, ME.

¹⁰ WHO, Environmental Noise Guidelines. 1999. §2.8 Summary

¹¹ Fidell, Green, Schultz, Pearsons. August 1988. A Strategy for Understanding Noise-Induced Annoyance. Human Systems Division, Air Force Systems Command. HSD-TR-87-013

- Only be used when necessitated by special circumstances and,
- Be used to clarify, not cloud or distort, the analysis.

For example, consistent with the locally adopted noise standards descriptors used in Alameda County, both the L_{50} and L_{dn} descriptors are useful. The East Altamont Energy Center should be designed to comply with Alameda County's Noise Ordinance¹² such that nighttime noise levels from the plant do not exceed 45 dBA L_{50} from 10:00 p.m. to 7:00 a.m. Consistent with the Alameda County General Plan Noise Element, the L_{dn} descriptor should be used for evaluation and decisions regarding environmental noise/land use compatibility, for assessing the significance of predicted project noise levels, and for establishing the required effectiveness of any noise abatement efforts.

9. Staff's Arguments Against the Use of L_{dn} Are Without Merit

In the FSA, Staff argues that "use of the L_{dn} descriptor is inappropriate and unnecessary" (FSA p. 5.6-17 *et seq.*). One reason given by Staff is "that the issue in this case is not land use compatibility per se, but whether the project will result in significant noise impact due to changes in ambient noise levels." This is not true for two reasons. First, agency the project does not cause significant impact pursuant to CEQA Guidelines because it is consistent with "appropriate" noise/land use compatibility guidelines (and noise ordinance) adopted by Alameda County. Second, we agree that an issue before the Commission is whether the project will result in a substantial increase in ambient noise levels. There is no scientific or mathematical reason why the L_{dn} noise descriptor could not be used to quantify changes in the ambient noise environment. Our preceding testimony (see Section III.D.8 above), explains why L_{dn} is the most appropriate descriptor for measuring increases in ambient levels.

The Staff next infers that L_{dn} is unsuitable because it has traditionally been applied to transportation noise sources. As described in our testimony above, the use of L_{dn} is not limited to transportation agencies. Hundreds of local agencies within California use the L_{dn} to assess noise/land use compatibility and determine noise impact. Federal non-transportation agencies (e.g., Federal Energy Regulatory Commission) also use L_{dn} for their environmental evaluations.

The Staff also argues that because the plant will only affect nighttime noise exposure, "including the daytime noise exposures in the calculations is an unnecessary complication." Similarly, the Staff offers that because the L_{dn} evaluates "noise levels over the day and night hours, it is not ideally suited to assessing the noise effects during nighttime only." However, CEQA provides no such limitation on the evaluation of noise and its potential for impact on the community. CEQA requires an evaluation of the impact on the ambient (i.e. total) noise environment. The plant is designed to operate throughout the day and night. The L_{dn} is

¹² Chapter 6.60 "NOISE" § 6.60.040, Table 6.60.04.A.

especially suited to describe this noise and its greater effect at night because L_{dn} has a built-in penalty for nighttime noise.

Finally, Staff claims that the L_{dn} criteria were not intended to address change in ambient noise levels but only to address annoyance. This is patently false. L_{dn} criteria were originally developed to quantify the changes in the noise environment from aircraft operations and annoyance, but have evolved during the past 30 years to include, describe, and regulate changes in ambient noise and predict annoyance from all kinds of planned development.

Three additional examples are given by Staff (FSA p. 5.6-18) to discredit the use of L_{dn} to evaluate East Altamont Energy Center noise. Each of the Staff statements are misleading. The percentage of highly annoyed people to an aircraft noise environment of “65 dB L_{dn} ” is irrelevant because the East Altamont Energy Center is a power plant and its L_{dn} at the nearest receptor will be 49 dBA L_{dn} . Staff’s statement that “55 dB L_{dn} ” “...would result in about 4% of the population being ‘highly annoyed’” is not relevant because the East Altamont Energy Center will only produce 49 dBA L_{dn} , yielding a cumulative L_{dn} of 54 dBA. This is an imperceptible 1.7 dB change from the existing L_{dn} . And finally, that “55 L_{dn} is equivalent to a continuous noise level of 49 dBA and would be 15 dBA above the “ambient background [sic] noise levels in the quietest hours of the night”. This is not relevant because the continuous level from the East Altamont Energy Center is proposed to be 43 and not 49 dBA and the resulting increase would be much smaller than 15 dBA.

10. The Commission Should Base Its Findings on Applicable LORS

As set forth in our testimony above, the East Altamont Energy Center noise emission will comply with local agency (Alameda County) LORS requiring plant noise to not exceed 45 dBA L_{50} and thus, will not exceed the CEQA threshold of significance regarding compliance with local LORS.¹³ This satisfies the Staff-referenced Appendix G criterion “a” (FSA p. 5.6-4).

However, instead of basing its recommended criterion level for Condition of Certification NOISE-6 on the Alameda County ordinance as would be appropriate under CEQA, Staff appears to have relied upon the Model Community Noise Control Ordinance and the guidelines of the WHO¹⁴ to concoct a standard that would forbid increases of 5-10 dBA if such increases would result in a noise level of more than 40 dBA.

To the extent that Staff wishes to look beyond the Alameda County ordinances in its impact analysis, it is looking in the wrong places. The Model Ordinance, developed 25 years ago, is only a sample or guideline to be used by agencies to develop an applicable regulation. It is not a “standard” pursuant to CEQA Guidelines §15064, subd. (h) first, because it has not been formally adopted by any agency with jurisdiction over the East Altamont Energy Center

¹³ The L_{50} is approximately equal to the L_{eq} for power plant noise.

¹⁴ Footnoted in the FSA (p. 5.6-4) and listed in the “References” section: State of California. 1977. Model Community Noise Control Ordinance, Office of Noise Control, April 1977.

and it has not (at least not recently) been subject to rigorous public review or scientific scrutiny. While the guidelines of the WHO may offer general perspective on noise regulations, they possess no regulatory authority or jurisdiction within Alameda County or the State of California, and thus, do not satisfy the CEQA Guidelines for a local “standard” either. The same can be said regarding the Staff’s assessment (FSA p. 5.6-15) of the East Altamont Energy Center’s consistency “with industrial noise standards commonly applied in European countries (Gottlob, 1995)”.

To summarize: relevant, existing local LORS are satisfied. The Commission should reject the Staff’s invitation to supersede the standards set forth in the Alameda County noise ordinance with the guidelines of the WHO, unnamed European countries, or a 25-year-old Model Ordinance that is no longer even in print. Following Staff’s guidance will result in applying unnecessary mitigation to the project.

11. A 5-Decibel Increase Is Not Always Significant

In the FSA (p 5.6-4), the CEC Staff reiterates their conclusion that a potential for significant impact exists where the noise of the project plus the background exceeds the background by 5 dBA L_{90} or more at the nearest sensitive receptor. The CEQA Guidelines’ recognize that “[a]n ironclad definition of significant effect is not always possible because the significance of an activity may vary with setting.” (Guidelines, PP 15064, subd. (b)). Use of a variable increment of change based on existing ambient sound level would represent an appropriate methodology consistent with this concept.

The FSA improperly attempts to set fixed levels of significance. Without any supporting authority the Staff states that an increase of more than 10 dBA is clearly significant. With equal lack of authoritative reference, the Staff also opines that an increase of 10 dBA is likely to be insignificant if the resulting noise level would be 40 dBA or less (FSA, 5.6-4). We believe that the importance of a specific decibel increase is highly dependent on the absolute before and after sound levels and the degree to which the project noise will cause adverse effects.

A method using variable decibel increase increments based on site conditions was adopted by the Federal Transit Administration¹⁵ in 1995 and subsequently by the Federal Railroad Administration in 1998 to determine significant adverse effect for purposes of the National Environmental Policy Act (NEPA). In relatively quiet existing environments an increase of up to 15 decibels (L_{dn} or L_{eq}) may not create impact (NEPA threshold of significance), while in existing noisy environments an increase of more than one decibel may constitute an adverse effect. We are aware that CEQA determinations are not necessarily in lockstep with those of NEPA. However, case law and common sense does not preclude use of an innovative concept that has utility within each framework.

¹⁵ U.S. Department of Transportation, Federal Transit Administration, April, 1995. DOT-T-95-16. Transit Noise and Vibration Impact Assessment. (Prepared under contract by Harris, Miller, Miller and Hanson). Burlington, MA.

In summary, noise impacts may occur with various decibel increases over a reasonable range depending on site-specific conditions. We are at least pleased to see that the CEC Staff appears to agree that noise impact will not always occur with a 5-decibel increase.

12. L_{dn} and L_{eq} Analysis Demonstrates that the East Altamont Energy Center Will Have No Significant Noise Impact

Because power plant operational noise is composed of continuous noise at relatively constant levels it is very well described by a cumulative metric such as L_{dn} , that include a nighttime penalty. The L_{dn} uses the daytime and nighttime L_{eq} as its building blocks. Table 1 shows that the most affected residence will experience only a 1.7 dBA L_{dn} increase from the operation of the East Altamont Energy Center. Such a small increase is clearly not a substantial impact and does not even rise to the Staff's threshold for further analysis.

An examination of a particular time period as a supplemental and secondary evaluation is reasonable to complement the primary L_{dn} analysis. Thus, power plant noise emissions may alternatively be adequately described by the L_{eq} during a "period of interest" such as nighttime. However, to maintain compliance with CEQA, the selected period should be based on scientific principle, reason, and common sense. It should not artificially limit a meaningful evaluation of the total environmental effect nor should it create a biased scenario in one direction or its opposite. Evaluating potential noise effects of a project over a full and typical 24-hour period using L_{eq} or L_{dn} would be compliant with CEQA. We agree that it is reasonable to focus on the L_{eq} of the nighttime period because there is evidence of more sensitivity to environmental noise during the night. It is not reasonable to focus only on a few minutes during the night (or day) based on the continuous, low sound level nature of power plant noise.

An examination of nighttime hours as a supplemental and secondary evaluation can complement the primary L_{dn} analysis. Table 3 presents the change in L_{eq} for total nighttime hours at the four closest receptors (Receptors A, B, C, and F).

Table 3

Nighttime¹ Noise Levels Expressed as L_{eq}

Receptors	L_{eq} (dBA)			
	Existing ^{2,3}	Plant	Combined	Increase
A ⁴	45.8	N/A	N/A	N/A
B	49.6	42.0	50.3	0.7
C	45.8	43.0	47.6	1.8
F	45.8	41.0	47.0	1.3

Notes:

1. Nighttime hours are 10:00 p.m. to 7:00 a.m.
2. Existing noise data is based on October 2001 measurements.
3. Since continuous nighttime noise measurements were not made at Receptors C and F, the noise measurements from the closest noise measurement site, Site 1, were used.
4. Receptor A will be removed from residential use for the life of the East Altamont Energy Center project. It is included for its measurement of the existing noise level, but any increase would be irrelevant and therefore is not shown.

Table 3 shows that the most affected residence (Receptor C) will experience only a 1.8 dBA increase in the nighttime L_{dn} as a result of operation of the East Altamont Energy Center. This increase is only 0.1 dBA greater than the 24-hour L_{eq} increase of 1.7 dBA, thus this secondary analysis also supports the conclusion of no significant impact to the closest noise-sensitive receptors.

Even applying a Staff's criteria of considering only the "4 quietest nighttime hours" does not support a finding of significant impact. Table 4 presents data on the average of the lowest consecutive 4 nighttime hourly L_{eq} 's. At the most affected site, (Receptor C) the increase in noise level due to the plant is 4.7 dBA L_{eq} , still less than Staff's threshold for further analysis. Thus, even this analysis confirms the finding of no significant impact.

Table 4

Lowest Consecutive 4 Nighttime Hours Expressed as L_{eq}

Receptors	L_{eq} (dBA)			
	Existing ^{1,2}	Plant	Combined	Increase
A ³	40.1	N/A	N/A	N/A
B	47.3	42.0	48.4	1.1
C	40.1	43.0	44.8	4.7
F	40.1	41.0	43.6	3.5

Notes:

1. Existing noise data is based on October 2001 measurements.
2. Since continuous nighttime noise measurements were not made at Receptors C and F, the noise measurements from the closest noise measurement site, Site 1, were used.
3. Receptor A will be removed from residential use for the life of the East Altamont Energy Center project. It is included for its measurement of the existing noise level, but any increase would be irrelevant and therefore is not shown.

13. An Increase in Ambient Noise Plus an Adverse Effect is Required for the Commission to Find a Significant Adverse Noise Impact

The Public Resources Code and the current Guidelines contain direction that is relevant to determine whether a particular project noise level will result in a “significant impact” on the environment.

By itself, the amount of project-related change to any one aspect of the total environment does not automatically and without exception cause a significant impact. In order to constitute a *significant impact* the physically changed condition of the environment must also result in a substantial adverse effect upon the sensitive population. Thus, we firmly believe “substantial change” in an environmental factor is inextricably linked to “adverse effect” in order for a significant impact to exist. The critical part of the argument is the requirement for an *adverse* effect. This argument is colloquially analogous to “No harm, no foul.”

The following discussion is provided to factually support our assertion that noise from the East Altamont Energy Center as planned will not result in adverse noise effects at sensitive receptors and, logically, will not result in a significant adverse noise impact.

EAEC noise will not adversely affect health. When evaluating noise effects the first category that is typically of concern is the effect of noise on health. All participants in the East Altamont Energy Center AFC proceeding agree that potential high-level noise effects would be limited to project construction workers and on-site plant personnel and would not extend to any off-site areas in the community. Further, the proposed Condition of Certification related to hearing conservation and worker safety addresses the protection of construction and plant workers. The low-level noise emission expected from the East Altamont Energy Center in off-site areas will be appreciably below 55 dBA L_{dn} , determined by USEPA to be the “level of environmental noise requisite to protect the public health with an adequate margin of safety”.¹⁶

EAEC noise will not interfere with daily activities of the residents. The three areas most commonly discussed in the literature regarding annoyance and the adverse effects of noise on people are sleep disturbance, intellectual/leisure activity interference, and speech (or similar communication) interference. Each of these areas will be addressed in the testimony below. Interference with other activities may be important under certain circumstances. For example, Caltrans and the FHWA have adopted Noise Abatement Criteria (NAC) for various Activity Categories.¹⁷ The most restrictive (Category A) is for “Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.” The exterior NAC for this very special category is a maximum hourly L_{eq} of 57

¹⁶ U.S. Environmental Protection Agency. March, 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, EPA Report 550/9-74-004. Washington, DC.

¹⁷ California Department of Transportation (Caltrans). October, 1998. Traffic Noise Analysis Protocol for New Highway Construction and Highway Reconstruction Projects. Table 2-1. Sacramento, CA.

dBA, fully 10 decibels below the (Category B) level allowed for residences and other noise-sensitive uses. There are very few locations designated as Category A in the United States. We are not aware of any Category A designations in California.

The East Altamont Energy Center noise will not cause sleep disturbance. In a residential setting, sleep disturbance is usually the most critical issue, although there will be shown to be a confluence of acceptable sound level criteria that results in no adverse effect on any of the concern areas. It is our observation that “a reasonable presumption predicated upon fact” is that most persons sleep indoors. Thus, the acoustical environment of concern is inside a residential structure that is also assumed to meet applicable building codes. It is acknowledged that some persons prefer to sleep with windows partially open for ventilation or personal preference. Studies of the ability of typical dwellings to reduce exterior noise with windows partially open that we personally conducted, study results that have been reported by other researchers, and data published by government agencies indicate that a reduction of 13 to 15 dBA is commonplace^{18,19,20,28}. This means that common community noise measured outside a dwelling will typically be 13 to 15 dBA lower inside the dwelling even with an open window. Studies of sleep disturbance have shown that novel, intruding and typically intermittent noise of about 35 dBA may interfere with sleep. There is of course a variation in susceptibility to noise from person to person and to the degree of effect from change in sleep state to outright awakening. Most persons accommodate (habituate) to familiar and recurring low-level sound without further disturbance.²¹ Continuous sound (duration and amplitude) appears to have less effect on annoyance and sleep disturbance than intermittent sound of varying intensity.²² Thus, based on the disturbance level of 35 dBA and the dwelling noise reduction of only 13 dBA, an exterior sound level limit of 48 dBA would be sufficient to avoid sleep disturbance from a continuous noise source. The East Altamont Energy Center predicted exterior noise level of 43 dBA L_{eq} would produce an interior level of 30 dBA L_{eq} . This is truly very quiet.

The most recent paper on sleep disturbance characterizes the factual basis of the WHO’s very conservative sleep disturbance criteria (that ranges from 45 to 30 dBA) as “scientifically weak”.²³ Notwithstanding this less than enthusiastic opinion of the WHO criterion even it

¹⁸ Greene, R.E. and M. Greene. June 30, 2000. I-15 Managed Lanes Project Noise Study Report. By URS for California Department of Transportation (District 11). Santa Ana, CA.

¹⁹ Fidell, S., Pearsons, K, et al. 1994. Noise Induced Sleep Disturbance in Residential Settings. By BBN for Air Force Materiel Command, Wright-Patterson AFB, OH.

²⁰ Carver, B. 1978. Planning in the Noise Environment. Figure 5-2.2.3.1. AFM 19-10. Departments of the Army, Navy, and Air Force, Washington, D.C.

²¹ Fidell, Green, Schultz, Pearsons. August 1988. A Strategy for Understanding Noise-Induced Annoyance. Human Systems Division, Air Force Systems Command. HSD-TR-87-013

²² Beranek, L. L., 1971. Noise and Vibration Control. Chpt. 18.1.5. McGraw-Hill Book Co., New York.

²³ Finegold, L and Elias, B. 2002 Predictive Model of Noise Induced Awakenings from Transportation Noise Sources. Proceedings of InterNoise 02. Dearborn, MI.

would be satisfied by the low indoor sound level produced by the East Altamont Energy Center.²⁴

EAEC noise will not be adverse to outdoor or indoor intellectual activity. Interference to intellectual activity (including leisure activity) is not reported on to a great extent in the scientific literature, but we are aware of a German standard (one of the DIN series) issued about twenty or so years ago that set a level of 45 dBA L_{eq} inside a private office as an appropriate sound level for what was termed “demanding intellectual work”. Several standard textbooks on acoustics, building noise control, and/or architecture recommend a similar sound level. Some local government agencies in California (e.g., Orange County) limit intrusive environmental noise inside institutional and commercial building “private office, board room, conference room” and similar spaces to 45 dBA L_{eq} during hours of use.²⁵ The exterior noise from the East Altamont Energy Center at sensitive use locations is predicted to be 43 dBA L_{eq} , thus outdoor intellectual or leisure activity would not be adversely affected. Indoor levels of 30 dBA L_{eq} from the East Altamont Energy Center would be of no consequence to intellectual activity whatsoever.

EAEC noise will not interfere with speech or like activity. Interference with normal speech and similar communication activities such as watching television and talking on the telephone occurs when an intruding acoustical signal degrades the information contained in the desired communication. A measure of the amount of information degradation or interference is the percent of sentence intelligibility achieved as a function of sound level. A plot of this relationship is provided in Figure 4-1.2b from *Carver* and is reproduced as Figure 3 located at the end of this section.²⁶ As may be seen from the figure, 100 percent of the speech intelligibility is preserved during steady background sound levels of 45 dBA or lower. As previously discussed, the predicted sound level from the East Altamont Energy Center will be 43 dBA L_{eq} in areas outside of dwellings and much lower inside. Thus, no adverse impact on speech or similar activities will result from the East Altamont Energy Center.

Based on the foregoing discussion it should be evident that with the noise control features proposed by the Applicant the noise emission from the East Altamont Energy Center will not cause adverse noise effects at sensitive receptors and, logically, will not result in a significant adverse noise impact.

14. Community Reaction

Mere Audibility Does Not Constitute a Significant Adverse Impact. The Staff has reiterated a specific scenario in the FSA (p. 5.6-13 *et seq.*) that is deserving of a focused response here even though several of the related issues have been addressed elsewhere in this testimony. The Staff postulates that “When no traffic is driving by, no airplanes are flying overhead, no

²⁴ World Health Organization. 1999. *Guidelines on Community Noise*. Chapter 4. Geneva.

²⁵ County of Orange, *Land Use/Noise Compatibility Manual* Table II-4. Santa Ana, CA.

²⁶ Carver, B. 1978. *Planning in the Noise Environment*. Figure 4-1.2b. AFM 19-10. Departments of the Army, Navy, and Air Force, Washington, D.C.

dogs are barking, no frogs are croaking, and no strong wind is blowing” then power plant noise would be heard. Based on our experience, we would add “birds chirping, trains passing, children playing, and insects buzzing” to the list. Sound from the plant, according to Staff, would “contribute to, and often define the background noise level.” Is this potential change in the makeup of audible sound during a few fleeting moments during nighttime hours an adverse and even significant impact as Staff is strongly inferring? Is it somehow sinister to have power plant instead of traffic noise constitute background sound? While one kind of low-level sound may be more or less adverse than another, a steady, characterless background sound is generally considered the more benign. Would the plant (or any development) need to be inaudible 100 percent of the time and achieve acoustic invisibility to avoid creating an adverse impact as Staff appears to suggest? We do not agree with the Staff’s perception or recommended solution to this hypothetical problem. We believe that requiring unwarranted mitigation to achieve inaudibility is inept public policy.

John Molino offers a view contrary to the Staff’s in his chapter on Annoyance and Noise in the Handbook of Noise Control.²⁷ In the section “Ambient Noise Level and Intrusiveness” he writes, “Annoyance caused by time-varying noise is reduced by a steady ambient noise---the higher the [steady] ambient noise level, the less annoying the time-varying noise. This is because the [steady] ambient noise then masks the time-varying noise. For this reason the addition of a steady noise to an environment may reduce the annoyance of a sound that would otherwise be more intrusive.” This succinct statement does not need further comment.

Low plant noise levels (<45 dBA as defined in the FSA’s Noise: Appendix A) will not result in significant adverse impact and may actually be beneficial. Also, just hearing low levels of plant sound will not cause significant annoyance or complaints. This is especially true if the sound from the plant may only be heard absent all other manmade and natural ambient sound as predicted by the CEC Staff.

In summary, mere audibility, like unfounded controversy, does not constitute project impacts pursuant to CEQA.

Persons Residing in the Vicinity of the East Altamont Energy Center Are Not Likely to Become Significantly Annoyed and Complain About Plant Noise. CEC Staff has stated that one of the factors to be considered in determining the significance of an adverse effect is “public concern” (FSA p. 5.6-4). This is interpreted by Staff to mean the degree of increase of *background* noise level at which it is likely that nearby residents will be annoyed and complain about a power plant (FSA p. 5.6-13 *et seq.*). It is difficult to decipher from the FSA exactly what amount of increase Staff now believes will cause residents to be annoyed and complain, but we believe that it is an increase of more than 8 dBA. Although Staff has not quoted a specific factual basis for this assertion, we believe that it derives from anecdotal information and perusal of the readily available plots of “community reaction” to “various types of intruding noise”. This particular dose-response relationship is generically referred to

²⁷ Molino, J. 1979. *Annoyance and Noise*, Chapter 16 of Handbook of Noise Control. Second Edition, Cyril M. Harris, Ph.D, editor. McGraw-Hill Book Company, NY.

as the “Schultz Curve” after the scientist who conducted landmark research in this area. It is true that most of the published literature reflects investigation of some form of *transportation noise* as opposed to non-transportation-related noise such as *industrial noise*. This should not be taken as “disrespect” for the potential negative effects of industrial noise but reflects the general estimation that some form of transportation activity accounts for nearly 95 percent of the adverse environmental noise affecting persons in the US. For example, in a 1981 USEPA study some 120 million persons were exposed to traffic, aircraft, and rail noise compared to about 7 million persons exposed to industrial noise at levels above 55 dBA L_{dn} .²⁸ The relative magnitude of exposure is likely still correct but, unfortunately, this information has not been updated as pointed out by Dr. Alice H. Suter (former Director of EPA’s extinct Office of Noise Abatement and Control) in her November 1991 report on Noise and Its Effects presented to the Administrative Conference of the United States.

Long-standing and recent research indicates that there is a distinct variability in annoyance caused by the same level of noise from different modes (e.g., highway versus railroad).²⁹ This is consistent with the observation that a steady noise is less annoying than noise whose sound level fluctuates.³⁰ A study of the relative annoyance caused by industrial noise would face the additional problem of addressing very different plant-specific noise characteristics that range from highly intermittent, impulsive, and tonal (e.g., metal foundry, saw mill) to continuous, constant magnitude, atonal (e.g., power plant) and the probable disparity of response to each. Even though there may be some degree of source-based variation in response to community noise, most researchers point out that the L_{dn} versus annoyance/complaint concept of “dose-response” such as that described by Schultz are applicable to most types of environmental noise. For convenience Figure 1, a “Shultz Curve” plot, representing 55 community noise case histories is reproduced at the end of this section.³¹ Also included at the end of this section is Figure 2, a reproduction of Figure 4-1.3e from *Carver*, presenting a summary of annoyance survey and community reaction results.

A cursory look at a typical version of this relationship does indeed show a distinct change in community reaction corresponding to approximately 10-decibel steps of noise level increases. However, several factors need to be considered before concluding that a 10-decibel (or any arbitrary step size) will always result in complaints and annoyance. As discussed in a federal agency noise assessment guideline cited by Staff in the FSA, it requires more of an increase in noise to produce a given increase in annoyance and complaints at lower ambient

²⁸ USEPA, 1981. *Noise in America*. pp. 10 and 15.

²⁹ German noise models and recent publications provide a “rail bonus” of 5 decibels less impact compared to other transportation noise sources.

³⁰ Molino, J. 1979. *Annoyance and Noise*, Chapter 16 of Handbook of Noise Control. Second Edition, Cyril M. Harris, Ph.D, editor. McGraw-Hill Book Company, NY.

³¹ Carver, B. 1978. Planning in the Noise Environment. Figure 4-1.3a. AFM 19-10. Departments of the Army, Navy, and Air Force, Washington, D.C.

sound levels compared to noise increases occurring in moderate or higher noise environments.³²

Importantly, the majority of these studies and their conclusions are founded on energy-based descriptors such as L_{eq} , L_{dn} , or similar metrics that have been normalized to L_{dn} . None of these studies were based on L_{90} . The expected L_{dn} from the East Altamont Energy Center is 49 dBA the most sensitive receptor (which results in a cumulative increase of <2 dBA L_{dn} at any sensitive receptor). Figure 1, illustrates that at levels of 50 to 55 dBA or lower there will be “No reaction, although noise is generally noticeable”, and “sporadic complaints” are not likely.³³ (The most affected receptor, Receptor C, is expected to experience a cumulative L_{dn} of 54.2 dBA, within this range).

It was not clear from information offered by Staff during prior workshop discussions or testimony that they were knowledgeable about the professionally recognized concepts of level dependency of annoyance and its relationship to complaint behavior and noise/land use compatibility. Two facts now make it clear that Staff is at least aware of these concepts.

First, Staff presents a discussion of “annoyance” and specifically includes reference to the Schultz curve (FSA p. 5.6-17 *et seq.*) in an argument against the use of the L_{dn} noise descriptor. Second, as stated above, Staff lists as an FSA “Reference” the Federal Transit Administration guidance on environmental assessment of noise and vibration.³⁴ This document contains an excellent section about the source of noise impact criteria used by its authors, including a revealing discussion about the present relevance of Schultz’s work. While the Staff utilized and quoted the FTA Guidelines for assessing vibration impact, they made no mention of its substantial contribution and relevance to noise impact assessment. While the FTA document authors generally focus on transportation noise, we believe that their brief discussion on the issue of annoyance and complaint likelihood is very relevant to the environmental noise evaluation of the East Altamont Energy Center. The excerpt is provided below for convenience and documentation:

“Synthesis of Social Surveys on Noise Annoyance.”³⁵ “In 1978, Theodore J. Schultz, an internationally known acoustical scientist, synthesized the results of a large number of social surveys, each concerning annoyance due to transportation noise. Remarkable consistency was found in a group of these surveys, and the author proposed that their average results be taken as the best available prediction of transportation noise annoyance. This synthesis has received essentially unanimous acceptance by acoustical scientists and engineers. The “universal” transportation

³² U.S. Department of Transportation, Federal Transit Administration, April, 1995. DOT-T-95-16. Transit Noise and Vibration Impact Assessment. Appendix A-2 (Prepared under contract by Harris, Miller, Miller and Hanson). Burlington, MA.

³³ Carver, B. 1978. Planning in the Noise Environment. Figure 4-1.3a. AFM 19-10. Departments of the Army, Navy, and Air Force, Washington, D.C.

³⁴ U.S. Department of Transportation, Federal Transit Administration, April, 1995. DOT-T-95-16. Transit Noise and Vibration Impact Assessment. (Prepared under contract by Harris, Miller, Miller and Hanson). Burlington, MA.

³⁵ Schultz, T.J. August 1978. “Synthesis of Social Surveys on Noise Annoyance,” JASA, Vol. 64, No. 2, pp. 377-405.

response curve developed by Schultz shows that the percent of the population highly annoyed by transportation noise increases from 0 at an L_{dn} of approximately 50 dBA to 100-percent when L_{dn} is about 90 dBA. Most significantly, this curve indicates that for the same increase in L_{dn} , there is a greater increase in the number of people highly annoyed at high noise levels than at low noise levels. In other words, a 5 dB increase at low ambient levels (40 to 50 dB) has less impact than at higher ambient levels (65 to 75 dB). A recent update of the original research, containing several railroad, transit and street traffic noise surveys, confirmed the shape of the original Schultz curve.”³⁶

Of particular relevance to the East Altamont Energy Center evaluation (and relatively quiet environments in general) are that the two sources cited above agree that the number of highly annoyed persons (i.e., likely to complain) is close to zero below about 50 dBA L_{dn} and that a “fixed” noise increase has less of an impact at lower ambient noise levels. This view is also held by Arnold P. G. Peterson who states “at levels below 55 [dBA L_{dn}] the [Schultz] formula shows values too low to be significant, which indicates that at such levels only minor problems should arise.”³⁷ Mr. Peterson, in another edition of his book provides that “The A-weighted sound level in the residential area can be measured and the corrections applied. (Table 3-7). Compare the corrected level with Table 3-8 to estimate the average public reaction.” No pertinent corrections are required (e.g., no pure tone, noise is continuous). So from his Table 3-8 for a “corrected level-dB(A) of <45” the “Expected Reaction” is “No observed reaction”.³⁸

In summary, the exclusive use of L_{90} in any of its forms to determine noise effect significance is improper and not supported by scientific evidence. Because of the many reasons discussed above, L_{dn}/L_{eq} is a more appropriate environmental noise descriptor for use in characterizing the existing and predicted noise environment compared to the variants of L_{90} relied upon by Staff. Although Staff opines (FSA p. 5.6-3) that certain “...increases in background noise level [L_{90}] would be clearly noticeable” we are unaware of any studies quantifying the relative audibility of changes in L_{90} of acoustical environments. The testimony presented herein also indicates that where a project results in relatively low noise environments, it will not have the potential for causing significant noise impacts. In a low noise environment from which no impact results, additional mitigation would be unnecessary and provide no benefit.

15. Conclusion

The East Altamont Energy Center’s acoustical design as proposed by the Applicant without additional mitigation will reduce the plant’s noise level at nearby residences to non-significant, non-adverse sound levels. Thus, the proposed East Altamont Energy Center will

³⁶ Fidell, S., Barber, D. S., and Schultz, T. J. January 1991. “Updating a Dosage-Effect Relationship for the Prevalence of Annoyance Due to General Transportation Noise”. JASA, Vol. 89, No. 1.

³⁷ Peterson, A. P. G. 1980. Handbook of Noise Measurement. Ninth Ed. GenRad, Inc., Concord, MA.

³⁸ Peterson, A. P. G. 1972. Handbook of Noise Measurement. Seventh Ed. GenRad, Inc., Concord, MA.

not have a significant adverse noise impact when the sound levels are evaluated in light of the whole record, including objective, published, scientifically-based criteria.

E. The East Altamont Energy Center Will Contain Extensive Design Features and Noise Attenuation Measures

Design features and noise attenuation measures will be incorporated into the design of the East Altamont Energy Center sufficient to limit the noise level resulting from plant operations to not more than 43 dBA at the nearest noise-sensitive receptor (Receptor B). These design features and attenuation measures include the following:

- The combustion turbines and generators will be designed to limit near-field noise levels to 90 dBA at 3 feet. Specific noise attenuation measures will include acoustical enclosures for the turbines, generators, and mechanical and electrical equipment packages, and inlet air silencers.
- The steam turbine and generator will be designed to limit near field noise levels to 90 dBA at 3 feet. To accomplish this, a very large noise enclosure, installed on the steam turbine pedestal, will enclose all four sections of the steam turbine (HP, IP, and two LP sections) and the generator. The installed cost of this noise enclosure is estimated to be about \$300,000. Attachments B and C are photographs depicting this type of noise enclosure, although the noise enclosure for the East Altamont Energy Center will be longer as a result of the two LP sections instead of a single LP section.
- The East Altamont Energy Center will be located at the center of the 174-acre parcel in order to maximize the distance to the nearest sensitive receptors located north, southeast, and southwest of the facility. Situating the facility in this location, versus the south end of the 174-acre parcel, results in increased project costs due to longer 230 kV transmission lines and a longer natural gas pipeline. Although there is a corresponding reduction in the length of the raw water pipeline, the net total cost impact of locating the facility in the middle of the 174-acre parcel is approximately \$1,610,000. This cost includes \$1,240,000 for a 2,000 feet increase in the length of the four transmission lines plus \$730,000 for 2,000 feet of additional natural gas pipeline less \$360,000 for a 2,000 feet reduction in the length of the raw water pipeline.
- The noise generating equipment associated with the brine concentrators, including the vapor compressors and recirculation pumps (see Attachments D and E for photographs of similar equipment), will be located inside the water treatment building in order to reduce noise. Typically, this equipment would be located outdoors to improve access for maintenance. The added cost to locate this equipment indoors is estimated at \$520,000 (4,000 sf @ \$130/sf, including overhead crane).
- The cooling tower, which is one of the largest noise sources, has been located at the north edge of the project site, maximizing its distance from the majority of the noise-sensitive receptors.

- Silencers will be provided on steam system vent and relief stacks to reduce noise levels (see Attachment F for a photograph of similar silencers).
- High-noise piping, such as that contained on the HRSG duct burner skirts and in the vicinity of high pressure-drop control valves will be acoustically lagged in order to reduce noise levels.
- Major plant components located outdoors will be specified to limit near field maximum noise levels to less than 90 dBA at 3 feet (or 85 dBA at 3 feet where available as a vendor standard).

In the FSA, Staff indicated that other power plant projects approved by the Energy Commission have incorporated practical and feasible noise mitigation measures which have resulted in lower noise levels than predicted for this project. In a September 23, 2002 Data Request, the Applicant asked that these “other power plant projects” be identified along with a list of the “practical and feasible measures which have resulted in lower noise levels than predicted for this project”. The Staff’s September 25, 2002 Data Response listed nine projects, many of which listed a number of the noise mitigation measures already proposed for the East Altamont Energy Center, such as turbines located inside sound attenuation enclosures, inlet air silencers, and acoustical lagging of equipment and piping. A number of the projects indicated that gas compressors would be located in acoustical buildings. It should be noted that gas compressors are not necessary at the East Altamont Energy Center, thus there will be no noise associated with gas compression. A number of the projects listed the use of “low-noise transformers”. While “low-noise” is a relative term, the East Altamont Energy Center will also be using low-noise transformers in that they will be designed for noise level of 80 dBA at 2 meters, which is less than the majority of the other noise-generating equipment.

On page 5.6-15 of the FSA, Staff states, “a noise level reduction of 8 to 10 dBA may be obtained by specifying acoustical cladding and barriers for the steam turbine generator”. As indicated above and also in Section 8.5.3.6 of the AFC, it should be noted that the Applicant’s current design already includes an acoustical enclosure (essentially a noise-attenuating building) over the entire steam turbine and its generator.

On page 5.6-15 of the FSA, Staff states “noise level reductions of up to 20 dBA have been reported for cooling towers by using super-low noise fans”. On page 5.6-16 of the FSA, staff states “the applicant’s finding that the use of low noise cooling fans would yield only a 2.6 dBA reduction in source noise levels is inconsistent with data provided to staff concerning the Morro Bay power plant project, where low-noise fans reduced cooling tower noise by up to 20 dBA.” In a September 23, 2002 Data Request, the Applicant asked that Staff provide a copy of the data provided to Staff concerning the Morro Bay power plant project which shows that “low noise fans reduced cooling tower noise by up to 20 dBA.” Staff’s response to this data request includes the following information:

- Performance data from GEA for an air cooled condenser (ACC) and parallel air cooling (PAC) system

- A discussion of air-cooled condenser alternatives and wet-dry cooling alternatives from an unidentified source, and
- Website sales literature from Howden, a manufacturer of large fans such as those used in air-cooled condensers and cooling towers

The first two items have very little information that even applies to cooling towers and nothing that compares cooling towers with low-noise fans to those with conventional fans. The third item appears to be generic sales literature from Howden, a manufacturer of low-noise, and ultra low-noise fans, comparing the relative reduction in noise levels that can be achieved by their various products. This sales literature includes no absolute fan noise levels, no cooling tower noise levels, and no data specific to any particular installation or project. None of the data provided in response to the Applicant's data request supports Staff's claim of a 20-dBA reduction in cooling tower noise levels on the Morro Bay power plant project. Although Staff could not provide any information supporting their claim of a 20-dBA reduction in noise levels for the Morro Bay project, the Applicant's representation of a 2.6-dBA reduction in cooling tower noise levels is well supported by manufacturer's data provided specifically for the East Altamont Energy Center. Attachment G is noise data from Marley Cooling Tower for the cooling tower presently included in the design of the East Altamont Energy Center. This data shows an overall cooling tower noise level of 64.8 dBA at a distance of 400 feet. Attachment H is noise data from Marley Cooling Tower for the same cooling tower using Howden SX fans, Howden's quietest offering. This data shows an overall cooling tower noise level of 62.2 dBA at 400 feet, a reduction of only 2.6 dBA below the Applicant's present design. As stated in the Applicant's response to Data Request 161, this 2.6-dBA reduction in the cooling tower noise level translates to a reduction in the overall plant noise level of only 0.2 dBA at the then-closest noise-sensitive receptor (Receptor A).

With the above-listed features incorporated into the design of the East Altamont Energy Center, there is no single remaining noise generating component that can be attenuated in order to significantly reduce the project-generated noise levels experienced at the closest sensitive receptors. To significantly reduce project-generated noise levels below the current estimates would require that a large number of additional noise attenuation measures be incorporated into the design of the East Altamont Energy Center. For instance, in response to Data Request 78, the Applicant conducted an acoustical analysis to determine the additional noise attenuation measures necessary to comply with the CEC Staff's proposed plant noise level of 40 dBA L_{eq} at the nearest noise sensitive receptors as identified in the Preliminary Staff Assessment.³⁹ Table 5 lists the noise control measures deemed necessary to meet the 40-dBA level along with the estimated cost of each measure. Equipment costs are based on vendor quotations. Installation costs, which are assumed to be 30 percent of the equipment costs, include concrete foundations, erection, and painting. The total estimated capital cost of

³⁹ Staff states on page 5.6-19 of the FSA that the Applicant "misinterprets Staff's proposed Condition of Certification NOISE-6, which allows a project noise level of 39 dBA". It should be noted that Data Response 78 was docketed well in advance of the issuance of the FSA. Data Request 78 as well as the Preliminary Staff Assessment references a plant noise level of 40 dBA, not 39 dBA.

the noise control measures deemed necessary to meet a plant noise level of 40 dBA at the closest sensitive receptors is about \$5.3 million. Because the ultra low noise cooling tower fans are less efficient than the standard fans included in the Applicant's proposed plant design, there is an additional estimated annual operating cost impact of about \$133,000. This estimated annual operating cost impact is based on an increase in fan energy of 395 kW, a power cost of \$0.048/kWh, and operation 80 percent of the year. Assuming an annual inflation rate of 2.5 percent per year, the total operating cost impact over a 30-year period is estimated to be approximately \$5.8 million. Although these costs were prepared to reflect a plant design that results in a plant noise level of 40 dBA at the closest sensitive receptor, the costs for a design that results in a noise level of 39 dBA will be similar, if not greater.

Table 5**Noise Attenuation Measures to Meet 40 dBA at Closest Sensitive Receptors**

Equipment	No. of Units	Equipment Cost, each unit	Installation Cost, each unit	Total Cost, all units
Cooling Tower	1			
Ultra low noise fans		\$1,447,000	\$0	\$1,447,000
Basin splash noise attenuation		543,000	163,000	706,000
HRSG's	3			
Maximum stack silencing		94,000	28,000	366,000
Thicker casing for transition and initial boiler sections		52,000	16,000	204,000
Duct burner control skid acoustical enclosure		48,000	14,000	186,000
Blowdown tank vent silencer		15,000	5,000	60,000
Combustion Turbines	3			
Enclosure ventilation fan silencers		10,000	3,000	39,000
Generator noise barrier wall		66,000	20,000	258,000
Accessory module noise barrier wall		62,000	19,000	243,000
Steam Turbine and Condenser	1			
Steam turbine pedestal enclosure (3-sides - excluding north side)		455,000	137,000	592,000

Equipment	No. of Units	Equipment Cost, each unit	Installation Cost, each unit	Total Cost, all units
Hogging ejector silencer		14,000	4,000	18,000
Atmospheric drain tank vent silencer		21,000	6,000	27,000
<i>Subtotal</i>				<i>\$4,146,000</i>
Construction Management (7%)				290,000
Engineering (5%)				207,000
Indirects (5%)				207,000
Contingency (10%)				415,000
<i>Total</i>				<i>\$5,265,000</i>

With Applicant's option on the parcel of land containing Receptor A, the removal of Receptor E as a noise-sensitive receptor, and the correction to the location of Receptor G, the closest noise-sensitive receptor is now Receptor B (noise monitoring Site 2). There are now only three noise-sensitive residential locations potentially subject to plant noise levels exceeding 40 dBA; Receptor B, Receptor C, and Receptor F. Staff and Applicant agree that even as currently proposed, there is no significant impact to two of these receptors (B and F), so the significance of impact at only one location, Receptor C, is in question. While the Applicant maintains that project noise levels of 43 dBA at this receptor will not result in a significant noise impact, even if the assumption is made that a significant impact exists, the potential loss of value associated with that impact would only be a small portion of the total value of this home. The Applicant contends that an expenditure of nearly \$5.3 million in additional capital costs and \$5.8 million in additional operating costs to achieve a plant noise level of 39 or 40 dBA is not justified when compared to the potential loss in property value that could reasonably exist as a result of a 43 dBA plant noise level at this home.

F. Construction Impact

Construction of the East Altamont Energy Center is expected to be typical of other power plants in terms of schedule, equipment utilized, and types of activities. The most significant sources of objectionable noise typically experienced during power plant construction are pile driving, where required, and high-pressure steam blowing to clean boiler tubing and steam lines. Pile driving may not be required at the East Altamont Energy Center. Steam blows will be restricted to the daylight hours of 7 a.m. to 7 p.m. as required by Condition of Certification NOISE-4 to minimize potential noise impacts. As required by NOISE-4, the steam blow piping will be equipped with a silencer that will provide a reduction of approximately 40 to 45 dBA to the steam blowing noise.

The noise level will vary during the approximate 24-month construction period depending upon the construction phase. The mitigated levels for steam blowing are expected to be about 50 to 55 dBA at the nearest residences. The resulting noise levels will be in the range of the ambient noise levels during daytime hours. Normal construction activities are expected to produce noise levels ranging from 42 to 53 dBA at the nearest residence. Since these levels are within the range of noise levels during daytime hours, they will not create a noise impact.

Construction of the transmission line, gas pipeline and water line will not create significant noise impacts at residences as the work will take place primarily during the day and noise created from these activities will be within the range of noise levels during daytime hours.

G. Operational Impacts

1. EAEC Noise Sources

Noise will be produced at the site during operation of the East Altamont Energy Center. The major noise sources include the combustion turbine generators and peripheral equipment, steam turbine generator and peripheral equipment, cooling tower, and HRSG's. Lesser noise sources include the generator step-up transformers, boiler feedwater pumps, circulating water pumps, HRSG duct burner skids, gas pressure regulating stations, various control valves and downstream piping, and steam vent and relief stacks.

2. Noise Analysis Methodology and Results

The far-field, A-weighted noise emissions of the proposed plant, during peak operation, were evaluated with a spreadsheet-based noise model. The model calculated the far-field sound pressure level of each source at a point of interest and then totaled these values to establish the overall plant noise level. To do this, the model was provided with an initial sound power level for each individual piece of equipment in the plant that produces a significant amount of noise. All inputs to the noise model were derived exclusively from first-hand field measurements of similar or identical equipment in actual operation at numerous combined-cycle facilities.

The noise reduction factors calculated or conservatively estimated in the model include distance loss, internal mutual shielding in the plant, equipment noise directivity, and other minor losses including ground absorption, air absorption, and "anomalous" attenuation. The sound propagation factors used in the model were adopted from the Electric Power Plant Environmental Noise Guide published by the Edison Electric Institute (Miller et al., 1978), and ISO 9613-2 Acoustics - Sound Attenuation During Propagation Outdoors. Safety factors based on field experience were added to the propagation loss values predicted in the above sources. The source sound power levels and the modeling technique in general have been verified by comparing the predicted far-field levels of specific plants to direct measurements. In all cases, the true plant performance has been found to produce noise levels equal to or, more commonly, slightly lower than the analytical results.

A number of noise modeling iterations were performed to develop the design features and noise attenuation necessary to meet a target plant noise level of 45 dBA at the then-closest

sensitive noise receptor, Receptor A. As previously described, because of a land option obtained by the Applicant, Receptor A is no longer considered a noise-sensitive receptor. Receptor B is now the closest noise-sensitive receptor with an estimated plant noise level of 43 dBA.

3. Low Frequency Noise Emissions

Simple cycle combustion turbine units can produce enough low frequency airborne noise to rattle windows and induce vibrations in distant structures; however, this is not the case with typical combined cycle generating facilities such as the East Altamont Energy Center. At simple cycle plants the turbine exhaust is vented directly to atmosphere and the low frequency noise generated in the exhaust system is difficult to silence, but at the East Altamont Energy Center, the exhaust from each combustion turbine will discharge to its associated HRSG, which acts as an expansion chamber muffler by virtue of its size, shape, and internal mass (steel finned tubes and SCR and oxidation catalysts). The large interior dimensions of the HRSG allow it to very effectively attenuate long wavelength low frequency noise. The end result is that the noise emissions from the HRSG walls and stack contain only a moderate amount of low frequency noise; less than is needed to cause perceptible vibration at nearby receptors.

4. Tonal Noise Emissions

An assumption implicit in the discussion of thresholds of disturbance with respect to potential noise impacts is that the new noise source produces a bland, broadband noise spectrum without any identifiable or distinctive pure tones. The threshold of disturbance is much lower for noise sources that are at all tonal in nature.

In general, combined cycle plants, even those without significant noise controls, do not produce discrete tones that are prominent or noticeable at typical receptor distances. The Applicant will anticipate the potential for audible tones in the design and specification of the plant's equipment and take necessary steps to prevent sources from emitting tones that might be disturbing at the nearest receptors. Therefore, no significant pure tone noises, originating from the East Altamont Energy Center, are expected to be audible at the noise-sensitive receptors.

H. Cumulative Impacts

There are no known industrial projects planned for construction in the vicinity of the East Altamont Energy Center that would contribute to a significant noise impact. While the East Altamont Energy Center will contribute to noise generated by existing sources such as vehicular traffic, Western's Tracy Substation, and the major pumping facilities for the Delta Mendota Canal, these sources have been accounted for in the noise modeling performed for the project. Construction and operation of the East Altamont Energy Center will not result in a significant cumulative noise impact.

I. Mitigation

NOISE

The project has been designed to do better than the most stringent applicable LORS, a design limit of 45 dBA as established by Alameda County. No additional mitigation measures, other than those already included in the design and described above, are necessary.

DECLARATIONS OF

James McLucas

I, James McLucas, declare as follows:

- 1. I am presently employed by Calpine as a Regional Engineer.**
- 2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.**
- 3. I prepared the attached testimony on Noise for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.**
- 4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.**
- 5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.**

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____

Signed: _____

At:

DECLARATIONS OF

Robert E. Greene

I, Robert E. Greene, declare as follows:

- 1. I am presently employed by URS Corporation as a Principal Scientist managing the Noise and Vibration Practice.**
- 2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.**
- 3. I prepared the attached testimony on Noise for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.**
- 4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.**
- 5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.**

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____

Signed: _____

At: Santa Ana, California

DECLARATIONS OF
Steven De Young

I, Steven De Young, declare as follows:

1. I am presently an independent consultant contracted to East Altamont Energy Center, LLC as the project Environmental Project Manager.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Noise for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____

Signed: _____

At: Dublin, CA

DECLARATIONS OF
Mark Bastasch

I, Mark Bastasch, declare as follows:

6. I am presently employed by CH2MHill as .
7. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
8. I prepared the attached testimony on Noise for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
9. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
10. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____

Signed: _____

At:

Applicant's Proposed Revisions to NOISE Conditions of Certification

NOISE-4 If a traditional, high-pressure, **intermittent** steam blow process is employed, the project owner shall equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 55 dBA measured at the nearest sensitive receptor. The project owner shall conduct **high-pressure, intermittent** steam blows only during the hours of 7 a.m. to 7 p.m. on weekdays, unless the CPM agrees to longer hours based on a demonstration by the project owner that offsite noise impacts will not cause annoyance.

If a low-pressure continuous steam blow or air blow process is employed, the project owner shall submit a description of this process, with expected noise levels and projected hours of execution, to the CPM, who shall review the proposal with the objective of ensuring that the resulting noise levels will not exceed 45 dBA L_{eq} . If the low-pressure process is approved by the CPM, the project owner shall implement it in accordance with the requirements of the CPM.

Verification: At least 15 days prior to the first high-pressure steam blow, the project owner shall submit to the CPM drawings or other information describing the temporary steam blow silencer and the noise levels expected, and a description of the steam blow schedule.

At least 15 days prior to any low-pressure continuous steam blow, the project owner shall submit to the CPM drawings or other information describing the process, including the noise levels expected and the projected time schedule for execution of the process.

NOISE-6 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the noise level produced by operation of the project will not exceed an hourly average exterior noise level of more than ~~43~~⁴³39 dBA L_{eq} measured at any residence.

No new pure tone components may be introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints, as determined by the CPM. Steam relief valves shall be adequately muffled to preclude noise that draws legitimate complaints, as determined by the CPM.

Verification: Within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at Site 2. In addition, the applicant shall conduct short-term survey noise measurements at monitoring sites 3 and 4. The short-term noise measurements shall be conducted during both daytime (7 a.m. to 10 p.m.)

and nighttime (10 p.m. to 7 a.m.) periods. The noise surveys shall also include short-term measurement of one-third octave band sound pressure levels at each of the above locations to ensure that no new pure-tone noise components have been introduced.

If the results from the operational noise survey indicate that the noise level due to the plant operations exceeds ~~43~~^{43.9} dBA for any given hour, mitigation measures shall be implemented to reduce noise to a level of compliance with this limit.

If the results from the operational noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

The measurement of power plant noise for the purposes of demonstrating compliance with this Condition of Certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g. 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the nearest residence. However, notwithstanding the use of this alternative method for determining the noise level, the character of the plant noise shall be evaluated at the nearest residence to determine the presence of pure tone of other dominant sources of plant noise.

Within 15 days after completing the post-construction survey, the project owner shall submit a summary report of the survey to the Alameda County Planning Department, and to the CPM. Included in the survey report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. Within 15 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

NOISE-8 Heavy equipment operation, pile driving, and noisy construction or demolition work shall be restricted to the times of day delineated below:

Weekdays	7 a.m. to 7 p.m.
Weekends and Holidays	8 a.m. to 5 p.m.

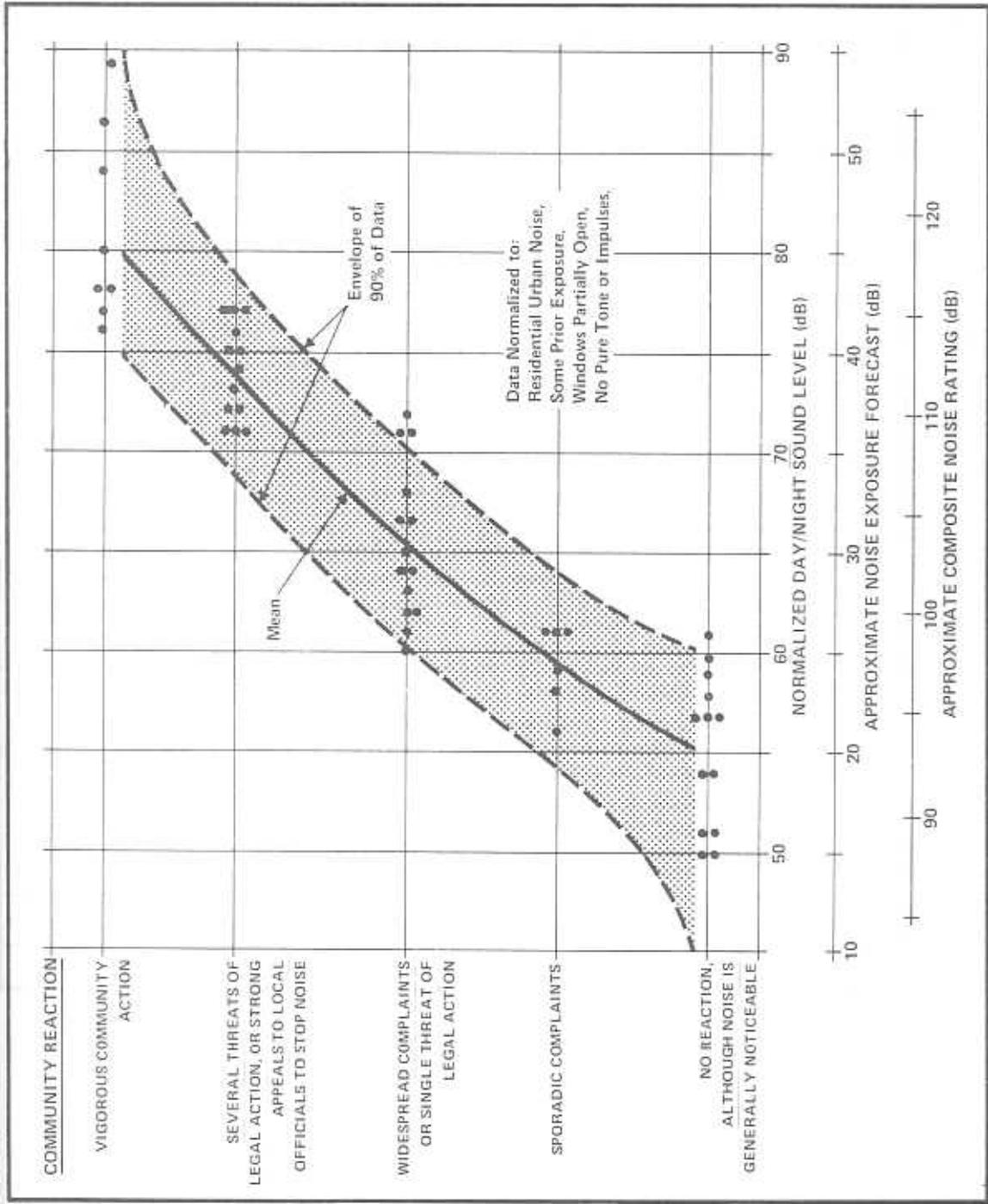
Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Horizontal drill rigs may be operated on a continuous basis, provided that the rigs are fitted with adequate mufflers and engine enclosures, ~~and that the rigs are shielded from view of residences by berms, canal banks or other suitable barriers. If no such shielding is provided, horizontal drill rig operation shall be limited to the hours stated above.~~

Verification: The project owner shall transmit to the CPM in the first Monthly Construction Report a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

COMMUNITY REACTION TO MANY TYPES OF INTRUSIVE NOISE AS A FUNCTION OF
NORMALIZED DAY/NIGHT SOUND EQUIVALENT LEVEL

FIGURE 4-1.3a



SUMMARY OF ANNOYANCE SURVEY AND
COMMUNITY REACTION RESULTS

FIGURE 4-1.3e

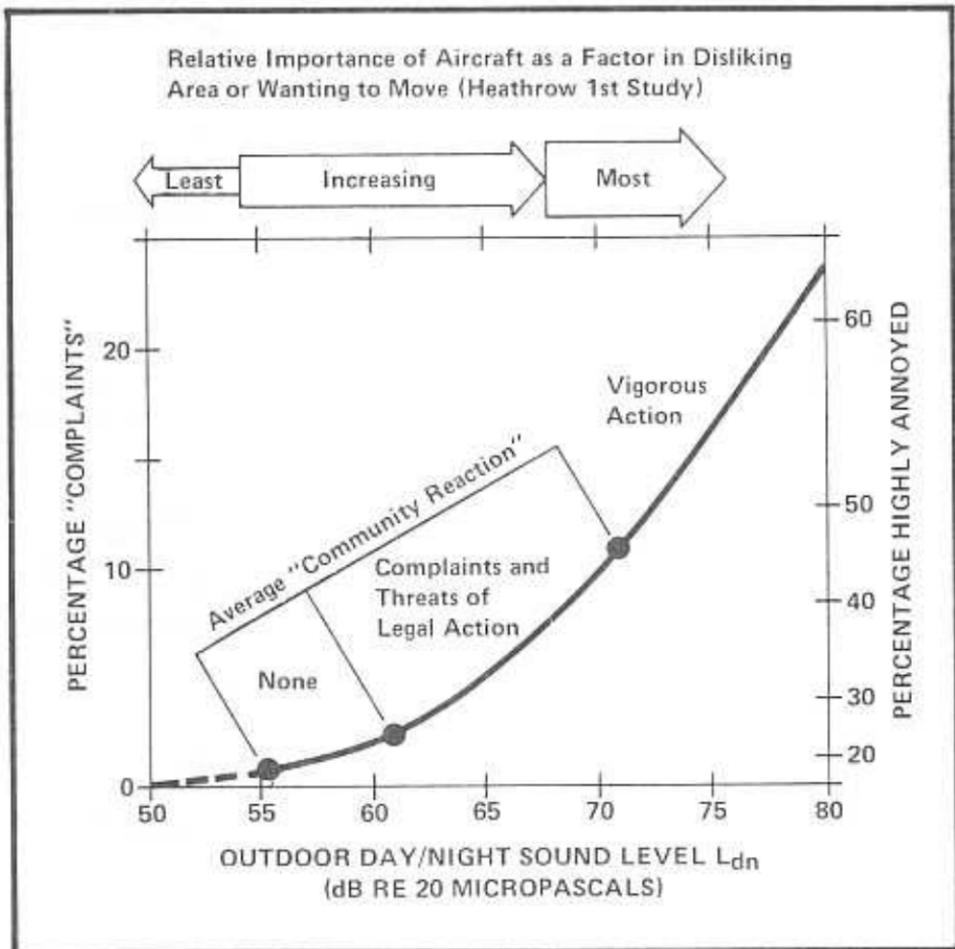
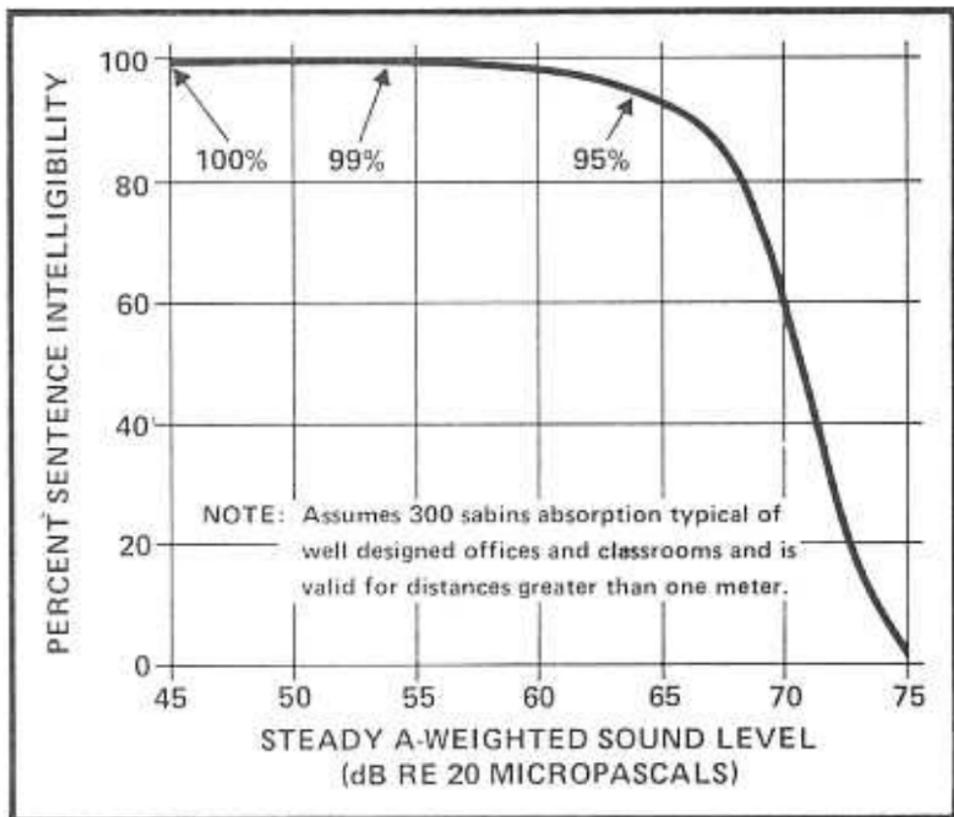


FIGURE 4-1.2b

NORMAL VOICE SENTENCE INTELLIGIBILITY
AS A FUNCTION OF THE STEADY BACKGROUND
SOUND LEVEL IN AN INDOOR SITUATION



Attachment A – Review of CEC Noise Criteria

Review of CEC Noise Criteria

“Staff acknowledges that each proposal must be examined on a case-by-case basis” (Metcalf Revised Presiding Member’s Proposed Decision, p. 406, August 2001).

Category 1 - City/County standards used in Conditions of Certification, which may also satisfy the CEC policy of not increasing existing noise levels by more than 5 dBA.

Category 2 - Maximum 5 dBA L_{eq} increase above existing noise levels.

Category 3 - Maximum 5 dBA L_{90} increase above existing (either lowest one-hour level, average 8-hour (10pm-7am or 9am-4pm), 6-hour nighttime average (10pm-5am) to avoid hours where traffic heavily influenced noise levels, 10am to 4pm and 11pm to 4am, single lowest manned noise measurement 6:36pm (duration?)).

Category 4 - Nearest residence so far away there isn’t a condition of certification requiring a community noise survey when plant comes on-line.

Category 5 - Condition of Certification criteria is a maximum of 3 dBA L_{90} increase above existing average nighttime L_{90} (10pm-7am).

Category 6 - Cumulative effect will be a decrease in existing ambient noise levels.

Project	Category	Date Approved	Criteria/Comments
Rio Linda/Elverta	No Data	Withdrawn	Plant designed to meet 45 dBA L_{50} at nearest residence due to Sacramento County Noise Ordinance (45 dBA L_{50} maximum hourly noise level at night). Was stated to be most stringent standard. Nearest receptor 900ft from plant. L_{90} levels not talked about in AFC section although the levels are presented in graphical format. Appears to have used an L_{90} average over all nighttime hours to comply with max. 5dBA increase over existing levels. There were no issues identified in the Commission Issues Identification Report dated May 16, 2001.
Magnolia Power Project	1	TBD SA, Jan. 2002	The project is located in the City of Burbank. The nearest existing non-conforming residential land uses shall be converted to conforming land uses so the nearest noise sensitive land use is located 1300 feet from the plant. To comply with the City of Burbank Ordinance the noise due to the power plant is limited to 48.3 dBA L_{eq} at the nearest residence. The existing 25-hour average L_{90} noise level at the

Attachment A – Review of CEC Noise Criteria

Project	Category	Date Approved	Criteria/Comments
			residence 1300 feet from the plant was measured as 52 dBA. Therefore if the noise due to the power plant complies with the City of Burbank Noise Ordinance, it will also satisfy the CEC criteria of not increasing the ambient noise level by more than 5 dBA.
El Segundo Power Redevelopment Project	1	TBD, FSA Sept. 2002	Project is located in the City of El Segundo. The nearest residences are located in the City of Manhattan Beach. The measured ambient noise level at the nearest residences was 52 dBA L ₅₀ to 54 dBA L ₅₀ during the quietest hours from 10 p.m. to 2 a.m. The lowest level is used as the ambient noise level. The project is calculated to increase the ambient noise level by less than 2 dBA. This was based on L ₅₀ noise levels according to the City of Manhattan Noise Ordinance. It is states that compliance with the LORS also satisfies the CEC policy of limiting increases in noise exposure to no more than 5 dBA. The proposed Condition of Certification NOISE-6 limits the increase in the ambient median noise level (L ₅₀) at residential receivers to 2 dBA and the noise due to the plant operations must comply with the local noise standards.
Russell City Energy Center	1	Sept. 2002	The project is located in Hayward. The nearest noise-sensitive receptor is 0.8 miles from the plant. The lowest measured nighttime L ₉₀ was 41 dBA and the average nighttime L ₉₀ was 46 dBA. The project noise level at the nearest noise-sensitive receptor was calculated to be 44 dBA L _{eq} . The plant noise results in a cumulative noise level increase of less than 5 dBA above the existing nighttime ambient noise level. The Commission Decision Condition of Certification NOISE-6 limits the noise level to the noise standards of the City of Hayward Municipal Code and Noise Element. The protocol also states that the noise level due to the project at monitoring site 2 must not exceed 44 dBA L _{eq} .
Los Esteros Critical Energy Facility	3	July 2002	Is located in the City of San Jose. The nearest sensitive receptor is 600 feet from the project boundary. The projected increase above ambient noise levels was based on the nighttime L ₉₀ . For all the residential locations the estimated increase will be less than 5 dBA. The cumulative noise level at the Coyote Creek riparian corridor complied with City limits but was 8.8 dBA above the existing nighttime L ₉₀ . The Commission Decision Condition of Certification NOISE-4 limits the cumulative noise level at the main Cilker home to no more than 5 dBA above the average

Attachment A – Review of CEC Noise Criteria

Project	Category	Date Approved	Criteria/Comments
			<p>nighttime L_{90}. At Location 2 (the Coyote Creek riparian corridor, a City park) the noise due to the plant operations must comply with the City of San Jose public park policies.</p>
Metcalf Energy Center	1	Sept. 2001	<p>Located partly in the City of San Jose and partly in Santa Clara County. The nearest residence is 1,150 feet from the project. The portion in the county has been proposed for annexation. San Jose noise standard is 55 dBA L_{dn} (continuous L_{eq} of 49 dBA) as a long-term goal. Santa Clara criterion is 50 dBA L_{50} (45dBA + 5dBA) at the receiving property line.</p> <p>Information from the Staff Report (Oct. 2000). Plant design based on existing average nighttime (10pm – 5am) L_{90} of 39 dBA on two consecutive nights. Originally an average L_{90} over all nighttime hours was made but the CEC did not agree with this as between 5am and 7am the noise levels were appreciably higher due to increased traffic noise. The original average L_{90} was 56 dBA, the CEC recalculated the average background level excluding 5am to 7am resulting in 39.5 dBA at the nearest sensitive receptor. The CEC then used an average nighttime noise level of 39 dBA L_{90} to base the 5dBA increase above ambient criterion. Thus the noise level at the nearest receptor must not exceed 44 dBA L_{90}.</p> <p>CEC staff then agreed with the applicant “that achieving 44 dBA outdoors is not necessarily a reasonable goal and a more appropriate approach is to reduce noise levels at the receiver (through noise insulation of the homes) based on the following reasons:</p> <ul style="list-style-type: none"> ▪ Relatively few sensitive receptors exist in the agriculturally zoned area. ▪ The ambient background noise levels will only be exceeded during late nighttime/early morning hours. ▪ Nighttime sleep would be affected more by louder single event noise from the train and truck traffic than from the steady-state noise of the MEC. ▪ The additional cost for mitigation at the source is \$5,000,000 and, given the few affected property owners, the additional cost is considered excessive. ▪ Mitigation at the receptors would provide a decrease in the current nighttime noise from the individual loud train and vehicular passing by and reduce impacts from future development, thus providing an overall benefit to the

Attachment A – Review of CEC Noise Criteria

Project	Category	Date Approved	Criteria/Comments
			<p>property owners that would not be received by mitigating noise at the source.</p> <ul style="list-style-type: none"> ▪ The area is in the process of changing from a rural agricultural area to a more urban campus industrial area. Future development in the area would experience noise levels from the plant that are in conformance with the applicable noise standard of the City of San Jose (DNL of 55 dB).” <p>Condition of Certification for the plant operating noise is not to exceed 49 dBA L_{eq} at the nearest residence. In addition, the project owner shall install sound-rated windows and air conditioning at all affected receptors exposed to noise levels between 44 dBA and 49 dBA L_{eq}.</p> <p>In the Revised Presiding Member’s Proposed Decision a long discussion of noise issues is presented regarding compliance of the project with City standards. It states that “the mitigation measures contained in the Conditions of Certification ensure that project-related noise levels will not cause unavoidable significant adverse direct, indirect or cumulative noise impacts and will, to the extent technically feasible, comply with City LORS.”</p>
Three Mountain	1	May 2001	<p>Located in Shasta County. County Noise Element limits new stationary noise sources to 50 dBA L_{eq} measured 100 feet from the nearest sensitive receptor during nighttime hours. The project property line limit is 75 dBA CNEL. Nearest residence 1,400 feet from plant property boundary. L_{90} as low as mid-30’s, 24-hour average ranged from 41 to 42 dBA. “Where traffic noise dominates, it is customary to examine not the single lowest background (L_{90}) level, but the average background level throughout the nighttime hours”. Ambient noise at the receptor was lower during the day. The average nighttime background (L_{90}) noise level (around 43 dBA) was used to assess potential impacts based on 5 dBA increase above existing sound levels. One residence would be impacted based on above criteria (8 dBA increase). NOISE-2 requires the installation of ceiling and wall insulation, multi-pane windows and an air conditioning system to the nearest residence (the only residence exceeding the significance criteria). The significance criterion used in Condition of Certification NOISE-5 was the county standard (50 dBA L_{eq} at 100 feet from the nearest residence).</p>
Huntington Beach	3	May 2001	Nearest residence located 250 feet from plant. City of Huntington Beach

Attachment A – Review of CEC Noise Criteria

Project	Category	Date Approved	Criteria/Comments
Generating Station Retool Project			Municipal Code nighttime noise standard for steady-state noise is 50 dBA, unless the ambient noise is higher. In this case the ambient noise level is higher than 50 dBA. Estimated increases in unmitigated noise level approached 9 dBA at the nearest residences. Condition of Certification requires additional measurements prior to the start of construction, inclusion of mitigation measures to ensure noise levels will not exceed the City noise standards or the L ₉₀ at residential receptors by more than 5 dBA. One-third octave band measurements are required to ensure no new pure-tone noise components.
Contra Costa Unit 8	5	May 2001	Nearest residents are non-conforming land uses with high existing noise levels. Calculated increases are less than 2 dB in all cases. The Condition of Certification NOISE-6 states that the maximum increase is 3 dBA L ₉₀ for the average nighttime hours (10pm – 7am). For pure tone compliance, 1/3 octave band measurements were required.
Otay Mesa Generating Project	3	April 2001	<p>Located in San Diego County. Nearest residence is 3,500 feet from plant site, 2nd nearest sensitive receptor, a correctional facility, 5,500 feet. Significance based on most stringent noise limitation required by applicable LORS, which is the San Diego County Code noise limit of 45 dBA L_{eq} at night. Significance is also an increase of 5dBA or greater above existing ambient noise levels at any noise-sensitive receptor. The Commission Decision states that the minimum measured nighttime ambient sound level in the area was 34 dBA L₉₀ this value is then later described as the average ambient noise level at the nearest sensitive receptor. This does not correlate with the lowest measurement in the table referenced in the FSA that was 34.7 dBA L₉₀, which was not at the nearest receptor. The lowest measured level at the two locations described as being located near the nearest receptor to the site was 38.0 dBA L₉₀.</p> <p>In the findings and conclusions in the Commission Decision, it is stated that the nearest sensitive noise receptor is a group of three residences 1.3 miles west of the site. This does not correspond with the FSA in which these houses were identified as 6,200 feet (1.17 miles) from the plant and the fourth nearest sensitive receptors. This is based on the descriptions of the measurement locations only maps were not included. The Condition of Certification NOISE-6 states that the noise level of the</p>

Attachment A – Review of CEC Noise Criteria

Project	Category	Date Approved	Criteria/Comments
			plant shall not exceed 39 dBA L ₉₀ at the nearest residence (34 dBA L ₉₀ plus 5 dBA).
Blythe Energy Power Plant Project	3	March 2001	Project site is located in a recently annexed area of Riverside County to City of Blythe. Nearest residence is 3,465 feet from plant. City standard is 65 dBA L _{dn} or CNEL at the property line or interior level of 45 dBA. County standard nighttime 45 dBA at sensitive receptors. In the FSA (Nov 2000) it states that “typically, the CEC requires that the 5dBA be compared against the lowest one-hour L ₉₀ value, which is usually during the nighttime hours...the lowest L ₉₀ noise level of 42.5 dBA occurred between the hours of noon and 1:00pm (mid-day) and may not reflect the existing conditions in the area...It is the staff’s opinion that the 5 dBA should be compared against an 8-hour averaged L ₉₀ noise level, especially since the lower noise levels were recorded during the daytime hours”. “For this analysis, the noise levels between 9am and 4pm were selected to develop an 8-hour averaged L ₉₀ noise level”. The average 8-hour L ₉₀ noise level was 44.2 dBA. The Condition of Certification NOISE-6 in the Commission Decision limits noise from the power plant at the closest sensitive receptor to 49.2 dBA L ₉₀ averaged over the lowest 8-hour period.
Mountainview Power Project	3	March 2001	The project is an addition to an existing facility (peaker) located in San Bernardino County, although it is in the process of being annexed to the City of Redlands. Nearest residence 200 ft from facility boundary (1,200 feet from plant location). Applicable standards are the City of Redlands (60 CNEL) and the County of San Bernardino (45 dBA L _{eq} nighttime or existing ambient noise levels at the nearest residences (49dBA L _{eq} was the nighttime measured level with existing plant shutdown). Measured noise level with existing peaker plant operating was 54 dBA L ₉₀ (10am – 4pm). These hours were used as it is the typical period the peaker plant is operating. The typical period when the peaker plant does not operate is 11pm to 4am. The existing measured L ₉₀ between 11pm and 4am, without the peaker plant operating, was 47 dBA. Condition of Certification NOISE-5 states that project noise levels must not exceed 59 dBA L ₉₀ during the daytime hours (10am to 4pm) and 52 dBA L ₉₀ during the nighttime hours (11pm to 4 am) at the nearest sensitive receptor.

Attachment A – Review of CEC Noise Criteria

Project	Category	Date Approved	Criteria/Comments
Pastoria Energy Center	2	Dec. 2000	Plant located in Kern County. The nearest sensitive receptor is located 4.4 miles from the project site. The Commission Decision states that the plant noise level was predicted to be 30 dBA L ₅₀ at the nearest sensitive receptor. The Commission Decision Condition of Certification NOISE-6 limited the project noise levels to 46 dBA L _{eq} (41 dBA L _{eq} + 5 dBA threshold) at the residence along Laval Road.
Moss Landing Power Project	6	Nov. 2000	The project is located in Monterey County. It is an addition of a 1,060 MW combined cycle plant on the site of the existing Moss Landing facility. It will be built concurrently with a repower of existing units 6 and 7 and the demolition of 19 fuel oil storage tanks. The nearest residences are some boats that are located 2,200 feet from the plant site. The nearest residence on land is 2,350 feet from the plant site. Due to the modernization of units 6 and 7 which will decrease the ambient noise levels by 13 dBA, the addition of the new 1,060 MW facility will still result in a net decrease compared to the existing ambient noise levels. The repower of units 6 and 7 was later separated from the project in subsequent filings. The discussion states that the design will increase existing ambient noise levels by 4 dBA (don't know if this is L _{eq} or L ₉₀). In the cumulative impact section, it is stated again that there will be a net reduction due to the modernization of units 6 and 7. The condition of certification states that the project must not exceed 70 dBA at the property line. L _{eq} or L ₉₀ not mentioned throughout either the FSA or the Commission Decision in regard to measured noise levels or predicted levels. Uses the terminology background noise or ambient background noise for measurement results. Monterey County General Plan Noise Element allows 50 to 70 dBA L _{dn} or CNEL for normally acceptable noise levels at industrial or utility land use categories. The report does not discuss the residential criteria.
High Desert Power Project	2	May 2000	Located within the City of Victorville. Nearest sensitive receptors, two schools, are located 1 ¼ miles from the project site. The Condition of Certification NOISE-6 states that power plant cannot cause noise increases in excess of 5dBA L _{eq} at any sensitive receptors.
Delta Energy Center	3	Feb. 2000	Located in the City of Pittsburg, in an industrial area. The nearest residence is 2,300 feet from the plant. The City standard allows, for a normally acceptable noise environment, a maximum of 60 dBA L _{dn} or CNEL. The City Noise Element

Attachment A – Review of CEC Noise Criteria

Project	Category	Date Approved	Criteria/Comments
			<p>states “increases more than 5 dB are significant and can generate adverse community response in residential areas”. This is in the process of being adopted as a significant impact. The City of Antioch limits exterior noise levels at outdoor living areas to 60 dBA CNEL. The plant design was based on lowest one-hour L₉₀ noise level for all but the closest residence. The existing CNEL at the closest receptor is 73 dBA. This residence is located near a busy highway and railroad. For this site, the assessment was based on the average nighttime L₉₀ excluding the increase between 5am and 7am due to the morning rush hour. This average nighttime L₉₀ was 48 dBA, the lowest nighttime L₉₀ was 45 dBA. The resultant design criterion is that the cumulative effect of the existing ambient and the project shall not increase the existing average nighttime L₉₀ (10pm to 5am) by more than 5 dBA i.e. 52 dBA L₉₀. In the Commission Decision (Feb. 2000), it states that “[I]n a typical residential setting, Staff relies on the lowest figure (L₉₀) to measure noise increases due to the project”. The Commission Decision, Condition of Certification NOISE-6 limits project noise levels to 52 dBA at the property line of the Casa Medanos residential motel (the closest receptor).</p>
Elk Hills Power Project	4	Jan. 2000	<p>Is located near the center of an oil field in Kern County. The nearest sensitive receptor is 5.1 miles away. The power plant noise level is only 22 dBA at the nearest sensitive receptor, which is less than the County standard of 40 dBA L₅₀ at night for highly sensitive land uses and less than the existing minimum hourly L₉₀ of 34 dBA. There is no Condition of Certification that requires a community noise survey of overall or octave band measurements.</p>
La Paloma	1	Oct. 1999	<p>Project is located in Kern County. The Kern County General Plan limits the nighttime L₅₀ to 40 dBA at highly sensitive land uses such as isolated rural residences. Nighttime L₉₀ noise levels ranged from 34 to 43 dBA. The nearest residence is 8000 feet from the plant. The plant noise level at the nearest sensitive receptor was designed to be below the Kern County General Plan noise level of 40 dBA L₅₀, which is said to also be below the existing ambient noise levels. The Commission Decision Condition of Certification NOISE-6 limit the power plant noise levels to 40 dBA L₅₀ at the nearest residence.</p>
Los Medanos,	3	August 1999	<p>The nearest sensitive receptor is 1,800 feet from the plant. The project is located in</p>

Attachment A – Review of CEC Noise Criteria

Project	Category	Date Approved	Criteria/Comments
Pittsburgh (PDEF)			<p>an industrial area.</p> <p>The assessment originally used L_{dn} analysis based on City standards and less than 5dBA increase. The Pittsburgh Noise Element is referenced but in the LORS it does not specifically say L_{90}, L_{eq}, or L_{dn}.</p> <p>The SA (page 175) says that “Were it not for the greatly varying level of ambient noise between day and night, and for the fact that the PDEF will be expected to operate round the clock, this may have been an acceptable approach. In light of these circumstances, however, staff objected to this approach”. The project was now limited to a 5 dBA increase above the existing L_{90} at the nearest sensitive use. The lowest nighttime L_{90} (45 dBA) was used as the basis for the 5 dBA increase. The plant noise level design goal and the Condition of Certification NOISE-6 were set at 47 dBA L_{90} at the nearest noise-sensitive use.</p>
Sutter Power Plant Project - Also does not exceed 5dBA above ambient.	1	April 1999	<p>Is located in Sutter County. The relevant criteria in the Noise Element are 50 dBA in the daytime and 45 dBA at night, measured at the nearest residence. The measured existing noise levels were as low as 41 to 45 dBA (does not specify L_{eq} or L_{90}). The Condition of Certification NOISE-6 limits overall noise levels at the nearest residence to 45 dBA L_{eq}.</p>

ATTACHMENT B

Steam Turbine Noise Enclosure (exterior view)



ATTACHMENT C

Steam Turbine Noise Enclosure (interior view)



ATTACHMENT D

Brine Concentrator Vapor Compressor



ATTACHMENT E

Brine Concentrator Recirculation Pump



ATTACHMENT F

Vent and Relief Stack Silencers



ATTACHMENT G

Marley Cooling Tower Noise Data for Proposed Cooling Tower

-----Original Message-----

From: BRIAN_DEUVALL@marleyct.com [mailto:BRIAN_DEUVALL@marleyct.com]

Sent: Wednesday, August 22, 2001 5:35 AM

To: Jim McLucas

Subject: East Altamont Cooling Tower Sound Data

Jim,

As requested in your voicemail message, attached is our sound data sheet @ 400 ft for the current cooling tower selection. Please let me know if you have any questions or need additional information.

Thanks,
Brian

(See attached file: Calpine - East Altamont Sound.doc)

Marley BEST™ Version 1.2
 Product Data: 12/19/00

Calpine Project E.opt
 Revised 8/10/01 3:34:30 PM by Brian Deuvall

Customer _____
 East Altamont Energy Center – Tracy, CA
 Calpine Contact: Jim McLucas - Pleasanton

Definition _____

Model (ID 1)	F499-6.0-19	Fan Deck Barrier Wall	None
Fan	360HP7-9	Air Inlet Barrier Wall	None
Stack	360"x14' Rflx/V Rib	Fan Attenuator	None
Speed Reducer	4000, 14.88:1	Air Inlet Attenuator	None
Motor	1800 rpm, TEFC	Splash Attenuator	None

Conditions _____

Wet-Bulb Temperature	69.60 °F	Altitude	0 ft
Dry-Bulb Temperature	95.98 °F	Fan Deck Height (TOC)	39.09 ft
Air Flow per Fan	1703000 cfm	Air Inlet Elev. (TOC)	12.50 ft
Fan Static Pressure	0.463 in H2O	Distance from Air Inlet	400 ft
Fan Air Density	0.07096 lb/ft³	Closed Sides	0
Fan Speed (100 %)	119 rpm	Closed Ends	2
Motor Output	243.0 BHp		

Sound _____
 Sound Power Level (PWL) expressed in dB (re: 10⁻¹² watts)
 Sound Pressure Level (SPL) expressed in dB (re: 20x10⁻⁶ Pa)

Sound Power Level	Octave Band Center Frequency (Hz)									Overall
	31.5	63	125	250	500	1000	2000	4000	8000	
Air Outlet PWL	121.5	121.5	121.5	117.6	114.7	111.8	104.1	100.1	96.0	116.6
Air Inlet PWL	113.1	119.2	115.3	113.6	109.0	110.6	110.3	111.8	110.8	117.9
Tower PWL	122.1	123.5	122.5	119.1	115.7	114.2	111.3	112.1	110.9	120.3

Sound Pressure Level	Octave Band Center Frequency (Hz)									Overall
	31.5	63	125	250	500	1000	2000	4000	8000	
Air Outlet SPL	70.2	69.2	67.4	60.9	54.8	48.5	37.2	28.3	14.8	57.4
Air Inlet SPL	62.0	68.1	64.1	61.8	55.3	57.9	57.4	56.8	48.7	63.9
Tower SPL	70.8	71.7	69.0	64.4	58.1	58.3	57.4	56.8	48.7	64.8

ATTACHMENT H

Marley Cooling Tower Noise Data for Cooling Tower with Ultra Low-Noise Fans

-----Original Message-----

From: BRIAN_DEUVALL@marleyct.com [mailto:BRIAN_DEUVALL@marleyct.com]

Sent: Monday, April 08, 2002 12:38 PM

To: Jim McLucas

Subject: Re: FW: East Altamont Cooling Tower Sound Data

Jim,

We looked at applying a Howden SX low-noise "elephant ear" fan assembly and determined that it only reduced tower noise by ~2 dBA @ 400'. Moreover, due to its relative inefficiency compared to our standard fans, the same 19-cell tower selection would require 300 HP/fan to meet the thermal duty. Another way to view this is that it would take an additional 4-5 more cooling tower cells @ 250 HP/fan, at a budget price add of in excess of (+) \$2 million.

The attached sound data sheet reflects the 19-cell tower model with the Howden fans. Note that in the summary at the bottom of the page, the overall Air Outlet sound level is 49.9 dBA, and the Air Inlet is 62.2 dBA, adding up to a total tower sound level of 62.5 dBA @ 400'. Note that if the tower was equipped with no fans, the falling water noise would still produce 62.2 dBA overall. At this point, we chose not to pursue any further tower selection details using these Howden fans, because there is minimal sound level reduction for a sizeable additional tower cost.

Please review this info and let me know what else you need, or if there is something else you'd like us to look at, to support your efforts.

Thanks,
Brian

(See attached file: EAEC Tower - Howden Fan Sound.pdf)

Marley Cooling Technologies

Calpine Project E

MISSILE v2.07

4/9/2002

Model.....499-6.0-19
 Fan.....Custom
 Gearbox.....Eickoff BVOLG-080 (1500)
 Fan Speed.....87 rpm

SPL from face 'A'

10:53

Air flow.....Custom
 Static pressure.....Custom
 Fan air density.....0.07 lb/ft³

Fan Deck Ht.....40.04 ft.

Altitude.....0.00 ft.
 WB.....69.6°F
 DB.....96°F

Perp Dist from face 'A'...400 ft @ 5 ft. elev.

19 - 54'W x 54'L fan cells
 0 ends open
 2 sides open
 12.5 ft air inlet elev.

AIR OUTLET	31.5	63	125	250	500	1000	2000	4000	8000	Overall
Fan:	103.5	103.5	95.9	96.2	93.5	91.7	86.5	80.5	73.4	
Gearbox (BVOLG-080):	82.4	82.4	86.4	88.4	87.9	86.7	82.9	78.4	73.9	
Outlet Adjustment:	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	
No. of Fans Add:	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	
Theoretical Diverg:	-50.3	-50.3	-50.3	-50.3	-50.3	-50.3	-50.3	-50.3	-50.3	
Directivity (97°) :	-1.1	-2.1	-3.9	-6.2	-9.0	-12.0	-14.9	-17.5	-19.6	
Atmospheric Atten:	0.0	0.0	-0.1	-0.2	-0.5	-1.0	-1.8	-4.1	-11.3	
Ground Attenuation:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Fan Attenuation:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Barrier Wall:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Fan SPL:	62.0	61.0	52.0	49.9	44.5	39.4	30.9	20.6	5.2	65.0
AIR INLET										
Total SPL @ 5' A.I.:	75.0	81.5	71.4	74.5	73.7	78.3	79.2	80.8	79.4	
Area Src Dist Rdctn:	-20.4	-20.4	-20.4	-20.4	-20.4	-20.4	-20.4	-20.4	-20.4	
Atmospheric Atten:	0.0	0.0	-0.1	-0.2	-0.5	-1.0	-1.7	-3.9	-10.9	
Ground Attenuation:	0.0	0.0	0.0	-1.4	-6.0	-1.8	-0.3	0.0	0.0	
Attenuation:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Barrier Wall:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Air Inlet SPL:	54.6	61.1	51.0	52.6	46.8	55.1	56.8	56.5	48.1	65.1
SUMMARY										
Air Outlet SPL dB:	62.0	61.0	52.0	49.9	44.5	39.4	30.9	20.6	5.2	65.0
Air Inlet SPL dB:	54.6	61.1	51.0	52.6	46.8	55.1	56.8	56.5	48.1	65.1
Tower Total SPL dB:	62.7	64.1	54.5	54.5	48.8	55.2	56.8	56.5	48.1	68.1
Air Outlet SPL dBA:	22.6	34.8	35.9	41.3	41.3	39.4	32.1	21.6	4.1	46.5
Air Inlet SPL dBA:	15.2	34.9	34.9	44.0	43.6	55.1	58.0	57.5	47.0	62.1
Tower Total SPL dBA:	23.3	37.9	38.4	45.9	45.6	55.2	58.0	57.5	47.0	62.2

FOR STUDY PURPOSES ONLY

PUBLIC HEALTH

I. INTRODUCTION

A. Name: John Lowe and Stephen O’Kane

B. Purpose: This testimony addresses the Public Health issues associated with air emissions from the proposed East Altamont Energy Center (East Altamont Energy Center).

C. Qualifications: Mr. John Lowe is a Human Health Risk Assessor with CH2M HILL, located in Dayton, Ohio. He received his Bachelor of Science degree in Environmental Toxicology from the University of California at Davis, in 1979. Mr. Lowe has been with CH2M HILL since 1993. He has worked in other environmental consulting firms in California since 1985 and, prior to then, for the State of California, in what is now the California Department of Pesticide Regulation. For the past 23 years, Mr. Lowe has been responsible for assessing potential for adverse health effects to the general public and to workers, from the presence of chemical contaminants or radionuclides in air, soil, and water, associated with a variety of settings. He has prepared risk assessments and impact analyses of air emissions in support of permitting for industrial, power generation, and hazardous waste treatment, storage and disposal facilities. During this time, he has also prepared risk assessments and associated technical studies for the evaluation and cleanup of hazardous waste sites.

While with CH2M HILL, Mr. Lowe has prepared application materials, participated in energy facility siting workshops and hearings, and/or presented testimony before the California Energy Commission, in the following cases:

- Central Valley Energy Center
- Cosumnes Power Plant Project
- Los Esteros Critical Energy Facility
- Metcalf Energy Center
- Delta Energy Center
- SMUD/Sacramento Power Authority Cogeneration Project

Mr. Stephen O’Kane has extensive experience and training in the areas of air quality impact assessments, boundary layer meteorology, emissions testing and inventories, risk management plans and health risk assessments. He has conducted dispersion modeling analyses and health risk assessments for power plants, airports, site remediation activities and numerous types and sizes of combustion equipment. Mr. O’Kane is well versed in the California Air Pollution Control Officers Association (CAPCOA) Health Risk Assessment Guidelines, the Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board approved risk assessment health values and the reporting and notification requirements set out in the California legislative bills AB2588 and Proposition 65.

Mr. Lowe's and Mr. O'Kane's qualifications are summarized more completely in the attached resumes (Appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.6 of the AFC
- Section 8.1 of the AFC
- Appendices 8.1 and 8.6 of the AFC
- Supplement A to the AFC, Filed on May 3, 2001
- Supplement B to the AFC, Filed on October 9, 2001
- Supplement C to the AFC, Filed on February 6, 2002

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) did not have any proposed Conditions of Certification related to Public Health.

III. SUMMARY

A. Affected Environment: The East Altamont Energy Center will be a nominal 1,100-MW natural-gas-fired, combined-cycle generating facility, with a 230-kV switchyard and approximately 0.5 miles of two new 230-kV transmission lines. The East Altamont Energy Center site will comprise approximately 40 acres within a 174-acre parcel of land located in unincorporated Alameda County, approximately 1 mile west of the San Joaquin County line, and 1 mile south and east of the Contra Costa County line. The site is located approximately 8 miles northwest of the city of Tracy, 12 miles east of Livermore, 5 miles south of Byron, and less than 1 mile from the San Joaquin County border and the Mountain House Community Service District, a new town just starting Phase 1 construction. Large infrastructure projects, principally water management and transmission facilities, dominate the landscape within less than 1 mile of the project. Existing land uses and zoning designations for the proposed site and vicinity include agricultural, low-density residential, and public recreational uses.

The site is bounded to the north by the Southern Pacific Railroad Corridor/Byron Bethany Road, to the south by Kelso Road, and to the west by Mountain House Road. The parcel is currently being used for agricultural purposes, including oat, alfalfa and hay crops, and occasionally row crops such as tomatoes. An existing dairy barn structure on the site

indicates that portions of the site had been previously used for dairy cows. Also, a single-family residence, which would be vacated subsequent to the construction and operation of the project, currently exists on the property.

There are few sensitive receptors (such as schools, daycare facilities, convalescent centers, or hospitals) in the vicinity of the project site. The nearest sensitive receptor is an elementary school located approximately 1 mile south of the project site (Mountain House School). There are also a few residences (primarily farmers) in the vicinity of the site.

B. Construction Impacts: The construction phase of the East Altamont Energy Center is expected to take approximately 24 months. Emissions due to the construction phase of the project have been estimated, including an assessment of emissions from vehicle and equipment exhaust and the fugitive dust generated from material handling, as described in Section 8.1 of the AFC, Air Quality. Potential public health impacts associated with construction will principally be associated with emissions from construction equipment operating with diesel-fueled engines. In addition to criteria air pollutants, diesel-fueled engines emit several toxic pollutants. The potential human health risks of these toxic pollutants were evaluated in a risk assessment prepared using guidelines developed under the AB 2588 Air Toxics "Hot Spots" Information and Assessment Act. Air dispersion modeling was used to estimate the maximum concentration in air of diesel particulate matter at residential locations. Based on this analysis, carcinogenic risk due to the maximum exposure to diesel exhaust during construction activities falls below thresholds used for regulating emissions of toxic pollutants to the air. The maximum concentration of diesel particulate matter in air was also lower than the Reference Exposure Level (REL). The REL is intended to protect the public including sensitive populations, and is based on the most sensitive health effect associated with that pollutant. Since the maximum diesel particulate concentration associated with construction activities was lower than the REL, construction emissions would not produce adverse health effects. Based on this analysis of potential cancer and noncancer effects, emissions of toxic air pollutants during construction operations will not pose a risk to human health.

C. Operational Impacts: Public health consequences associated with the project are potential human exposure to chemical substances emitted into the air, and potential risks associated with storage and use of hazardous materials at the facility. Potential impacts associated with emissions of toxic pollutants to the air from the proposed facility were evaluated in a risk assessment prepared using guidelines developed under the AB 2588 Air Toxics "Hot Spots" Information and Assessment Act. Human health risks were evaluated for a hypothetical maximum exposed individual (MEI). The hypothetical MEI is an individual assumed to be located at the point where the highest concentrations of pollutants in air associated with facility emissions are predicted to occur, based on air dispersion modeling. Human health risks associated with toxic emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MEI. If there is no significant impact associated with toxic concentrations in air at the MEI location, there would be no significant impacts in any location in the vicinity of the facility.

The results from this risk assessment indicate that the estimates of excess lifetime cancer risks, and potential non-cancer health effects associated with chronic or acute exposures, fall

below thresholds used for regulating emissions of toxic pollutants to the air. Based on the results of this risk assessment, there are no public health impacts anticipated from emissions of toxic pollutants to the air from the proposed facility.

Use of hazardous materials and other chemicals at the proposed facility will be in accordance with standard practices for storage and management of hazardous materials. Normal use of hazardous materials therefore will not pose significant impacts to public health. While mitigation measures will be in place to prevent releases, accidental releases that could migrate offsite, specifically that associated with release of ammonia vapor, could result in potential impacts to the public. The California Health and Safety Code Sections 25531 to 25541 and Code of Federal Regulations (CFR) Title 40 Part 68 under the Clean Air Act establish emergency response planning requirements for acutely hazardous materials. These regulations require preparation of a Risk Management Plan (RMP), which is a comprehensive program to identify hazards and predict the areas that may be affected by a release of an acutely hazardous material (AHM).

- D. Cumulative Impacts:** The risk assessment evaluated health risks at the theoretical maximum impact location. Estimated risks at this location are well below thresholds of significance established by regulatory agencies. Estimated risks at all other locations would be lower than at this maximum impact location. In the unlikely event that worst-case emissions from an existing facility coincided in space and time at the maximum impact location with emissions from the proposed project, there would be no significant cumulative increase in estimated cancer risks or noncancer health impacts.

Additional Issues

Public Health Impacts Associated with Use of Recycled Water

When recycled water is available, it will be treated to comply with Title 22 of the California Code of Regulations for reuse in cooling towers. These regulations include provisions to ensure that water is at all times free of pathogens and would comply with primary drinking water standards for toxic materials. Cooling water treatment may require the addition of chemicals such as a pH control agent (acid or caustic), a mineral scale dispersant (i.e. polyacrylate polymer), a corrosion inhibitor (phosphate based), and a biocide (hypochlorite or equivalent).

Potential concerns that have been raised in the past about the use of recycled water included potential human exposures to pathogenic organisms and chemical additives in the cooling water. The only feasible pathway of exposure to humans is inhalation, should pathogenic microorganisms or treatment chemicals be emitted from the cooling tower. While pathogenic organisms including *Legionella* have been found on occasion in water-handling systems, standard practices for maintenance and operation of cooling towers will be used at the East Altamont Energy Center, including use of a biocide to minimize the growth of *Legionella* and other microorganisms. These standard practices are intended to assure that microbial contamination in water is minimized prior to and during use in a cooling tower. Based on these factors, it is concluded that there will be no significant risks to human health related to pathogens associated with use of recycled water in cooling towers.

The cooling water additives represent a variety of materials with relatively low systemic toxicity to humans. These would be added to cooling water in small quantities, which would undergo further dispersion and dilution as cooling water is released into the air. Storage and use of these materials could produce hazards to workers on-site, as discussed in the Hazardous Materials testimony and the AFC. However, the concentrations in ambient air from cooling tower emissions are anticipated to be sufficiently low that they will pose no significant risks to the public.

Therefore, there will be no significant risks to human health related to pathogens or water treatment chemicals, associated with use of recycled water in cooling towers.

- E. Mitigation:** Potential public health impacts from the proposed project are associated with air emissions. Mitigation measures for air emissions, and therefore, public health impacts, are addressed in the Applicant's testimony prepared for air quality.

**DECLARATION OF
John Lowe**

I, John Lowe, declare as follows:

1. I am presently employed by CH2MHill as a Human Health Risk Assessor.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Public Health for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: Dublin, California

**DECLARATION OF
Stephen O’Kane**

I, Stephen O’Kane, declare as follows:

1. I am presently employed by CH2MHill as a Human Health Risk Assessor.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Public Health for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: Dublin, California

SOCIOECONOMICS

I. INTRODUCTION

- A. Name:** Fatuma Yusuf
- B. Purpose:** This testimony addresses the Socioeconomics issues associated with the proposed East Altamont Energy Center.
- C. Qualifications:** Fatuma Yusuf is employed by CH2M HILL as an Associate Consulting Economist. Dr. Yusuf has over 6 years of experience conducting economic/statistical analyses. She has experience in preparing the socioeconomics analysis for numerous power plant permitting efforts and other environmental documents, including cost analysis and input-output modeling. Her qualifications are summarized more completely in the attached resume (Appendix A).
- D. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Section 8.8 of the AFC
 - Data Adequacy Responses Set 1, Filed on May 1, 2001
 - Informal Data Request and Response #I-SO-1, Filed September 28, 2001
 - Supplement A, Filed on May 3, 2001
 - Supplement B, Filed on October 9, 2001
 - Comments on the Preliminary Staff Assessment, Filed January 14, 2002
 - Supplement C, Filed on February 6, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that Conditions of Certification be adopted to address Socioeconomic issues. These conditions are SOCIO-1 and SOCIO-2 and are described on pages 5.8-10 and 5.8-11 of the FSA. Implementation of the Conditions of Certification will ensure that the facility will be in compliance with the applicable federal, state, and local laws, ordinances, regulations, and standards (LORS). I have reviewed the Staff's proposed Conditions of Certification set forth in the FSA and find them acceptable with a minor modification to Condition SOCIO-1, located at the end of this testimony.

III. SUMMARY

- A. Affected Environment:** The East Altamont Energy Center plant site, electrical transmission line, natural gas pipeline, approximately 0.8 miles of the raw water supply pipeline, and a mile of the recycled water line are located in the far eastern corner Alameda County. The remaining 1.3 miles of the raw water supply pipeline is located in Contra Costa County and the remaining 3.6 miles of the recycled water line is located in San Joaquin County.

Specifically, the East Altamont Energy Center project site is located on approximately 40 acres on Mountain House Road, across from the Tracy Substation. Land use in the vicinity is agriculture and open space, with relatively few residences. Economic activities/facilities are farming, the Western substation, a PG&E gas compressor station, the Department of Water Resources (DWR) water conveyance systems (California Aqueduct), and the U.S. Bureau of Reclamation's Delta-Mendota Canal.

- B. Construction Impacts:** Total construction personnel requirements during the approximately 24 months of construction will be approximately 5,671 person-months. The East Altamont Energy Center will provide approximately \$49 million in construction payroll, at an average salary of \$50 per hour (including benefits). Available skilled labor in the three-county region was evaluated by surveying local labor unions and contacting the California Employment Development Department. Both sources show that the workforce in the Bay Area will be adequate to fulfill the East Altamont Energy Center's labor requirements for construction. It is expected that most of the construction workforce will be drawn from the local area and will commute daily less than 30 miles each way to reach the job site. As a result, the construction of the East Altamont Energy Center will not create any significant adverse impacts to the local school system since there will likely be no new students entering the local school districts. The construction of the proposed project will not cause significant demands on public services or facilities. All utilities are readily available from local utility providers and the construction of the proposed project will not cause significant demands on electricity and gas, sewer, water, or telephone service. The estimated value of materials and supplies that will be purchased locally during construction is between \$5 and \$10 million. The total local sales tax expected to be generated during construction is \$400,000 to \$800,000.

- C. Operational Impacts:** The Project Owner is expected to employ up to 40 full-time employees with no significant impact on population due to plant operations, since the entire permanent workforce is expected to commute from within the three-county (Alameda, Contra Costa, and San Joaquin) region. There will also be no anticipated significant impacts to local housing resources. There will be no significant impact to the local educational system from the operation of the East Altamont Energy Center. The Project Owner will be required to pay a school impact fee of \$0.33 per square foot of principal building to the Tracy Unified School District. Operation of the proposed project will not cause significant demands on public services or facilities. Required utilities are readily available from local providers. The East Altamont Energy Center's total value for property tax purposes has not been established. However, a simple assessment using values of \$400 to \$500 million, based on the Applicant's estimate of project value, suggests the total property tax obligation could range from \$5 million to \$6.5 million annually. The East Altamont Energy Center will be in

compliance with Guidances and the Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low Income Populations (1994), because local minority and low-income populations will not be exposed to disproportionately high and adverse impacts from the project.

- D. Cumulative Impacts:** The construction and operation of the East Altamont Energy Center will not produce any significant negative cumulative impacts. To the extent that its superior efficiency and reliability result in the retirement of less efficient and reliable generators earlier than would otherwise have occurred, the East Altamont Energy Center will produce a positive cumulative impact on the economy of the region and the State of California.
- E. Mitigation:** The design of the East Altamont Energy Center will include technologies that will limit its off-site impacts to insignificant levels. With the implementation of the proposed project mitigation measures and the Conditions of Certification, the project will comply with all applicable LORS.

APPLICANT'S PROPOSED MODIFICATIONS TO SOCIO-1

SOCIO-1: The project owner and its contractors and subcontractors shall recruit employees and procure materials and supplies within Tri-County area unless:

- a. to do so will violate federal and/or state statutes;
- b. the materials and/or supplies are not available;
- c. qualified employees for specific jobs or positions are not available; or
- d. there is a reasonable basis to hire someone for a specific position from outside the local area.

Verification: At least 60 days prior to the start of ~~construction, demolition,~~ the project owner shall submit to the Energy Commission Compliance Project Manager (CPM) copies of contractor, subcontractor, and vendor solicitations and guidelines stating hiring and procurement requirements and procedures. In addition, the project owner shall notify the CPM by letter of the reasons for any planned procurement of materials or hiring outside the local regional area that will occur during the next two months.

**DECLARATION OF
Fatuma Yusuf**

I, Fatuma Yusuf, declare as follows:

1. I am presently employed by CH2MHill as a Associate Consultant.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Socioeconomics for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: Sacramento, California

SOIL RESOURCES

I. INTRODUCTION

- A. Name:** Steve Long
- B. Purpose:** This testimony addresses the water resources issues associated with the proposed project.
- C. Qualifications:** Mr. Steve Long is a Soil Scientist with over 12 years of experience conducting a wide range of tasks associated with natural resource and hydrogeologic environmental evaluations. Duties include evaluating contaminants study results for surface water, sediment and biota, relating land use to surface water quality, preparation of proposals, field data collection, interpretation, and preparation of reports and presentation of results. A resume of Mr. Long's qualifications is presented in Appendix A.
- D. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Section 8.9 (portions pertaining with Soil Resources)
 - Data Response Set #2, Responses to Data Requests #'s 81, 82, and 83, Filed on August 17, 2001
 - Data Response Set #2F, Response to Data Requests # 83, Filed on October 9, 2001
 - Data Request Response to the September 6th Workshop, Response to Data Requests #'s 81, 82, and 83, Filed on October 5, 2001
 - Data Response Set #2A, Responses to Data Requests #'s 81, 82, and 83
 - Supplement A to the AFC, Filed on May 3, 2001
 - Supplement B to the AFC, Filed on October 9, 2001
 - Supplement B to the AFC, Filed on February 6, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. SUMMARY

The Final Staff Assessment (FSA) for the project, dated September 19, 2002 recommends that 3 conditions of certification be adopted to address soil resources issues. Conditions 1, 2, and 3 are acceptable.

A. Soil Resources

The East Altamont Energy Center site is located on a 174-acre parcel at the eastern edge of Alameda County, 8 miles northwest of the City of Tracy. The dominant land use in the area is agricultural production, comprising hay, alfalfa, tomatoes, and other row crops. These uses are interspersed with small residential areas, the Western electrical substation pump facilities, and roads. Gas, water, and electrical transmission lines serving the site cross similar land uses.

Information on types and distribution of soils within the project area was derived from published soil survey reports by the National Resource Conservation Service (NRCS) [formerly the Soil Conservation Service] and review of national soil data base information (NRCS, 2000). Soil types are characterized by soil map units that provide information on the soil series and phase. Soil series comprise soils exhibiting a common range of physical and chemical characteristics. Soil types and distributions for the East Altamont Energy Center project site and linear features are presented in Soil and Water Table 1.

The designations of Important Farmlands is administered by the Division of Land Resource Protection in the California Department of Conservation. The designation of prime farmland is also considered with respect to specific soil mapping units as indicated in the NRCS soil surveys. The NRCS defines prime farmland as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses.

A review of the Important Farmland Map for the project area shows that a majority of the project area is considered as Prime Farmland, Farmlands of Statewide Importance, Unique Farmlands, or Farmlands of Local Significance. The most notable exceptions to this are the Grazing lands in the western portion of the project area and Urban and Built-up lands, or Other Lands along the Delta-Mendota Canal and the area around the Tracy substation.

Table 1. Soil and Water - Soil Types Affected & Characteristics

Project Element	Primary Soil Name	Slope Class Percent	Depth Range	USDA Texture	Parent Material	Water Erosion Hazard	Permeability	Drainage	Revegetation Potential
East Altamont Energy Center Plant	Rincon Clay Loam (Rd)	0 – 3%	0 – 16 in.	Clay Loam	Alluvium from sedimentary rocks	Slight	Slow	Well Drained	Very Good
Water Line	San Ysidro Loam (Sc)	0 – 2%	0 – 15 In.	Loam	Alluvium from sedimentary rocks	Fair	Very Slow	Moderately Well Drained	Fair
Recycled Water Line	Stomar Clay Loam (252)	0 – 2%	0 – 17 in.	Clay Loam	Alluvium from sedimentary rocks	Slight	Slow	Well Drained	Good
Natural Gas Line	San Ysidro Loam (Sc)	0 – 2%	0 – 15 In.	Loam	Alluvium from sedimentary rocks	Fair	Very Slow	Moderately Well Drained	Fair

Table 1. Soil and Water - Soil Types Affected & Characteristics

All of the project site, and most of the project linears, are either on or adjacent to farmlands identified as Prime. In real terms, construction of the project will result in the conversion of up to 40 acres of land from agricultural use, because water and gas pipelines will either be constructed in or adjacent to road rights-of-way where agricultural uses are absent, or will be re-contoured to allow agricultural uses after installation.

The water erosion hazard designations for soils in the project area (presented in Table 1) are indicated as slight or fair, and standard best management practices (BMPs) will be sufficient to control water erosion of soils from the sites under construction. Because most of the soil map units in the project area are level or nearly so, the ability to manage soil erosion risks are greatly simplified.

The revegetation potential (Table 1) was based on the soil survey interpretation of the suitability of the soil to produce wild herbaceous plants. The revegetation potential of most of the affected soils is considered to be from fair to very good. This indicates that there should be few limitations to re-establishing vegetation for soil stabilization once construction activities have been completed.

The overall potential for soil loss from water erosion is considered slight and the construction sites should not have significant limitations for revegetation. Although the potential for wind erosion is not defined, most of the soil surface textures are very fine (e.g., clay, clay loam, silty clay). Soils with these textures are cohesive and not likely to be at risk for wind erosion. Some soil units have coarser surface materials (e.g., loam, sandy loam, or fine sandy loams) that could be at slight to moderate risk for wind erosion. Preventive use of BMPs during construction and revegetation after construction is complete will be sufficient to avoid significant soil erosion as a result of the project.

Soil layers containing clay have a potential for shrinkage and swelling that can be a significant engineering consideration for constructed linear features. The soil survey indicates that many of the soil layers containing clay within the project area have a moderate to high potential for shrink and swell. High shrink-swell potential is reported for clay layers in the majority of soil units in the project area. Problems that could be caused by shrink-swell need to be anticipated prior to construction. The material excavated in these soils may not be suitable for backfilling where subsequent soil movements could adversely affect constructed linear features.

B. Construction Impacts

Potential construction effects on soil resources can include increased erosion, compaction, loss of soil productivity, and disturbance of saturated soils. Soil erosion results in the loss of topsoil and can increase the sediment load in surface waters downstream of the construction site. The magnitude, extent, and duration of this construction-related impact will depend on several factors, including the erodibility of the soil (discussed above), the proximity of the construction to receiving water, and the method, duration, and time of year of construction.

Construction of the project, the construction parking and laydown area, and access road will result in soil compaction and the loss of soil productivity on some portions of the site from the construction of foundations and pavement. Soil erosion will be controlled in accordance with an approved Erosion Control Plan. Watering loose surfaces during construction will minimize soil loss from dust. Following deep excavation for linear corridors, soil materials will be stockpiled and replaced in excavated areas so that loss of the original stratigraphy is minimized. Some of the soils could have seasonally high water tables. In these areas, construction will be scheduled to minimize encounters with groundwater. Topsoil removed from the site in preparation for foundation construction will be stockpiled and covered; the topsoil may be available for sale for landscaping use or used to enhance the surface characteristics of onsite areas for revegetation. After construction, any areas that are not developed will be restored for landscaping or agricultural use.

Once constructed, the linear facilities will have no significant effect on surficial soils onsite or offsite. However, during construction, standard erosion and dust control methods will be implemented to reduce siltation in storm drains and waterways. Use of these methods will reduce losses of soil to wind and water erosion to a less than significant level.

The site, construction parking, laydown area, and some linears will pass through areas currently used for agriculture. Any areas not required for project operations will be restored to pre-construction conditions. Therefore, the project construction will have a less than significant impact on agriculture.

Construction of the project site will remove up to 40 acres of land currently classified as prime agricultural land from the resources of Alameda County. The project will also preserve agricultural uses on the remaining 134 acres. Alameda County has 10,500 acres of prime, unique, and agricultural lands of state importance. Loss of less than 1 percent for this use is not considered to be individually significant.

C. Operational Impacts

Project operation will not result in impacts to the soil from erosion or compaction. Routine vehicle traffic during project operation will be limited to existing roads, most of which are paved, and standard operational activities will not involve the disruption of soil. When linear facilities need to be inspected or maintained, vehicle traffic near cultivated areas will be minimized and slow. Impacts to soil from project operations will be less than significant.

There is a concern in some areas that emissions from the generating facility, principally NO_x from the combustion products and from drift from the cooling towers, will have an adverse effect on soil-vegetation systems in the project vicinity. This is principally a concern where environments that are highly sensitive to nutrients or salts, such as serpentine habitats, are downwind of the project.

In this case, the dominant land use downwind of the project is agriculture. The addition of small amounts of nitrogen to agricultural areas will be insignificant within the context of fertilizers, herbicides, and pesticides typically used.

D. Cumulative Effects

The project will result in approximately 40 acres of agricultural land onsite being converted to industrial uses. While not individually significant, the project, when considered in conjunction with regional housing and industrial development, will contribute to the cumulative losses of agricultural soil resources in the region. Agricultural soil uses remain prevalent in eastern Alameda and western San Joaquin County and the conversion of approximately 40 acres is considered to be less than significant.

E. Mitigation Measures

Construction and operation of this project will result in conversion of approximately 40 acres designated as prime farmland. The impact of this project on the regional availability of agricultural land will not be significant and requires no mitigation.

Storm Water /Erosion control measures will be required during construction to help maintain water quality, protect property from erosion damage, and prevent accelerated soil erosion or dust generation that destroys soil productivity and soil capacity. Temporary erosion control measures may be installed before construction begins and will be removed from the site after the completion of construction. These measures will be included in a Storm Water Pollution Prevention Plan/Erosion Control Plan that is required by the Central Valley RWQCB for construction activities disturbing more than 5 acres of land. The Applicant will prepare the required plan to meet the requirements of the RWQCB and the Commission.

Landowners will be notified of activities adjacent to their properties. Vehicles will be driven only on areas designed to support them and with the express permission of the landowners. Vehicle traffic will be minimized to avoid undue soil compaction. Vehicle speeds will be kept low enough to avoid significant dust generation. Significant offsite migration of sediment will be prevented by measures described in the following sections.

Temporary Erosion Control Measures

Temporary erosion control measures will be implemented before and during construction. These measures typically include revegetation, slope stabilizers, dust suppression berms, ditches, and sediment barriers. Vegetation is the most efficient form of erosion control because it keeps the soil in place and maintains the landscape. Vegetation reduces erosion by absorbing raindrop impact energy and holding soil in place with fibrous roots. It also reduces runoff volume by increasing infiltration into the soil. Disturbed areas will be revegetated with rapidly growing groundcover as soon as possible after construction and vehicle traffic will be kept out of revegetated areas. If required, revegetation of the area disturbed by construction of the linear facilities will be accomplished using locally prevalent plant species. When lines are installed beneath existing road or railroad rights-of-way, revegetation may not be consistent with the vegetation management goals of the right-of-way, and will not be implemented.

During construction of the project and the related linear facilities, dust erosion control measures will be implemented to minimize the wind-blown erosion of soil from the site.

SOIL RESOURCES

Water of a quality equal to or better than either existing surface runoff or irrigation water will be sprayed on the soil in construction areas to control dust and during revegetation.

Sediment barriers, such as straw bales or silt fences, slow runoff and trap sediment. Sediment barriers are generally placed below disturbed areas, at the base of exposed slopes, and along streets and property lines below the disturbed area. Sediment barriers are often placed around sensitive areas, such as wetlands, creeks, or storm drains, to prevent contamination by sediment-laden water. However, they should be placed up-slope when slope lengths are long enough to cause overloading of measures at the foot of the slope. Because the site is nearly level, it is not considered necessary to place barriers around the property boundary, but some barriers will be placed in locations where offsite drainage could occur to prevent sediment from leaving the site. Barriers and other sedimentation control measures will be used to prevent runoff into the irrigation ditch east of the site. If used, straw bales will be properly installed (staked and keyed), then removed or used as mulch after construction. Runoff retention basins, drainage diversions, and other large-scale sediment traps are not necessary because of the level topography and surrounding paved areas. Any soil stockpiles will be stabilized and covered if left onsite for long periods of time. These methods can be employed for construction of the waterline and most of the natural gas pipeline.

Permanent Erosion Control Measures

Permanent erosion control measures include drainage and infiltration systems, slope stabilization, and long-term revegetation. Revegetation will follow from planting for short-term erosion control because seed mixes will contain annuals that establish ground cover quickly, perennials will be planted, and annuals will be reseeded for long-term vegetation. Significant landscaping to the north and south of the plant and along the access road is planned.

DECLARATION FROM STEVE LONG

TRAFFIC AND TRANSPORTATION

I. INTRODUCTION

A. Name: Jeanie Acutanza and Jerry Salamy

B. Purpose: This testimony addresses the Traffic and Transportation issues and potential impacts associated with the proposed project.

C. Qualifications : Jeanie Acutanza has over 20 years experience in Traffic and Transportation Planning and Engineering issues. She has conducted traffic and transportation investigations for power plants and electrical energy transmission projects. Her resume is included in Appendix A.

Jerry Salamy has over 16 years of experience preparing environmental documentation for power plants and over 10 years preparing Applications for Certification. His resume is included in Appendix A.

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.10 of the AFC
- Data Adequacy Responses Set 1, Filed May 1, 2001
- Data Requests and Responses Set #2, Numbers 103-105 and 111, Filed August 17, 2001
- Supplement A, Filed on May 3, 2001
- Supplement B, Filed on October 9, 2001
- Comments on the Preliminary Staff Assessment, Filed January 14, 2002
- Supplement C, Filed on February 6, 2002

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that Conditions of Certification be adopted to address Transportation issues. These conditions: TRANS-1 through TRANS-10 are described on pages 5.9-17 through 5.9-19 of the Final Staff Assessment. We have reviewed the Conditions of Certification set forth in the FSA and find them acceptable with minor modifications. We suggest minor modifications to Conditions

TRANS-5 and TRANS-9 and the deletion of TRANS-6 because TRANS-6 has already been satisfied. Proposed language modifications are located at the end of this testimony.

The stated objective of TRANS-5 is to “confirm that construction trip generation rates identified in the AFC and used to determine less than significant impacts to County of Alameda and County of San Joaquin streets are not being exceeded.” Given this objective, the Applicant does not understand how the following activities will accomplish this objective.

1. Monitoring and compliance with speed limits on Mountain House Road, particularly in the vicinity of the Mountain House School.
2. The monitoring of turning movements at the intersections of Byron-Bethany Road/Mountain House Road, and Byron-Bethany Road/Kelso Road.

The Applicant has no traffic enforcement ability, nor can the Applicant identify if a vehicle speeding near the Mountain House School belongs to an East Altamont Energy Center construction employee (due to the fact that you would not be able to see the project’s access road from the Mountain House School). Enforcement of state and local vehicle traffic laws is the responsibility of the California Highway Patrol, and the Alameda County Sheriff’s department, not the Applicant. Therefore, the Applicant requests that this requirement (1 above) be deleted from TRANS-5.

The Applicant agrees that the monitoring of turning movements will meet the CEC’s stated objective. However, the Applicant disagrees on the locations for the turning movement study. Studying turning movements at the intersections of Mountain House Road/Byron-Bethany Road and Byron-Bethany Road/Kelso Road will not provide data that can be used to verify trip generation estimates provided in the AFC. This is due to the fact that not all vehicles using these intersections will be traveling to the East Altamont Energy Center project site. The Applicant is amenable to monitoring turning movements at the project access road off Mountain House Road, to verify the trip generation estimates used in determining the East Altamont Energy Center’s construction traffic impacts and requests this requirement be revised accordingly.

Condition TRANS-9 requires that fog warning signs be installed for motorists traveling along Byron-Bethany Road, near the project site. This condition addresses the concerns of Alameda County. Alameda County in its letter to the CEC and referenced in the FSA, States in part: “We are concerned with construction traffic slowing to enter the site on these roadways where predominant speed of travel is very fast. This is especially of concern during times when there is ‘valley fog,’ and trucks or other slow moving vehicles will be exiting or entering the site from a narrow and unlit County Roadway.” However, the Staff has concerns about foggy conditions during operation attributed to ground level plume fogging and tule fog, therefore, staff wants the fog warning signs installed permanently.

The Applicant has concerns with the permanent installation of fog warning signs. Table 1 in the Traffic and Transportation Appendix A—Cooling Tower Plume Ground Level Fogging Analysis (FSA page 5.9-22) provides the number of hours the Staff believes the plumes

would occur at various lengths. The hours and plume lengths were given for a three year period, over three different operating scenarios: 1) All hours with duct firing; 2) Daytime hours with duct firing; and 3) Seasonal hours with duct firing. The Applicant has technical concerns regarding the Staff's modeling for ground level plume fogging and do not believe that the minimal number of hours the Staff predicts the plume would reach Byron-Bethany Road warrants permanent fog warning signs. For example, when looking at the worst case scenario identified in the Staff's Table 1 (All hours with duct firing), ground level plume fogging at distances reaching Byron-Bethany Road (400 meter and farther, based upon the measurement of the northeastern-most corner of the cooling tower to Byron Bethany Road) would be visible less than 0.5 percent of the hours during the three year period evaluated by the Staff. When looking at a more likely scenario (Daytime hours with duct firing) Staff predicts ground level plume fogging would be present less than 0.1 percent of the time during the three year period evaluated.

The Staff's modeling does not indicate the opacity of the plume at these distances, nor does it consider the coincidental occurrence of tule fog during these time periods. Therefore, the Applicant believes that the fog warning signs should be limited to construction traffic as suggested by the County.

With regard to Conditions of Certification, TRANS-6, the Applicant has already submitted a copy of the Federal Aviation Administration (FAA) response to the Form 7460-1 request to the CEC as the response to Data Request #111 in Data Request Response Set 2 (Docket Log #21868). Therefore, this Condition has already been complied with. Furthermore, Land Use Condition LAND-5 requires the Applicant to submit evidence that FAA Form 7460-2 has been submitted and that marking of the heat recovery steam generator exhaust stacks have been marked in accordance with FAA regulations and requirements. Therefore Applicant requests the deletion of TRANS-6.

III. SUMMARY

- A. Affected Environment:** The East Altamont Energy Center project site is located in the far eastern corner of Alameda County, approximately 8 miles northwest of the City of Tracy, 12 miles east of Livermore, 5 miles south of Byron, and less than 1 mile from the San Joaquin and Contra Costa County borders and the Mountain House Community Services District, a new town just starting Phase 1 of construction. The roads nearest to the project site include Byron Bethany Road to the north and east, Kelso Road to the south, and Mountain House Road to the west. Additional roads that connect these three roads with the regional system include Grant Line Road, I-580, I-205, and State Route 4.

Access to the East Altamont Energy Center site will be from along the following routes:

- From Eastern Contra Costa County—via Byron Bethany Road with turns at the Byron Bethany Road-Mountain House Road intersection.
- From Tracy and Central Valley Area—via Byron Bethany Road with turns at Kelso Road or Mountain House Road.

- From San Francisco Bay Area—via I-580/I-205 using the Grant Line Road interchange and passing through the Grant Line Road/Mountain House Road intersection and the Mountain House Road/Kelso Road intersection.

B. Construction Impacts: Most of the East Altamont Energy Center site will be paved to provide internal access to all project facilities and on-site buildings. Locked/electric gates will control access into the facilities. Vehicular traffic into and out of the site will be limited as much as practical to daylight hours. There will be adequate internal circulation and parking.

Construction of the proposed facility will take approximately 24 months. It is anticipated that the onsite construction workforce required to build the project will be drawn from the local labor pool. At the peak of construction, a total workforce of approximately 400 workers per day will commute to the site. It is assumed that no more than 200 of these vehicles will approach from any one direction during the peak hour, consistent with current traffic patterns.

Increased construction traffic will consist of truck deliveries of plant equipment and construction materials such as concrete and steel. In total, approximately 4,451 truck deliveries are expected over the 24 month period, with an average of about 10 deliveries per weekday. An average of 26 trucks per weekday are expected during the months with the highest truck traffic, resulting in an additional 52 daily trips. Forty daily deliveries are assumed during the peak construction period.

There are certain pieces of heavy equipment that due to their weight must be transported to the site by rail. The equipment and total weight of the components to be transported include the main components of the CTG (330,000 lb), HRSG (320,000 lb), STG (300,000 lb), main transformers (375,000 lb.), and auxiliary boiler (250,000 lb.). These components may be shipped by rail to the site, or to Tracy, and delivered by heavy truck.

Significant effects on the local transportation system are not expected from construction activities of the project. The Alameda County East County Area Plan states that the minimum desirable Level of Service (LOS) is D during peak commute times. However, LOS E may be acceptable under certain conditions. For the roads affected by the East Altamont Energy Center project, the construction traffic associated with the project will still enable the roads to operate above LOS D. The exception is Byron Bethany Road which currently operates at LOS E. However, construction traffic associated with the project will not change that LOS. Though the total number of trips generated by employees and other personnel during peak hours will not cause a significant adverse impact, it will cause a short-term increase in the congestion that already exists in the immediate project area.

Construction of the linear facilities will involve several types of construction:

- Road Crossings—This type of construction involves trenching, stringing, welding, radiographic inspection, coating, lowering-in, and backfilling activities that will be completed as a single construction activity; street repair (if necessary); hydrostatic testing; and cleanup.

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- **Horizontal Directional Drilling**—This type of construction involves locating the drill rig, stringing pipe, welding, radiographic inspection, placing pipe on roller, coating, pre-testing pipe, drilling the pilot hole, reaming (hole opening), pulling-back, hydrostatic testing, cleanup, and drilling mud disposal.

Access to the pipeline construction areas will be along existing roads and rights-of-way. Damage to existing roads by construction activity will be repaired to original, or as near to original condition, as possible.

Construction of the proposed linears includes crossings of Byron Bethany Road, Mountain House Road, and Kelso Road. They also include construction along the roadway segments. Because Byron Bethany Road has significant traffic volumes, closures of lanes are not recommended as this would trigger safety and performance concerns. Traffic volumes on Kelso Road and Mountain House Road are low enough to establish single-lane closures and traffic control without flaggers, without degrading performance.

During each road crossing, through access will be provided at all times. Traffic will be either directed along one-half of the roadway (where construction is underway on the adjoining half), or routed across temporary trench bridging. Access for emergency vehicles, such as fire and ambulance services to local land uses, will be maintained during construction.

All road-crossing construction activities will be in accordance with local, state, and federal regulatory requirements and specifications. Adequate barricades and lights will be provided around excavations at crossings in accordance with Caltrans “Manual of Traffic Controls for Construction and Maintenance of Work Zones” and California Vehicle Code Section 21400.

C. Operational Impacts: During operations the project will have up to 40 employees. The impact of this relatively low number of staff on local roadways will be insignificant.

D. Cumulative Impacts: The largest development near the project site is the Mountain House new town in San Joaquin County. No definite time frame for the development of the Mountain House area has been established and the 1985 Master Plan is currently being updated. Due to the substantial infrastructure improvements that are needed prior to development of the area as described in the Master Plan, it is likely that the East Altamont Energy Center would be in operation before much of the area was developed. The small amount of operational traffic related to the East Altamont Energy Center will easily be accommodated by the capacity provided by these proposed infrastructure improvements.

E. Mitigation

Construction: The construction contractor will prepare a construction traffic control plan and implementation program that addresses timing of heavy equipment and building materials deliveries, signage, lighting and traffic control device placement, and the establishment of delivery/work hours outside of peak traffic periods.

Methods for mitigating potential traffic impacts caused by construction will include stationing flag persons at the access road into the site, and advance warning flashes, flag persons, and signage along the roadways associated with the linear facilities. Roadways

damaged during construction of the linear facilities will be repaired to their existing condition.

Operation: The following actions would avoid nuisance problems associated with truck traffic:

- Shippers of hazardous materials, including inhalation hazards, will adhere to all applicable LORS for the transport of hazardous materials.
- Shipment of hazardous materials will occur during business hours, but to the extent possible, during off-peak traffic periods. Acutely hazardous materials transportation routes will be approved by the CHP prior to the first delivery of the material.
- Shippers will maintain mufflers, brakes, and secure all loose items on trucks to minimize noise and ensure safe operation.

Because the total number of trips generated by employees during peak hours is not significant, mitigation is not necessary.

Implementation of Conditions of Certification recommended by staff and as modified by the Applicant, is anticipated to reduce any transportation impacts to a less than significant level as defined by CEQA guidelines and California Code of Regulations Title 14, §15065, and ensure that the project complies with the applicable LORS.

APPLICANT'S PROPOSED MODIFICATIONS TO CONDITIONS TRANS-5, TRANS-6, and TRANS-9

TRANS-5 The project owner shall develop a construction traffic control and transportation demand implementation program that limits construction-period truck and commute traffic to off-peak periods in coordination with the County of Alameda, County of San Joaquin and Caltrans. These studies are to confirm that construction trip generation rates identified in the AFC and used to determine less than significant impacts to County of Alameda and County of San Joaquin streets are not being exceeded. Specifically, this plan shall include the following restrictions on construction traffic:

- a. Establish construction work hours outside of the peak traffic periods to ensure that construction workforce traffic occurs during off-peak hours, except in situations where schedule or construction activities require travel during peak hours, in which case workers will be directed to routes that will not deteriorate the peak hour level of service below the County of San Joaquin's LOS D standard and County of Alameda's LOS E standard;
- b. Schedule heavy vehicle equipment and building material deliveries as well as the offsite movement of materials and equipment from laydown areas to occur during off-peak hours;
- c. ~~Monitoring and compliance with speed limits on Mountain House Road, particularly in the vicinity of the Mountain House school;~~

TRAFFIC AND TRANSPORTATION

- d. The construction traffic control and transportation demand implementation program shall also address the following issues for linear facilities:
 1. Timing of pipeline construction (all pipeline construction affecting local roads shall take place outside the peak traffic periods to avoid traffic flow disruptions);
 2. Signing, lighting, and traffic control device placement;
 3. Temporary travel lane closures;
 4. Maintaining access to adjacent residential and commercial properties; and
 5. Emergency access.

Verification: At least 30 days prior to site mobilization, the project owner shall provide to the County of Alameda, the County of San Joaquin and Caltrans for review and comment, and to the CPM for review and approval, a copy of their construction traffic control plan and transportation demand implementation program. Additionally, every 4 months during construction the project owner shall submit to the CPM turning movement studies for the entrance to the East Altamont Energy Center plant intersection at Byron Bethany Road and Mountain House Road, and Byron Bethany Road and Kelso Road during the A.M. (7:30 to 8:30 a.m.) and P.M. (4:30 to 5:30 p.m.) peak hours.

TRANS-6 ~~The HRSG stacks shall have all the lighting and marking required by the Federal Aviation Authority (FAA) so that the stacks do not create a hazard to air navigation.~~

~~The project owner shall submit to the FAA Form 7460-1 "Notice of Proposed Construction or Alteration" and supporting documents on how the project plans to comply with stack lighting and marking requirements imposed by the FAA.~~

~~**Verification:** At least 30 days prior to the start of construction, the project owner shall provide copies of the FAA Form 7460-1 with copies of the FAA response to Form 7460-1, to the CPM and the Alameda County Public Works Agency Development Services Department~~

TRANS-9 The project owner shall consult with the County of Alameda and submit to the CPM for approval a schedule for the installation of fog warning signs for motorists traveling along Byron -Bethany Road near the project site during construction.

Verification: 30 days prior to start of the construction, the project owner shall provide to the CPM a letter from the County of Alameda stating its satisfaction with the placement and design of the traffic signs warning motorists about the possibility of fog.

**DECLARATION OF
Jeanie Acutanza**

I, Jeanie Acutanza, declare as follows:

- 1. I am presently employed by CH2M HILL as an _____.
- 2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
- 3. I prepared the attached testimony on Traffic and Transportation for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
- 4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
- 5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

**DECLARATION OF
Jerry Salamy**

I, Jerry Salamy, declare as follows:

- 1. I am presently employed by CH2M HILL Corporation as a Senior Project Manager.
- 2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
- 3. I prepared the attached testimony on Traffic and Transportation for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
- 4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
- 5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

TRANSMISSION LINE SAFETY AND NUISANCE

I. INTRODUCTION

A. Name: Alan Roth and Amanali Amirali

B. Purpose: This testimony addresses the issues associated with transmission line safety and nuisance.

C. Qualifications: Alan Roth has 26 years of engineering experience in the power plant and petrochemical industry. Mr. Roth has been with Calpine for 4 years where he has been involved with various power plant engineering, operations, and project permitting functions. His qualifications are summarized more completely in the attached resume (Appendix A).

Amanali Amirali has twelve years of electric utility experience, with a background in system planning and engineering. He has worked for PG&E, the California Independent System Operator (ISO), and Calpine Corporation. He actively participated in ISO efforts to address the resource deficiency issues in California, and served as the ISO's environmental expert on electrical power issues in the State. His qualifications are summarized more completely in the attached resume (Appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 5 of the AFC
- Appendix 5 of the AFC
- Supplement A, Filed on May 3, 2001
- Supplement B, Filed on October 9, 2001
- Supplement C, Filed on February 6, 2002

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are consistent with our own. We make these statements and render these opinions freely and under oath, for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project filed by the CEC recommends that Conditions of Certification be adopted to address Transmission Line Safety and Nuisance issues. These conditions TLSN-1 through TLSN-4, described on page 5.10-12 of the FSA, address applicable federal, state, and local laws, ordinances, regulations, and standards (LORS) and minimize the project's potential impacts associated with Transmission Line

TRANSMISSION LINE SAFETY AND NUISANCE

Safety and Nuisance. We have reviewed the Conditions of Certification set forth in the FSA and find them to be acceptable.

III. SUMMARY

A. Affected Environment: The proposed electrical transmission interconnection will connect the East Altamont Energy Center to the regional power grid by looping the two circuits of the existing Tracy- Westley 230-kV line jointly owned by the Modesto Irrigation District and the Turlock Irrigation District into a new East Altamont Energy Center switchyard. Two new 0.5 mile transmission lines carrying two 230 kV circuits each will be built from the East Altamont Energy Center switchyard to the interconnection point. The transmission line construction and operation will comply with applicable Laws, Ordinances, Regulations, and Standards (LORS). Compliance with these LORS ensures that the transmission line will be designed and constructed in a manner that provides safe facilities for the surrounding community and operating personnel.

The design of the transmission line is such that maximum calculated electric and magnetic field levels are considerably less than limits established by states that have regulatory limits. The CPUC's transmission line EMF guidelines will apply to these lines.

B. Construction Impacts: There are no unique construction issues associated with the East Altamont Energy Center.

C. Operational Impacts: There are no unique operational issues associated with the East Altamont Energy Center.

D. Mitigation: Any potential impacts will be mitigated through project design, implementation of the Conditions of Certification contained in the FSA, and compliance with the applicable federal, state, and local laws, ordinances, regulations, and standards.

**DECLARATION OF
Alan Roth**

I, Alan Roth, declare as follows:

1. I am presently employed by Calpine Corporation as an Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Transmission Line Safety and Nuisance for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

**DECLARATION OF
Ali Amirali**

I, Ali Amirali, declare as follows:

1. I am presently employed by Calpine Corporation as a _____
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Transmission Line Safety and Nuisance for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

VISUAL RESOURCES

I. INTRODUCTION

- A. Name:** Thomas Priestley, Ph.D., and AICP/ASLA
- B. Purpose:** This testimony addresses the visual resources issues associated with the East Altamont Energy Center.
- C. Qualifications:** Thomas Priestly is an urban and environmental planner with over 20 years of experience, much of it devoted to both research and applied work related to evaluation of the land use, aesthetic, property value, and public perception issues associated with electric facilities. He holds a Ph.D. degree in Environmental Planning, and is the author of several special studies on the perception of transmission lines and numerous assessments of the visual resources effects of infrastructure development projects. His qualifications are summarized more completely in the attached resume (Appendix A).
- D. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Section 8.11 of the AFC
 - Data Requests and Responses, Set 1, Filed July 29, 2001
 - Data Requests and Responses, Set 1A, Filed October 5, 2001
 - Data Requests and Responses, Set 2, Filed August 17, 2001
 - Data Requests and Responses, Set 2G, Filed October 12, 2001
 - Data Requests and Responses, Set 2H, Filed October 31, 2001
 - Informal Visual and Plume Data Response, Filed March 29, 2002
 - Response to Workshop Comments, Filed April 3, 2002
 - Revised Visible Plume Analysis, Filed May 5, 2002
 - Staff Response to Applicant's First Set of Data Requests, Filed September 25, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

Because the East Altamont Energy Center will not create significant adverse visual impacts, there is no basis for requiring additional “mitigation”. However, the Applicant is willing to accept Conditions of Certification VIS-1, VIS-2, VIS-4, VIS-6, and VIS-7. In addition, the Applicant can comply with Conditions VIS-3 and VIS-5 with the modifications described below.

In Condition of Certification VIS-3, the references to evergreen trees should be removed. Given the severe constraints on plant selection because of the need to reduce the potential for raptor perching, it is not feasible to restrict the tree selection to evergreen species. A planting plan has been proposed that includes a combination of deciduous and evergreen trees as part of a strategy to achieve the maximum feasible level of screening in the shortest period of time. This is the planting scheme visible in the simulations docketed on April 3, 2002. If the word “evergreen” is not deleted from this Condition, it will not be possible to implement the plan that has been proposed, and an all-evergreen scheme would not be as visually interesting, would not provide as high a level of overall screening and would result in greater environmental impacts.

The reference to screening being “...capable of reaching a height of 50 feet at maturity” should also be deleted from this Condition. In the landscape plan that has been proposed as a part of the project, and which is illustrated in the simulations filed on April 3, 2002, trees that will reach an ultimate height of 50 feet or more have been proposed on 2 entire sides of the project site. On the southern edge of the site, most of the trees will be 50 feet or taller at maturity, but in a short segment of the perimeter under the transmission lines that connect to the project switchyard, shorter trees have been intentionally specified to respect mandatory safety clearances under the conductors. Along the site’s western edge, where the perimeter trees will be in close proximity to viewers, taller trees are not required to provide screening, so shorter trees have been specified because trees of shorter height are less attractive to raptors, and because use of shorter trees in this area opened up more options for the specification of tree species that are native and have positive habitat value.

In Condition of Certification VIS-5, the language that specifies that lighting be installed such that “light bulbs and reflectors are not visible from public viewing areas” is problematic. Experience on prior projects has demonstrated that when enforced in a literal way, compliance with this provision is burdensome, if not virtually impossible to meet, and that it does not necessarily make substantial difference in a project’s overall night lighting impacts. To address this issue, we request that the first sentence of Condition of Certification VIS-5 be revised to read: “To the extent that is reasonably feasible and consistent with safety considerations, the project owner shall design and install all permanent lighting such that light bulbs and reflectors are not visible from sensitive public viewing areas; lighting does not does not cause reflected glare; and illumination of the project, the vicinity, and the nighttime sky is minimized.”

III. SUMMARY

A. Affected Environment.

1. *Description of the Visual Setting*

The East Altamont Energy Center project site is located in the northeastern corner of Alameda County in an area within the San Joaquin Valley landscape zone and on the edge of the Sacramento-San Joaquin Delta. The site is a 43.5-acre area of flat valley land that is the middle section of a 174-acre agricultural parcel that extends along the east side of Mountain House Road from Kelso Road to Byron Bethany Road. At present, the project site is open, and is used for field and row crops and for occasional grazing. There are no structures on the project site, and except for seasonal crops, there is no vegetation.

The USBR Central Valley Project's Delta-Mendota Canal passes within 1,000 feet of the project site. The portion of the canal that lies west of Byron Bethany Road is lined by high levees, and the steep slopes of the canal's levee can be seen on the west side of Mountain House Road, directly opposite the project site.

The Delta-Mendota Canal flows to the USBR CVP Tracy Pumping Plant, which is located less than one-half mile to the southwest of the project site, in the area just west of the intersection of Mountain House and Kelso Roads. Here, large pumps raise the water 200 feet into a higher elevation continuation of the Delta-Mendota Canal that begins in the area south of Kelso Road.

The Western Area Power Administration's Tracy Substation is located at the northwest corner of Kelso and Mountain House Roads, adjacent to the Tracy Pumping Plant and less than 800 feet southeast of the East Altamont Energy Center site. The substation includes an older 230-kV facility located along Kelso Road and a newer 500-kV switchyard that borders Mountain House Road in the area immediately southwest of the project site. The older portion of the substation is surrounded by a border of casuarina trees that provide partial screening of the substation equipment. The newer, 500-kV portion of the substation however, is not screened, and its dense collection of equipment, particularly the tall bus structures, is prominently visible in views from Mountain House Road, Kelso Road, Byron Bethany Road, and from more distant points to the east.

A number of large transmission lines converge on the Tracy Substation. One of these lines is a MID/TID 230-kV line carried on tall steel poles that runs along the southern edge of Kelso Road in the vicinity of the project. The large agricultural parcel located north of the project site is crossed by three parallel transmission lines comprising two 230-kV lines and one 500-kV line that are carried on large lattice steel towers. A cluster of three towers, which range from 100 to 120 feet in height, is located in the area just to the north of the site's northwest corner.

VISUAL RESOURCES

The flat, open project site has no permanent vegetation and has no features that could be considered to be a scenic resource. Because the landscape in the project area has been highly altered to accommodate large scale, irrigated and mechanized agriculture and because of the unusually high concentration of major electric and water infrastructure facilities in the area close to the site, the project area landscape can be characterized as one that is a mix of the agricultural and technological in which large structures associated with the infrastructure facilities are visually prominent elements of the overall landscape composition. Applying the Buhyoff visual quality rating scale, the visual quality of the landscape of the project site and its immediate vicinity can be classified as moderately low.

The landscape character of the project site and its immediate surroundings is consistent with the character of the larger landscape region of which they are a part. This larger region has a visual character that is dominated by an unusually high concentration of water and energy facilities of state and regional importance. In addition to those facilities in the immediate vicinity of the project site that have already been described, these facilities include:

- DWR's Clifton Court Forebay, located 1.3 miles north of the project site, a shallow, 2,180-acre reservoir surrounded by a 14-foot-high dam.
- DWR's Skinner fish screening facility, located approximately 1.9 miles north of the project site and prominently visible from Byron Bethany Road
- A 138-foot-wide, 2-mile-long segment of the DWR California Aqueduct between the Skinner Facility and the Banks Pumping Plant
- The DWR Banks Pumping Plant, located at the base of the hills, 2.4 miles to the west of the project site, where massive pumps raise 6.7 billion gallons of water per day up 244 feet to a canal that transports it 1.2 miles to Bethany Reservoir.
- The DWR Bethany Reservoir, an 180-acre impoundment located in the lower hills, approximately 2 miles southwest of the project site.
- PG&E's gas compressor station located, 1.3 miles to the southwest of the project site, which has structures with light, reflective colors that contrast with the landscape backdrop, making them visually prominent landscape elements.
- Large assemblages of wind turbines located in the hill areas to the west and south of the project site that are a part of the state-designated Altamont Pass Wind Resource Area where there are approximately 5,000 wind turbines. The wind turbines closest to the site are located approximately 1.5 miles to the southwest. From the areas around the project site, fields of wind turbines are visible elements on the hills in the middleground and background of views to the west and southwest.

In the area surrounding the project site, the numbers of sensitive viewers are relatively low. Because there are no occupied residences located within .05 mile of the proposed power plant's structures, the proposed power plant's location is not visible within the foreground zone of any residential view. The residences closest to the project site are individual farm dwellings, which, in most cases are surrounded by outbuildings and trees. The largest

concentration of residences in the project vicinity consists of the cluster of approximately 30 small homes located approximately 0.75 mile northeast of the project site, in an area known as the Livermore Yacht Club. These homes are located along a small slough, are oriented to the water, and have no views toward the project site because of the levees that surround this area.

Mountain House School, a public elementary school serving approximately 60 students, is located along Mountain House Road, approximately 1 mile south of the project site. Because of vegetation and structures in the area to the immediate north of the school, the power plant site is not visible from the school property, although it is visible from Mountain House Road in front of the school, where it can be seen in the view's middleground.

The recreational facility closest to the project site is the Rivers End Marina, located adjacent to the Livermore Yacht Club and .75 mile northeast of the project site. Because the use at marina centers around the slough, which is at the eastern edge of the facility, rather than toward the west where the project site is located, the project site and the set of major electrical facilities located in its immediate vicinity are not a sensitive part of the marina's overall visual setting. The other recreational activity areas in the vicinity, including the portions of the shoreline of the Clifton Court Forebay and the California Aqueduct used for bank fishing and waterfowl hunting; a marina located adjacent to Clifton Court Forebay; and the Bethany Reservoir, where boating and fishing take place are all located two miles or more from the project site. Because of the distance of these areas from the project site (2 miles or more) and because of the presence of a considerable concentration of large energy and water infrastructure in the intervening landscape, the views from these areas toward the project site are not visually sensitive.

2. *Description of the Project*

The East Altamont Energy Center will be a 1,100 MW natural-gas fired, combined cycle electric generation facility consisting of three combustion turbines, three heat recovery steam generation units (HRSGs), three HRSG stacks, one condensing steam turbine, an auxiliary boiler and stack, a cooling tower, two brine concentrators, two brine crystallizers, several tanks, two ancillary buildings, and a switchyard. The facility's largest structures will be the HRSG stacks, which will be 175 feet tall; the HRSGs, which will be 60 feet wide, 150 feet long, 78 feet to the platform on top, and 108 feet to the tops of the relief valves and vent silencers mounted above the HRSG platforms; the auxiliary boiler stack, which will be 120 feet tall, the brine crystallizers, which will be 100 feet high, the brine concentrators, which will be 90 feet high; and the cooling tower, which will be 57 feet wide, 1,030 feet long, 43 feet to the top of the deck, and 57 feet to the top of the cones. The switchyard will have a horizontal, low profile design; the switchyard bus structures will be 32 feet high, and the three takeoff structures will be 56 feet high.

The East Altamont Energy Center switchyard will be connected to the Tracy Substation by the addition of new 0.5-mile-long, 230-kV double-circuit transmission lines on parallel tower structures that will follow an alignment that passes across the open agricultural field to the south of the project site, and at Kelso Road, will connect with the existing MID/TID 230-kV

line that runs parallel to the road, at the edge of the flat, open agricultural parcel located on the road's south side.

The components of the facility are arranged on the site in a neat and orderly manner. A setback area of over 50 feet is planned for the area between the edge of Mountain House Road and the closest project structures to provide a spatial separation between the road and the project and to provide ample space for installation of landscaping. The tallest project structures are set back as far from Mountain House Road as is feasible, and the water tanks, administration building, and other smaller structures are located along the western edge of the site to create a transition in scale between the corridor along Mountain House Road and the power plant's taller features. A palette of neutral gray tones will be used for project structures to create a pleasing composition and to reduce the facility's contrast with its landscape and sky backdrops. Project lighting will be the minimal required for safety, security, and operations, and will be shielded and directed to reduce light scatter and glare.

The project as proposed includes extensive landscaping that will create an attractive composition, to visually integrate the project into its overall landscape setting and, to screen project structures to the extent feasible in views from nearby areas. The landscape plan included as a part of the Application for Certification entailed planting of informal groupings of acacia and eucalyptus trees around the perimeter of the 55-acre site that the project, with its evaporation ponds, was initially expected to occupy. After reviewing the AFC, representatives of the CEC Staff (Biology), California Department of Fish and Game (CDFG), and U.S. Fish and Wildlife Service (USFWS) expressed concerns regarding potential conflicts between wildlife habitat issues and the proposed landscape concept. They were primarily concerned that the trees specified in the landscape plan could potentially provide perching opportunities for golden eagles, which prey on the San Joaquin kit fox, a protected species. In response to feedback presented by these representatives at a meeting on September 12, 2001, the landscape plan was revised to reduce the project landscaping's potential to attract raptors, and this plan was submitted to the CEC Staff, CDFG, and USFWS on November 9, 2001. The revised plan was reviewed at a workshop on January 23, 2002. Following the workshop, the revised plan was further modified to respond to the suggestions CEC Visual Resources Staff made at that workshop and a new landscape plan and simulations were docketed on April 3, 2002.

The landscape plan submitted on April 3, 2002 provides the maximum level of screening that can be achieved from vegetation which does not result in a significant adverse impact to wildlife. This landscape plan also increases the numbers of native plants used in the composition. To maximize screenings, the landscape plan provides for the trees to be planted as closely together as feasible to ensure both rapid creation of a dense screen and an optimal rate of tree growth. Along the project's eastern edge and much of its northern and southern sides, a staggered double row of lombardy poplars (*Populus nigra* "Italica") is proposed. The lombardy poplars are the fastest growing and tallest trees available that are appropriate for this area and that meet the criterion of resistance to roosting by raptors. Because lombardy poplars are deciduous, plantings of evergreen river she oaks (*Casuarina cunninghamina*) are provided in front of the poplar rows to provide winter screening. Besides providing winter screening, the informal groupings of river she oaks also provide a visual counterpoint to the regular rows of lighter colored lombardy poplars that form their backdrop. Along the western

portions of the project's northern and southern perimeters, and along the project's western edge where the need for tall screening is not as critical, small and medium height evergreen trees have been specified in the plan.

The appearance of the project with the revised landscape plan is represented by a set of visual simulations presented as Figures March 02-1a through March 02-4d in the April 3, 2002 filing. These simulations represent views of the project from KOPs 1, 2, and 5, views that were selected to address specific concerns about the level of project screening expressed by CEC Staff at the January 23 workshop. Review of conceptual landscape plan, the accompanying information on tree growth rates, and the visual simulations make it clear that the Project's currently proposed landscape plan creates an attractive landscape composition that relates well to the setting and that will, in a reasonably short period of time, screen most of the project's lower elements from view.

We are concerned that Staff's analysis does not take the proposed project landscaping into sufficient account, and that to the extent that the project landscaping has been considered, reference is made to the wrong set of landscape simulations. For reasons which the Final Staff Assessment does not explain, the simulations presented in the FSA reflect the original landscape plan rather than the current landscape plan filed with the Commission on April 3, 2002.¹ We are particularly concerned that Staff may have used the wrong set of simulations in making its analysis because in our view, the current landscape plan is in many ways different from and is aesthetically superior to the plan originally proposed.

Review of the simulated views of the project with the current landscape scheme indicates that the current plan provides a substantial level of screening, particularly under summer conditions. Although the trees do not appear to be quite as tall in some views as those proposed under the original landscape plan, overall, they provide a higher degree of screening under summer conditions because of the density of the screens they create. Within 10 years, in all three of the simulated views, the cooling tower will be substantially hidden, as well as the lower half of the HRSG structures.

We note that in evaluating the visual implications of the landscape plan, it is not sufficient to look only at the degree of screening provided, but that it is also important to consider the resulting composition's intrinsic attractiveness, its relationship to its landscape setting and its role in modulating the project's overall appearance. To this end, the revised plan creates an attractive landscape composition. The extensive use of the lombardy poplars creates a high degree of visual unity in the composition. The presence of the informal groupings of the darker colored evergreen river she oaks in front of the regular rows of lombardy poplars creates a sense of depth and visual interest. The horizontal lines created by the dense, regular, and very long rows of lombardy poplars create a strong horizontal feature that mirrors the horizontal lines that prevail in the surrounding flat landscape. This phenomenon is particularly apparent in views from KOP 5. The regularity of the visually salient tree rows

¹ Because the Visual Resources Analysis in the FSA consistently references visual simulations of the original landscape plan, it is not clear whether the FSA's conclusions regarding the visual impacts are in reference to the original plan or the revised plan.

created appears to be consistent not only with the character of the power plant structures but also with those of the existing infrastructure facilities in the view. In a relatively short period of time, the proposed landscaping will screen out most of the project's smaller and more visually complex features that in the "start of operation" simulations can be seen in the area closest to the ground plane. As a result of this screening, and by the strong simple lines it creates, the landscaping will integrate the elements of the project that remain visible into a more visually coherent and pleasing whole.

B. The Project Complies With All Applicable LORS

The Alameda County Planning Department has determined that the project is consistent with all applicable LORS. The County's assessment of its policies and the Project's relationship to them have been included in FSA Table 4 (FSA, p. 5.12-29 through 5.12-37). The Commission Staff defers to this determination (FSA p. 1-11). Therefore, the County, the Staff and the Applicant all concur that the Commission should find that the project is in compliance with all laws, regulations, standards and ordinances that apply to visual resources.

C. The Project Will Not Result in a Significant Adverse Visual Impact

Appendix G of the State CEQA Guidelines define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by the project, including objects of historic or aesthetic significance" (14 CCR, § 15382.) The Aesthetics section of Appendix G of the Guidelines lists four questions lead agencies need to address in determining whether a project's visual effects are significant. These questions and our assessment of the significance of the project's effects in light of them are presented below:

1. Would the project have a substantial adverse effect on a scenic vista?

The Applicant concurs with Staff's conclusion that the project's structures and plumes will not result in significant visual impacts under this criterion. The closest viewpoints from which scenic vistas are available are 8 and 20 miles away, and at these distances, the views will be little affected by the project's presence

2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The Applicant concurs with Staff's conclusion that the project's structures and plumes will not result in significant visual impacts under this criterion. There are no state-designated scenic highways in the project vicinity, and no project elements are located "within" the right of way of such a highway.

3. *Would the project substantially degrade the existing visual character or quality of the site and its surroundings?*

The Applicant concurs with Staff's conclusion that the plumes associated with the operation of the Project's gas turbines, HRSGs and cooling tower will not create significant impacts on visual resources. However, the Applicant continues to have technical concerns regarding the modeling techniques and significance criteria used by the Staff in estimating the frequency and dimensions of visible water vapor plumes from the gas turbines/HRSGs, and cooling towers. The East Altamont Energy Center understands that Staff has made revisions to their modeling techniques intended, at least in part, to address some of these concerns; however The East Altamont Energy Center has not yet had the opportunity to review these revised techniques in detail. Given that the Staff's conclusions regarding the significance of the visible water vapor plume impacts are now consistent with those of the East Altamont Energy Center, Applicant does not believe it necessary to pursue these differences further.

The Applicant strongly disagrees with Staff's conclusion that the project structures will substantially degrade the existing visual character or quality of the site and its surroundings (FSA 5.12-26). The overwhelming evidence is that the project will not substantially degrade the character and quality of the site and its surroundings because although the project will be large and visible:

- it will have a neat and orderly layout and appearance,
- its surfaces will have colors and finishes that minimize reflectivity and maximize the structures' visual absorption into the setting,
- it will be surrounded by multiple rows of dense landscaping designed to integrate the project facilities into their overall setting and to be visually attractive in its own right.,
- it will not substantially alter the existing character of its setting, which is a highly altered landscape of large scale agriculture and infrastructure in which there is already an unusually high concentration of major water and electric facilities, including the 500 kV Tracy Substation, which is located across Mountain House Road from the project site.
- It will not substantially decrease the existing level of visual quality of the setting which is now moderately low.

Staff's conclusion is wrong for many reasons. It mischaracterizes the setting, ignores the setting's existing visual character and quality, ignores the mitigation proposed as a part of the project, and is based on a seriously flawed methodology.

The FSA states that: "...the proposed project would introduce prominent structures of industrial character into the foreground to middleground of views from nearby residences and roadways. The resulting visual change would range from low-to moderate to high depending on viewpoint location." and goes on to say that the "high level of visual degradation" would be experienced by "viewers on adjacent roads and at nearby residences."

This analysis in the FSA contains many false statements and factual mischaracterizations:

On page 5.12-19, Staff defines the foreground distance zone as the area 0 to ½ mile from the viewer. Based on this definition, Staff's suggestion that the project's structures would be visible in foreground views from residences is false because no occupied residences are located within a ½ mile radius of the major equipment on the power plant site.

The statement that structures will be in the foreground views from nearby roadways seriously mischaracterizes the setting. The segments of roadway from which the project would appear in the foreground zone are extremely limited - a 0.7 mile segment of Mountain House Road and a 0.4 mile segment of Byron-Bethany Road lie within the Project's near-foreground (1/4) mile distance zone and segments of Mountain House Road totaling 0.45 mile and segments of Byron-Bethany road totaling 0.65 lie within the far foreground (1/4 to ½ mile) zone. From most of these segments along Byron-Bethany Road, the project will not be visible within the primary cone of vision of vehicle drivers. In views from the segments of Mountain House Road lying within the foreground zone, the project landscaping will play a major role in the view, and from the area of Mountain House Road adjacent to the project, the project's structures will be substantially screened by the project landscaping, which will be located just to the east of the roadway, in the immediate foreground of the view. Therefore, structures will not be a prominent element in the foreground views from roadways. Considering the landscaping, the cone of vision of the motorists and the speeds at which the vehicles will be traveling, motorists will have, at most, a brief foreground glimpse of the project as vehicles pass the project.

The East Altamont Energy Center will be seen as a middleground feature in views from residences and most nearby roadway segments. However, the FSA is wrong when it characterizes the projects effects on these views as resulting in "a high level of visual degradation. Staff states that the visual changes resulting from the project would "range from low-to moderate to high depending on viewpoint location. " By Staff's own logic, if all residential views and most roadway views are from locations in the middleground rather than the foreground viewing zone, it can be presumed that the project's effects on these views would be low to moderate rather than high. Staff has not provided an explanation of or evidence to support how a low to moderate effect on a project area view, which in staff's own analysis has been rated low to moderate in visual quality "...would substantially degrade the existing visual character or quality of the site and its surroundings." (FSA 5.12-26).

As discussed in detail below, the elaborate analysis of Project visual effects that Staff presents in the FSA fails to provide a clear understanding of whether the project would or would not "substantially degrade" the project site's and area's visual character or quality.

4. *Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?*

The Staff asserts, without any explanation, that "The project has the potential to create a new source of substantial light that would adversely affect nighttime views."

This assertion is wrong. The plant will create a new source of light, but the light will be subject to extensive measures to minimize its impact. As indicated in the AFC, lighting at the East Altamont Energy Center will be restricted to areas where it is required for safety, security, and operation. Exterior lights will be hooded, and lights will be directed onsite so that significant light or glare will not be created. Fixtures of a non-glare type will be specified. For areas where lighting is not required for normal safety or security, switched lighting circuits will be provided, allowing these areas to be unilluminated at most times, minimizing the amount of lighting potentially visible offsite. As the dense vegetation to be planted around the perimeter of the project site begins to fill out and gain height, it will have the effect of screening some of the lighting from view. Because of these measures, which are proposed as a part of the Project design, the plant will not be a substantial source of light nor will it adversely affect nighttime views.

Our nighttime observations, which were documented in Data Request and Response (01-AFC-4) Set # 1 filed with the Commission on July 9, 2001, establish the fact that the existing nighttime condition in the project area is there are a number of large, brightly illuminated infrastructure facilities distributed across the area that create a landscape in which there are large areas of bright illumination, and a level of overall ambient light that is higher than that typically found in rural settings. For example, Figure V is 3-2 included as a part of that Data Response is a night view of the Tracy Substation's 500 kV switchyard as seen from the edge of the project site. It documents that fact that because there is no landscaping or solid fencing around this portion of the substation, the brightly illuminated equipment is fully visible in views from the north and east, and that light from the substation extends into the surrounding landscape. In this context, the highly controlled lighting associated with the Project will not create a substantial change in or adversely effect nighttime views in the area. It is fair to say that from some viewpoints, the presence of the Project has the potential to actually reduce the amount of illumination visible in the nighttime landscape. As the Staff Assessment notes, the Tracy Substation, immediately adjacent to the project, is a substantial existing source of nighttime lighting. In views from a portion of Byron-Bethany Road, the East Altamont Energy Center structures and dense landscaping will block views toward the substation, screening the substation's intensely illuminated equipment from view.

D. The Project Will Not Result in Significant Cumulative Impacts

Staff concludes that the project structures and the project's night lighting would create significant cumulative impacts to visual resources (FSA, p. 5.12-27).

Staff offers two reasons to support this conclusion.

First, Staff alleges that the project structures would cause a greater contribution to cumulative visual impacts than any of the other energy infrastructure features, including the Tracy Substation. However, as describe elsewhere in this testimony, the East Altamont Energy Center structures will be substantially screened by the project landscaping which is carefully composed from a palette of native species. Therefore, it is simply incorrect to state that the landscaped features of the East Altamont Energy Center will cause a greater contribution to visual impacts than the unscreened Tracy substation. In fact, the incremental contribution of

the East Altamont Energy Center to the cumulative visual impacts will be de minimis and thus not significant.

Second, Staff states, without any supporting analysis, that the project would contribute additional lighting impacts to a nighttime landscape that is already substantially impacted by the unshielded lights of the Tracy substation. Under CEQA, the Staff may not merely allege an impact – the Staff has a duty to discuss the severity of the impact. See CEQA Guidelines, section 15130(b). In this instance, the Staff has offered no analysis of the incremental effect of the East Altamont Energy Center lighting to demonstrate that such lighting, when combined with the lighting from the Tracy substation, will result in even a perceptible, much less a significant, change in the nighttime landscape.

In conclusion, the Staff's conclusion that the project will result in a significant cumulative visual impact is incorrect.

E. Staff's Significance Evaluation Procedure and Criteria Should Be Rejected

The FSA analysis of visual resources is based upon an elaborate evaluation process to assess the significance of visual impacts. This process and the criteria it applies are described on pages 5.12-4 through 5.12-6 of the FSA and the results are presented in text form in several places in the Visual Resources Chapter and in tabular form in Appendix VR-1. This analysis process is also applied in the analysis of plume effects.

The visual impact evaluation process applied to this project was developed by a consultant to Staff. In response to an Applicant request for more information about this method, Staff indicated in the cover memo to its response on February 15, 2002, that:

“Our consultant Michael Clayton used the following material in the preparation of the visual resources section of the PSA for the East Altamont Project. It is not part of his PSA section and was meant only for his use. CEC staff first received this material after Calpine requested it at the PSA workshop. CEC staff did not participate in its creation and has not edited it or adopted it. CEC staff is in the process of reviewing our approach to visual resources analysis, in cooperation with our visual resources consultants. We are considering this material as part of that review.”

In response to a recent Applicant data request about the status of the tables of numerical scores and factor interrelationships on which application of the impact assessment procedure entails (Staff Response to Applicant's First Set of Data Requests, filed September 25, 2002), staff indicated that the procedure and supporting materials used in preparation of the FSA visual impact assessment were the same as those used in the PSA analysis, that no changes had been made in the methodology, and that CEC Staff had not reviewed, edited, or adopted any of the material required for its implementation.

Aside from the questionable status of an approach that has not been reviewed or adopted by CEC staff, the visual impact analysis procedure applied in this case is seriously flawed.

There are many problems with the Consultant's approach. A fundamental problem is that it is not well documented, making it difficult to clearly understand what it is that the procedure is

actually determining, how the variables are rated, what the ratings mean, how the ratings are combined, why the variables are combined in the way they are, how the combinations are translated into outcomes, and what it is that those outcomes really mean.

The procedure's outcome variable, "visual impact" is not clearly defined and does not appear to have been developed in a rigorous way that makes it meaningful in relationship to the need of the key CEQA guideline question to determine whether a project will "...substantially degrade the existing visual character or quality of the site and its surroundings". The process determines impact significance by combining a "high", "medium", or "low" rating of "Overall Visual Sensitivity" with a "high", "medium", or "low" rating of "Overall Visual Change". The logic of how the two sets of ratings are combined is not explained, and there is no definition of how the combined levels of sensitivity and visual change are believed to constitute a "significant" visual impact.

A point of particular concern is that the method description does not explain how this determination of significance relates to the CEQA guideline's third question related to whether there has been "substantial degradation" of a visual resource. Curiously, the procedure does not appear to relate the visual change variable with the variable that defines existing visual quality to determine the extent the existing level of visual quality would be changed by the project. In addition, the procedure does not include an assessment of existing visual character and does not assess the extent to which visual character would be altered by the project. Without performing these two operations, the answer to the third question can't really be determined.

In addition to this fundamental failure to properly define the final outcome variable and the specifics of the assumptions and operations by which the outcome determinations are derived, there are serious problems with the definition and treatment of the individual variables which are aggregated to develop the assessments of "visual sensitivity" and "visual change". One example is the variable titled "viewer concern". In justifying the ratings of "viewer concern" it assigns, the analysis makes highly speculative statements about what viewers would expect to see in this landscape setting and how they would perceive project-related changes.² No data of any kind is provided to support these assertions. In the absence

² For example, in the Table presented as Appendix VR-1, Staff asserts in its assessment of viewer concern at KOP 1 that "Motorists on Mountain House Road anticipate a foreground to middleground landscape dominated by energy infrastructure, but with a visible background of distant rolling hills. Any additional blockage of views of surrounding hills would be perceived as an adverse visual change." The FSA does not explain the basis for their statement of motorist's expectations of seeing "distant rolling hills" and of their presumed response to any changes in this view. The hills referred to are visible in the distant to far distant view not only from this portion of Mountain House Road, but from the southbound and westbound lanes of virtually all roads in the surrounding area. Thus, this is a view that, in this area, is not unique. In the area from this portion of Mountain House Road, the distant hills are seen in the context of a concentration of electric transmission towers and the collection of electric equipment at Tracy Substation. There are other roads in the nearby area where these hills can be seen without such a heavy concentration of electric structures in the foreground and it could be argued that although motorists might have some level of concern about changes to views of the hills seen in the context of a relatively open landscape, they might have little or no concern about views from areas like that visible in KOP 1 where large infrastructure facilities already partially block these views. Another factor to note is that the portion of the distant hills which is obstructed by the project landscaping is visible (within the cone of vision) to southbound drivers for a total length of no more than 0.6 miles along this road, and as a consequence, the typical motorist's view would be blocked for less than a minute during the drive down Mountain House Road. Because the view involved is common in the area, it is not a particularly exceptional or pristine example of this view type, and would be blocked for less than a minute for the typical motorist, there would appear to be no basis for concluding that the potential level of viewer concern about alteration of this view would be anything other than "no" or "low" concern.

of supporting data, whether it be findings of academic landscape perception studies carried out in comparable situations or findings of surveys of area residents and travelers, this variable must be deleted.

Another example of problems with the contributory variables is the treatment of viewer distance, which is counted at least twice, first as the variable labeled “distance zone”, and second as one of the major contributors to the determinations made in the variable labeled “project dominance”. In some instances, distance is also a factor in “view blockage” and “viewer concern”. As a consequence, the procedure gives undue weight to the proximity of the project to viewers, predetermining a finding of significance in cases where the project would be simply be visible in foreground views.

A further example of a problematic variable is “view blockage”. In its formulation of the project’s view blockage effects on the view from KOP 2 for example, Staff asserts that the proposed project structures (lower quality landscape features) would block from view a portion of sky and a relatively small portion of the Coast Range hills” and concludes that “The proposed project’s resulting view blockage would be moderate.” We take issue with a number of aspects of this formulation and its conclusions. The presumption of this statement is that the project structures constitute “lower quality landscape features.” We challenge this unexamined assumption—as noted previously in this testimony, the project will have a neat and orderly appearance and will include design measures to improve the blending of the structures into the setting. In addition, Staff’s assessment of this issue makes no mention of the project’s proposed landscaping, which will be visible in this view, and which we argue does not constitute a “lower quality landscape feature”. Views of the sky are styled “higher quality landscape features³. This characterization of the sky is not explained, and more importantly, the analysis provides no explanation of why preservation of views of the sky is assumed to be an issue in this area, and what criteria have been established to determine how much blockage of sky views, in what contexts, and for how much elapsed travel time would constitute “low,” “medium,” and “high” levels of view blockage effect.

For the East Altamont Energy Center, the application of this flawed analysis procedure has led to conclusions that fly in the face of common sense. As indicated earlier in this testimony, the project site is located in a landscape that has been highly altered to accommodate large scale mechanized agriculture and has an unusually large concentration of highly visible infrastructure of statewide importance. Although Staff’s introductory description of the project setting recognizes that the project site is located in “...a landscape in which a large number of infrastructure facilities have been sited, creating a scene that is a mosaic of the rural and technological” and although Staff’s analysis rates existing landscape quality as low to moderate, these conditions are not taken into account in the final determinations of impact. Staff’s conclusions that the project would “substantially degrade the existing character or

³ We note that although staff also makes reference to blockage of a small portion of the Coast Range hills, this assertion is erroneous. Review of AFC Figure 8.11-4a, which also appears in the FSA as Figure 3A, makes it clear that there are no hills that are visible in this view. What is seen is a flat plain that extends to the horizon, in which transmission lines and some distant trees are visible.

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quality of the site and its surroundings,” does not demonstrate that the project will substantially alter the area’s overall character as a landscape of energy, water, and agricultural infrastructure or will create a substantial decrease in the area’s existing low to moderate levels of visual quality.

Indeed, with the addition of extensive landscaping, which includes native species that are biologically compatible, the project improves the visual character and interest of the site and its surroundings. Not only will the landscaping provide substantial screening of views of the project, it will also screen the existing substation and transmission infrastructure from several viewpoints, will screen the substation’s nighttime glare from some views, will create visual interest related to seasonal variations in foliage, and, in close-range views from Mountain House Road, will provide interesting foliage and blossom displays.

VISIBLE PLUME – MODELING RESULTS AND VISUAL PLUME IMPACTS ANALYSIS

I. INTRODUCTION

- A. Names:** Thomas Priestley, James McLucas, and Gary Rubenstein
- B. Purpose:** This testimony addresses visible plume issues associated with the East Altamont Energy Center.
- C. Qualifications:** Thomas Priestley is an urban and environmental planner with over 20 years of experience, much of it devoted to both research and applied work related to evaluation of the land use, aesthetic, property value, and public perception issues associated with electric facilities. He holds a Ph.D. degree in Environmental Planning, and is the author of several special studies on the perception of transmission lines and numerous assessments of the visual resources effects of infrastructure development projects. His qualifications are summarized more completely in the attached resume (Appendix A).

James McLucas is a Regional Engineer with Calpine Corporation. He has over 21 years engineering experience in the energy field. His qualifications are summarized more completely in the attached resume (Appendix A).

Gary Rubenstein is a Senior Partner in the firm of Sierra Research, an air quality consulting firm located in Sacramento, California. He has a Bachelor of Science degree in Engineering from the California Institute of Technology. He co-founded Sierra Research in 1981, after serving as Deputy Executive Officer for technical programs for the California Air Resources Board (ARB). While at ARB, he supervised the work of more than 300 engineers and scientists involved in the development and enforcement of a wide variety of air pollution control regulations.

Since co-founding Sierra Research, he has had primary responsibility for the firm's activities in the areas of stationary source (i.e., industrial) air pollution. These activities include the preparation of permit applications for new facilities; evaluation of the effect of existing or proposed regulations on existing or new sources of air pollution; and assessments of compliance by existing sources of air pollution with federal, state and local requirements. He has had extensive experience in regard to advising clients in interpretation and compliance with regulations concerning environmental air pollution, including the regulations of the Bay Area Air Quality Management District. His qualifications are summarized more completely in the attached resume (Appendix A).

- D. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.11 of the AFC

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- Data Request Response Set #1, Filed July 10, 2001
- Data Request Response Set 2G Numbers 116, 119, 120, Filed October 12, 2001
- Data Request Response Set 2H Numbers 117 and 119, Filed October 31, 2001
- Informal Visual and Plume Data Response Filed March 29, 2002
- Revised Visible Water Vapor Plume Analysis, Response to CEC Preliminary Staff Analysis, and an Assessment of the Visual Impacts of the Plumes and Determination of Whether They Are Significant Under CEQA, Filed April 3, 2002
- Revised Visible Plume Analysis Filed May 1, 2002

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. SUMMARY

A. Affected Environment

The East Altamont Energy Center project site is an approximate 40 acre area of flat valley land located in the northeastern corner of Alameda County. At present, the project site is open, and is used for field and row crops and for occasional grazing. There are no structures on the project site, and except for seasonal crops, there is no vegetation. The site has no features that would be considered to be visual resources, and the site's level of visual quality is moderately low. The project site is located in a part of the county that falls within the San Joaquin Valley landscape region. The landscape in the project area has been highly altered to accommodate large scale, irrigated agriculture. In addition, the area around the project site has an unusually high concentration of major electric and water infrastructure facilities. Large and highly visible infrastructure facilities in the immediate vicinity of the project include the Delta-Mendota Canal, the Central Valley Project's Tracy Pumping Plant, the Western Area Power Administration's Tracy Substation, and a number of 500kV and 230 kV transmission lines. The project area landscape can be characterized as one that is a mix of the agricultural and technological in which large infrastructure facilities are visually important parts of the overall landscape composition. The visual quality of the immediate project area can be classified as moderately low.

B. Construction Impacts

Since plume formations is only associated with plant operation, there are no construction impacts associated with this issue.

C. Operational Impacts

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During the project's operational period, the appearance of the project site and its surroundings will be altered by the presence of the power plant and the intermittent presence of plumes associated with the project's stacks and cooling tower. Although the presence of the project plumes will create changes in the current appearance of the site and the project area, these changes will not produce a substantial degradation of the area's existing character as a landscape of agriculture and infrastructure and/or of its existing moderately low level of visual quality.

Both the Staff and the Applicant conducted visible plume modeling and visual impact analyses to determine the predicted frequency and dimensions of the cooling tower and HRSG plumes and whether they create a visual impact. Throughout the East Altamont Energy Center proceeding, the Applicant has had concerns regarding the modeling techniques and significance criteria used by Staff in estimating the frequency and dimensions of the visible water vapor plumes from the gas turbines/HRSGs and the cooling towers. The Applicant understands that Staff has made revisions to their modeling techniques (FSA pages 5.11a-1 through 5.11a-13) intended, at least in part, to address some of these concerns. However, the Applicant has not yet had the opportunity to review these revised techniques in detail.

The significance threshold used by Staff is based on whether there is a 10% or greater frequency of plume formation during the times when plumes would be visible. If the 10% significance threshold is exceeded, then the staff conducts a more detailed analysis on whether the plumes present a visual impact. For the East Altamont Energy Center, this analysis was based, in part, on the evaluation of the visibility of plumes from two different Key Observation Points, with photo simulations prepared by the Staff of the HRSG and cooling tower plumes.¹ Based on this portion of the Staff's analysis, it was determined that the East Altamont Energy Center plumes would result in an adverse, but less than significant, impact.

The Staff's analysis then evaluates potential plume impacts in light of the aesthetic standards established in the California Environmental Quality Act. Appendix G of the State CEQA Guidelines define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by the project, including objects of historic or aesthetic significance" (14 CCR, § 15382.) The Aesthetics section of Appendix G of the Guidelines lists four questions lead agencies

¹ The Applicant has concerns regarding the accuracy and meaningfulness of the plume simulations. We are concerned that Staff has not identified the characteristics, circumstances, or frequency of the plumes that it has simulated; has provided no description of the process by which the simulations presented were prepared; and has not specified the measures that were taken to assure that the plumes depicted provide an accurate portrayal of the plume conditions assumed. We also note that for KOP 1, the simulated power -plant-with-plume image (Figure 2) has been prepared using a photo that is different from the existing conditions image (Figure 1) with which it is being compared. The photo used for the creation of Figure 2 appears as though it may have been taken from a slightly different location than the photo used for KOP, was clearly taken at a somewhat different angle, and depicts late summer rather than winter or "seasonal" conditions, which presumably are the conditions which are intended to be those evaluated in Staff's analysis. We note as well that the photos used for Visible Plume Figures 3 and 4 both reflect late summer landscape conditions, rather than those that prevail in the "seasonal" period that is the focus of Staff's concerns about visible plumes.

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need to address in determining whether a project's visual effects are significant. These questions and the Applicant's assessment of the significance of the East Altamont Energy Center's plumes in light of them are presented below:

1. *Would the project have a substantial adverse effect on a scenic vista?*

The Applicant concurs with Staff's conclusion that the East Altamont Energy Center's plumes will not result in significant visual impacts under this criterion. The closest viewpoints from which scenic vistas are available are 8 and 20 miles away, and at these distances, views will be little affected by the project's plumes presence.

2. *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

The Applicant concurs with Staff's conclusion that the project's plumes will not result in significant visual impacts under this criterion. There are no state-designated scenic highways in the project vicinity, and no project elements are located "within" the right of way of such a highway.

3. *Would the project substantially degrade the existing visual character or quality of the site and its surroundings?*

The Applicant concurs with Staff's conclusion that the plumes associated with the operation of the Project's gas turbines/HRSGs and cooling tower will not create significant impacts on visual resources.

4. *Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?*

The Applicant concurs with the Staff's assessment that this criterion is not applicable to the proposed project's plumes.

The Staff in its analysis also determined that the East Altamont Energy Center's visible plumes comply with applicable laws, ordinances, regulations, and standards.

Although the Applicant has concerns regarding the modeling techniques and significance criteria used by the Staff, the Applicant concurs with Staff's conclusion that the East Altamont Energy Center's plumes will not result in a significant visual impact and are consistent with applicable laws, ordinances, regulations, and standards.

D. Cumulative Impacts

The water vapor plume from the East Altamont Energy Center will not result in any cumulative visual impacts. The Mountain House community is the closest planned project to the East Altamont Energy Center. The initial phase of this project that has been approved is Neighborhood F, which is located at a point approximately 2.3 miles southeast of the project site, well outside of the East Altamont Energy Center's immediate viewshed. It is now

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anticipated that the community's overall buildout will take place over a period ranging from 20 to 40 years, and at the moment, there are no specific approvals or commitments for development of the portions of the project's northernmost fringes which are closest to, but still more than a mile away from the project site.

III. CONDITIONS

The Final Staff Assessment includes three Conditions of Certification. These conditions, PLUME 1, PLUME-2, and PLUME-3, are described on pages 5.11b-18 through 5.11b-19 of the Final Staff Assessment. These conditions are raised for the first time in the FSA. Unlike other sections in the FSA, this section does not recommend the adoption of these Conditions of Certification. Moreover, the Visible Plume Staff Assessment – Summary Analysis in the FSA under the column "Mitigation/Conditions," indicates "none." The Applicant believes the Conditions of Certification are deeply flawed for many different reasons. However, since the Staff is not recommending adoption of these Conditions of Certification, there is no issue or dispute and the Applicant need not address these conditions further in this testimony.

WASTE MANAGEMENT

I. INTRODUCTION

A. Name: Steven De Young

B. Purpose: This testimony describes the wastes that will be generated at the East Altamont Energy Center (East Altamont Energy Center) during both construction and operation; the potential impact of the wastes on human health and the environment; the handling of the wastes including reduction, recycling and disposal; the availability of recycling and disposal capacity for the wastes; and how the wastes will have no significant impact on the environment.

C. Qualifications: Steven DeYoung is an environmental manager with 22 years of experience in environmental regulatory compliance, including waste management and contaminant investigations at industrial facilities. His qualifications are summarized more completely in the attached resume (Appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.13 of the AFC
- AFC Appendix 8.13.A
- Supplement A to the AFC, Filed on May 3, 2001
- Supplement B to the AFC, Filed on October 9, 2001
- Comments on the Preliminary Staff Assessment, Filed January 14, 2002
- Supplement C to the AFC, Filed on February 6, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that Conditions of Certification be adopted to address Waste Management issues. These conditions: WASTE-1 through WASTE-5 are described on pages 5.13-6 through 5.13-8 of the FSA. The conditions address site mitigation, hazardous waste management requirements, waste management-related enforcement action notification, waste management planning, and measures to be taken in the event contaminated soil is discovered during construction. Incorporation of mitigation measures in accordance with the requirements of these Conditions of Certification will ensure that the routine use and transport of hazardous materials will not significantly

impact the public or environment and that the facility will be in compliance with the applicable federal, state, and local laws, ordinances, regulations, and statutes (LORS).

I have reviewed the Staff's proposed Conditions of Certification related to Waste Management, and agree with them all.

III. SUMMARY

- A. Affected Environment:** A private citizen has been farming the land since approximately 1950 and living in a residence located at the southwest corner of the property. Typical crops have included wheat, alfalfa, oats, beans, and sugar beets. The surrounding area is used for agriculture and large infrastructure projects. These projects include the Western Area Power Authority's Tracy substation; two pumping stations for the Delta-Mendota Canal and the California Aqueduct; PG&E's gas compressor station; numerous windfarms; four 500-kV transmission lines; four 230-kV transmission lines; and several lower voltage lines.

The site is currently zoned agricultural and is being farmed. A Phase I Environmental Site Assessment (ESA) was conducted in accordance with the ASTM Standard E 1527, Standard Practice for Environmental Site Assessments. The Phase I ESA was conducted on the entire 174-acre parcel of land under the control of the Applicant. The Phase I ESA revealed the following environmental conditions resulting from present or past activities. It is important to note that these environmental conditions exist in the southwest corner of the 174-acre parcel and not within the approximately 40 acre portion upon which the East Altamont Energy Center will be located.

- The residence and barn at the southwest corner of the property contained typical farm equipment and chemicals.
- Pesticide containers were present in the former chicken coop. It is not known if releases of hazardous substances are present in the vicinity of the chicken coop.
- Releases of petroleum and lubricant products in the main yard equipment staging areas, near the lubricant dispensing stand and forklift parking area, and near the aboveground waste oil storage tanks.
- An underground storage tank was removed from the site approximately 10 years ago. No documentation is available regarding the removal of the tank, the condition of the tank at the time of removal, or the potential presence of petroleum products or hazardous substances associated with gasoline.

Again, the Phase I ESA did not identify any environmental issues within the project boundary (i.e., the approximately 40 acre portion of the 174-acre parcel upon which the East Altamont Energy Center will be located).

- B. Construction Impacts:** Both hazardous and non-hazardous waste will be generated during the construction and operating phases of the facility. Most of the waste generated during the construction phase will be solid, non-hazardous waste, primarily concrete, metal, paper, wood, glass and plastics. Non-hazardous wastewater in the form of sanitary waste and

equipment wash water will also be generated. Hazardous waste generated will consist primarily of flushing and passivating fluids used to clean, flush, and condition the pipes and equipment of the plant. Small quantities of solvents, paints, and welding materials will also be generated. The construction contractor will be considered the generator of hazardous waste and will be responsible for proper handling of the waste in compliance with all applicable federal, state, and local laws and regulations including licensing, training of personnel, accumulation limits and times, and reporting and record keeping.

C. Operational Impacts

The primary non-hazardous solid waste generated at the East Altamont Energy Center will be salt cake generated through the operation of the brine crystallizers/dryers used to treat the effluent from the plant cooling system. The maximum daily salt cake generation is expected to be 18 tons. This waste will be disposed of in a local Class III waste disposal facility.

Other non-hazardous solid waste produced at the East Altamont Energy Center will consist of rags, broken and rusted metal machine parts, defective or broken electrical materials, empty containers, and other miscellaneous solid wastes including the typical refuse generated by plant workers. This type of solid non-hazardous waste will be collected, recyclable items removed, and the residue deposited in a Class III landfill.

Hazardous waste generated at the East Altamont Energy Center will be stored at that facility for less than 90 days. The waste will then be transported by a permitted hazardous waste transporter to a TSD facility. These facilities vary considerably in what they can do with the hazardous waste they receive. Some can only store waste, some can treat the waste to recover usable products, and others can dispose of the waste by landfilling.

For ultimate disposal, California has the following three hazardous waste (Class I) landfills.

Laidlaw's Buttonwillow Landfill in Kern County

This landfill is permitted at 13.25 million cubic yards and they have approximately 10.9 million cubic yards of remaining space, as of October 2000. The annual deposit rate is currently 130,000 to 150,000 cubic yards. At the current deposit rate, the landfill can accept hazardous waste until approximately 2068 to 2078. Buttonwillow has been permitted to accept all hazardous wastes except flammables, PCB with a concentration greater than 50 ppm, medical waste, explosives, and radioactive waste with radioactivity greater than 20,000 picocuries.

Laidlaw's Westmorland Landfill in Imperial County

This landfill is permitted at 4 million cubic yards and, as of October 2000, has approximately 2.4 million cubic yards of remaining space. The annual deposit rate is currently about 110,000 cubic yards; at the current deposit rate, the estimated closure date for the landfill is 2021. The landfill's conditional use permit (CUP) prohibits the acceptance of some types of waste, including radioactive (except geothermal) waste, flammables, biological hazard waste (medical), PCB, dioxins, air- and water-reactive wastes, and strong oxidizers.

Chemical Waste Management's Kettleman Hills Landfill in Kings County

This landfill has 6 to 7 million cubic yards of remaining permitted capacity for hazardous waste (Class I). They also accept Class II and Class III wastes. The current annual deposit rate is about 200,000 cubic yards per year. According to Chemical Waste, the landfill will be open for at least another 25 years, though they could permit additional capacity, if necessary. The Class I landfill is permitted for and will accept all hazardous wastes except radioactive, medical, and unexploded ordnance (UXO).

In general, the East Altamont Energy Center will follow the hierarchical approach of 1) source reduction, 2) recycling, 3) treatment, and 4) disposal in the handling and management of its waste. This approach will employ best-known waste management methods and comply with all applicable LORS. Management of the East Altamont Energy Center waste will be performed in a manner that poses little or no risk to the public and the environment.

- D. Cumulative Impacts:** The East Altamont Energy Center will generate nonhazardous solid waste that will add to the total waste generated in Alameda County and in California. However, there is adequate recycling and landfill capacity in Alameda County to recycle and dispose of the waste for the next 15 to 20 years. Therefore, the impact of the project on solid waste recycling and disposal capability is not significant.

Hazardous waste generated will consist of waste oil, filters, SCR and oxidation catalysts, and fluids used to clean the HRSGs and piping. The waste oil and catalysts will be recycled. Cleaning and flushing fluids will be removed and disposed of offsite. Cleaning and flushing will occur only periodically. Hazardous waste treatment and disposal capacity in California is more than adequate. Therefore, the effect of the East Altamont Energy Center on hazardous waste recycling, treatment, and disposal capability is not significant.

- E. Mitigation:** All solid and hazardous waste will be handled, stored, and disposed of in accordance with all applicable LORS. Waste reduction will be a primary objective followed by recycling, in order to minimize the quantity of waste deposited in landfills. During construction, waste metals, plastic, and wood will be recycled to the extent possible. During operation, waste oils will be recycled, as will rags, containers and other items that can be recovered. Spent SCR catalysts will be returned to the manufacturer for recycling.

**DECLARATION OF
Steven De Young**

I, Steven De Young, declare as follows:

1. I am presently an independent environmental consultant and am the Environmental Project Manager for the East Altamont Energy Center.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Waste Management for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

WATER RESOURCES

INTRODUCTION

A. Name: Kris Helm, James McLucas, Kevin O'Brien

B. Purpose: This testimony addresses the water resources issues associated with the proposed project.

C. Qualifications:

Kris Helm Mr. Helm is a professional consultant with over 20 years of experience in water resources. He has unique experience in successful implementation of recycled water use in industrial applications and has experience in numerous negotiations of water supply and development agreements between public agencies and between public agencies and private entities.

While at the Metropolitan Water District of Southern California, Mr. Helm was the principal author of Metropolitan's Seasonal Storage Service water service program. For approximately 3 years at Metropolitan he was responsible for administration of Metropolitan's water service regulations. Following that, he was a Branch Manager in the Resources Division responsible for the development of programs to encourage development of new groundwater conjunctive use programs. Also, he was the technical lead on the evaluation of the adequacy of Metropolitan's distribution system for Report 950, which described the most recent expansion program of Metropolitan intended to complete facilities to receive State Project Water, including the construction of Diamond Valley Lake.

While at West Basin Municipal Water District, as the Manager of Operations and Planning, Mr. Helm was responsible for obtaining and complying with numerous permits for the recycling project including permits for potable reuse of wastewater. He was responsible for customer development and the creation of water service regulations. He was also responsible for planning which included the production of West Basin's Regional Urban Water Management Plan and participation in Metropolitan's Integrated Resources Plan. As manager of Operations, he was responsible for all aspects of operation, compliance and customer service. Since leaving West Basin, he has been a water resources consultant working primarily on water recycling projects, resource planning and agreement negotiation.

Throughout his career Mr. Helm has acted as a principal negotiator of many water service agreements including:

- Agreements between County Sanitation District of Los Angeles County and the Central Basin Municipal Water District for Reclaimed Water supply.
- Agreements between City of Los Angeles and West Basin Municipal Water District for supply of secondary effluent to the West Basin Water recycling Project and the disposal of waste concentrate from the West Basin project.

WATER RESOURCES

- Amendment of the State Water Contract Between Department of Water Resources and the Metropolitan Water District of Southern California to provide for expansion of the East Branch of the California Aqueduct and the granting of new service rights therefrom.
- Agreements between West Basin MWD, City of El Segundo and Chevron Corporation for the Construction of dedicated treatment plants and the provision of recycled water to the Chevron El Segundo Refinery.
- Agreements between West Basin Municipal Water District, City of Torrance and Mobil Oil Corporation for the construction of dedicated facilities and provision of recycled water to Mobil's Torrance Refinery.
- Agreements between West Basin MWD, Dominguez water corporation and ARCO for the provision of recycled water and the construction of the Carson Regional Treatment Plant.
- Agreement between the Water Replenishment District of Southern California and the City of Long Beach for construction and operation of the Alamitos Barrier recycled water project.
- Agreement between Metropolitan Water District of Southern California, Calleguas Municipal Water District and Ventura County Flood Control District for the wheeling of Santa Barbara's SWP entitlement through Metropolitan's distribution system to provide emergency drought relief.
- Agreement between Metropolitan Water District of Southern California and Castaic Lake Water Agency to provide long term wheeling of CLWA's SWP entitlement through Metropolitan's distribution system.
- Agreements between Metropolitan, City of San Diego and the San Diego County Water Authority to store imported water in local reservoirs of the City of San Diego reservoirs.
- Agreements between Metropolitan Water District and the Irvine Ranch Water District to store imported water in Irvine Lake.

For the last 3 years, Mr. Helm has worked with Calpine to develop water resources solutions for their power plant development. Specifically, he has assisted Calpine in the development of commercial agreements for the delivery of water and/or the provision of wastewater disposal and the environmental assessment associated with those water supply agreements. He has provided assistance on the following Calpine Projects:

- Delta Energy Center
- Metcalf Energy Center
- Russell City Energy Center

- San Joaquin Valley Energy Center
- Inland Empire Energy Center
- East Altamont Energy Center

Mr. Helm also was the lead in due-diligence evaluations of the water supply for the Pastoria Energy Center.

Mr. Helm's qualifications are summarized more completely in the attached resume.

James McLucas is Calpine's project engineer for the East Altamont Energy Center and is a registered mechanical engineer with twenty-one years of experience in the design and construction of energy and water and wastewater treatment facilities. For the East Altamont Energy Center, in the area of water, Mr. McLucas supervised and coordinated the efforts of the Parsons Energy and Chemicals Group (the project A/E), Thomas M. Larange, Inc. (the project design consultant for water), Calpine's internal engineering, construction, and operations staff, and major equipment suppliers. In addition, Mr. McLucas prepared or contributed to a number of the design-related water data responses.

Kevin O'Brien is an attorney licensed to practice law in the State of California and a partner with the Sacramento law firm of Downey, Brand, Seymour & Rohwer LLP, where he chairs the water practice group. He has more than 20 years of experience in water resources and environmental law. Mr. O'Brien has served as lead counsel in numerous water right and water quality proceedings before the State Water Resources Control Board and in state and federal courts. He has also testified as an expert witness on water issues in state court. His qualifications are summarized more completely in the attached resume.

Mr. O'Brien has served as lead counsel on the following matters relevant to this proceeding:

- Petition to Change Place and Purpose of Use of Treated Wastewater for City of Turlock (ongoing)
- Water Transfer of State Water Project entitlements from Berrenda Mesa Water District to Dublin San Ramon Services District (2001)
- Water Transfer of 160,000 acre-feet of pre- and post-1914 appropriative water rights from Sacramento Valley agricultural water users to Westlands Water District (2001)
- Negotiation and drafting of water supply agreements for the following Calpine projects: Pastoria, San Joaquin Valley Energy Center and Inland Empire Energy Center (2000-2002)
- General counsel to three agricultural water districts, some of which hold pre-1914 appropriative water rights (ongoing)

The following testimony, while presented jointly, is generally divided by subject matter as follows: Mr. Helm will testify regarding the East Altamont Energy Center water resource

issues including planning, operations, economics, BBID water service and the potential development of treated wastewater. Mr. McLucas will testify regarding engineering and cost issues. Mr. O'Brien will testify regarding legal issues.

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Application for Certification
- Supplement A, filed on 5/3/2001
- Supplement B, filed on 10/9/2001
- Supplement C, filed on 2/6/2002
- Approved Recycled Water Feasibility Study, filed 6/1/2001
- Data Request Response Set #2, filed on 8/17/2001
- Data Request Response Set #2A (Docket Log #22133), filed on 8/31/2001
- Data Request Response Set #2B, filed on 9/10/2001
- Data Request Response Set #2C, filed on 9/14/2001
- Data Response, Set 2C and Informal Data Responses, filed 9/28/2001
- Data Request Response from September 6th Workshop, filed 10/5/2001
- Data Request Response Set 2F, filed on 10/9/2001
- Informal Data Request Response Set # 2, filed 10/12/2001
- Letter to address report of conversation with Maureen Sargent, filed 10/30/2001
- Letter to express purpose of registering a protest regarding the manner in which CEC staff is conducting its investigation of the East Alt, filed 10/30/2001
- Data Request Response Set 2I, filed 11/9/2001
- East Altamont Energy Center Status Report # 3, filed 11/13/2001
- Informal Data Request Responses Set # 3, filed 11/21/2001
- Informal Data Request Set # 3, filed 11/30/2001
- Status Report # 4, filed 1/3/2002
- PSA Comments Set #1, filed 1/14/2002

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- Water Resources Data Request Response Set # 4, filed 1/16/2002
- Response from the National Marine Fisheries Services, filed 4/3/2002
- Report of Conversation D. Flory and N. Quan of DWR, J. Stuart of NMFS and SWP Analysis Office re Discussion of Potential the East Altamont Energy Center Water Supply, filed 4/23/2002
- East Altamont Energy Center Status Report #5, filed 4/24/2002
- Supplement to Applicant's Status Report #5, filed 5/7/2002
- Approved Recycled Water Feasibility Study, filed 6/1/2002
- Letter from US Dept. of Commerce regarding Phone conversation with C. Davis re: decision to concur with the Western Area Power Administration, filed 6/12/2002
- Letter re: Clarify the Department's Position on Issues, filed 6/19/2002
- Mountain House Community Services District (MHCS D)/ Paul Sensibaugh. Response to CEC Staff inquiries regarding recycled water from MHCS D. Dated 6/20/02 and docketed 6/25/02.
- Memorandum of Understanding between Byron Bethany Irrigation District, filed 7/16/2002
- Opposition to Construction from Mow to Chairman Keese, filed 7/18/2002
- Opposition to Construction from San Joaquin County Board of Supervisors to Chairman Keese, filed 7/18/2002
- Report of Conversation between R. Gilmore and Byron-Bethany Irrigation District re: MHCS D Letter, filed 7/28/2002
- Status Report #6, filed 8/5/2002
- Agreement Between the Dept. of Water Resources, State of California and the Byron-Bethany Irrigation District, filed on 8/8/2002
- Report of Conversation with R. Gilmore, Byron-Bethany Irrigation Dist. re: Mountain House Community dated June 20, 2002, filed 8/28/2002
- Biological Opinion, filed 9/19/2002

To the best of the witnesses' knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are the true opinions of the witnesses based on their education, training and experience. The witnesses make these statements, and render these

opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

SUMMARY

The Final Staff Assessment (FSA) for the project, dated September 19, 2002, recommends that 10 conditions of certification be adopted to address water resources issues. Conditions 4, 8, 9, 11, 12, and 13 are acceptable. The Applicant disagrees with Conditions 5, 6, 7, and 10; the Applicant recommends that these conditions be modified.

Proposed Condition of Certification SOIL & WATER-5 would limit the total water use at the East Altamont Energy Center to a 5-year *average* of 4,616 acre-feet per year. This is an unprecedented and entirely unnecessary limit, not previously proposed by the Staff in this proceeding, that would severely limit the operating flexibility of the East Altamont Energy Center and the potential generating benefits of the facility.

Conditions of Certification SOIL & WATER-5 and 6, which require that the project owner enter into an agreement with BBID to receive specific quantities of recycled water, from a specific source and by a specific date, are unnecessary, unreasonable and unlawful. Conditions 5 and 6 are unnecessary because the Applicant, together with the public agencies responsible for water supply and wastewater disposal, is committed to developing recycled water to the extent feasible. The Applicant has proposed a facility design that will enable use of recycled water to the extent that such supply becomes available. As demonstrated by Calpine projects licensed by the Commission, Calpine has a proven record of developing recycled water for use in its facilities whenever it is feasible to do so.

Conditions of Certification SOIL & WATER-5 and 6 are unreasonable because they will restrict the flexibility that BBID needs to develop recycled water supplies from all available sources in a manner that is efficient, economical and environmentally sound. Moreover, these conditions would require BBID to prematurely enter into a water service agreement with the Mountain House Community Service District despite the practical impediments to negotiating such a contract at this time.

Conditions of Certification SOIL & WATER-5 and 6 are unlawful because they attempt to utilize Water Resources Code Section 13580.7, which by its terms is discretionary in nature, as a mechanism for imposing upon the East Altamont Energy Center (and, indirectly, BBID) *mandatory* obligations to utilize MHCSO wastewater regardless of cost. This attempt to subvert the letter and spirit of Section 13580.7 must be rejected. Moreover, the proposed mitigation will require the Commission to override and usurp many of the laws governing the operation of BBID.

There are three provisions of proposed Condition of Certification SOIL & WATER-7 that are not justified based upon any LORS, do not mitigate any impact and do not serve any useful purpose. These conditions were not in the PSA and were never raised in any workshop. Applicant first learned of these conditions in the FSA. They are:

- e) The requirement to size the recycled water pipeline based upon the peak demands of the East Altamont Energy Center will necessitate the construction of a pipeline with capacity greater than the available supply of wastewater and serves no purpose.
- f) The requirement to include 10 million gallons of on-site storage is completely unjustified and not supported by any engineering or cost evaluation.
- g) The requirement to recycle water from the storm water basin is similarly unjustified. No analysis of the engineering, environmental effects or the cost-effectiveness of this requirement has been presented.

Proposed Condition of Certification SOIL & WATER-10 would require the project owner to obtain a building permit from Contra Costa County for the BBID fresh water pump station intended to serve the East Altamont Energy Center. This is not required by Contra Costa County. The LORS section of the FSA describes a need to obtain grading and trenching permits for pipelines, but the requirement for a building permit is not explained or justified.

A. Project Description

Water for the East Altamont Energy Center will be supplied by Byron Bethany Irrigation District (“BBID”), which is the sole water purveyor in the area. BBID is a multi-county special district established under the California Irrigation District Law (Water Code Section 20500 *et seq.*) for the primary purpose of providing water to the lands within the District covering portions of Alameda County, Contra Costa County, and San Joaquin County.

The East Altamont Energy Center will require approximately 4,600 AF of water in a typical year. In peak demand years, when power output including peaking capacity from the plant will be maximized year-round such as during a potential power emergency, water use could be as high as 7,000 AF. The use of water for “wet-cooling” is essential to the project’s high density power design which incorporates a substantial amount of duct firing within the heat recovery steam generators which in turn increases cooling demands in the surface condenser of the steam turbine.¹ More than 95% of the water demand for the project is consumed by evaporation of water from mechanical draft cooling towers used to cool the surface condenser of the steam turbine. The remainder is consumed in boiler makeup, combustion turbine air fogging, and potable and service water needs.

The Applicant has proposed an on-site zero liquid discharge treatment system that will treat and reclaim internal wastewater streams and eliminate the discharge of wastewater from the facility. The onsite treatment system will treat cooling tower blowdown with a combination of softening and high TDS reverse osmosis. Permeate from the high TDS reverse osmosis process will be returned to the cooling towers for makeup and waste brine from the softeners

¹ The use of wet cooling as proposed will have a \$36.8 million lower capital cost than alternative dry cooling. When considering all costs and revenues from the use of wet cooling, net operating revenues (all operating revenues minus all operating costs) the East Altamont Energy Center costs will be increased by \$8.61 million in the first year of operation and \$244 million over 30 years when compared to the dry cooled alternative.

and reject from the high TDS reverse osmosis system will be treated in a brine concentrator. Distillate from the brine concentrator will be used for heat recovery steam generator makeup, inlet air fogging and power augmentation. Concentrated brine will be dried in a crystallizer and dried salt cake will be hauled for landfill disposal. When distillate production from the brine concentrator is greater than steam demands for boiler makeup, inlet air fogging and power augmentation excess distillate is returned to the cooling towers. When steam demands exceed production of distillate from the brine concentrator, incoming raw fresh water is treated with reverse osmosis and mixed bed demineralization to augment distillate production.

BBID has determined that it has adequate supplies of water from existing fresh water sources to serve the projected demands within its service area plus the projected demands of the East Altamont Energy Center. This determination considers the existing and estimated future demands within BBID.

BBID is also actively pursuing the development of recycled water to further augment its available supplies. Initially, only fresh water will likely be supplied to the East Altamont Energy Center, but in the future, BBID intends to supply recycled water. BBID identified the first likely source of such recycled water as wastewater generated by the development of the Mountain House Community Services District (MHSCD) and identified the likely routes and sizes for recycled water pipelines. The recycled water pipeline to MHSCD was included by the Applicant in the East Altamont Energy Center project description.

Once recycled water is made available to the East Altamont Energy Center by BBID, water makeup into the cooling towers will preferentially be received from recycled water supplies and fresh water will only be used for potable and service demands, makeup of steam demands in excess of brine concentrator production and as a supply for cooling tower demands in excess of the available flow of recycled water.

Based upon planning projections prepared by BBID, the Applicant estimated the quantities of recycled water that could be supplied to the East Altamont Energy Center from the future production of wastewater by the development of the Mountain House Community Services District. This estimate indicates that initially only fresh water will be available to the East Altamont Energy Center but that upon full development of the Mountain House community up to approximately 2,860 af of recycled water or about 62% of the East Altamont Energy Center's total needs, could be supplied with recycled water. The projections by Applicant are shown in the table below.²

² From DR 86. August 17, 2001.

	(Acre-Feet Per Year)			
	2005	2010	2015	2020
Total Wastewater	1,483	2,965	4,448	5,930
Potentially Available to East Altamont Energy Center	500	1,645	2,197	2,861

The FSA incorrectly assumes that all wastewater production from the MHCSO will be available to serve the East Altamont Energy Center. The FSA projection does not account for potential uses of recycled water within the MHCSO, nor does it account for the seasonal fluctuations in supply and demand of recycled water and the effect of such fluctuation on facility sizing. Thus, the FSA overestimates the amount of recycled water that will be available to meet the East Altamont Energy Center demands in year 2020.

The projections by Applicant are the only accurate forecast of the future recycled water supply that will be available to the East Altamont Energy Center. They are consistent with and derived from the planning projections of BBID (Testimony of G. Nuss). The actual manner by which BBID chooses to allocate recycled water supplies among its customers would be in an equitable, efficient and environmentally sound manner. In contrast, the forecast in the FSA is not based on an actual study of the needs, policies or operating policies of BBID, but is instead based on the premise that all recycled water should be allocated to a single customer regardless of the cost or consequence of such a requirement.

On July 9, 2002, Applicant and BBID entered into a Memorandum of Understanding (MOU), that describes, among other matters, the role of each entity in the future supply of recycled water. Under the terms of the MOU, BBID agrees to develop recycled water to the maximum feasible extent and the Applicant agrees to use recycled water to the maximum feasible extent. The MOU reflects active cooperation of BBID and the Applicant in regional efforts to develop recycled water supplies. Although recycled water supplies do not presently exist, BBID has a strong interest in developing recycled water supplies in the future in an economically efficient and environmentally sound manner. (Rick Gilmore Testimony). As noted in the MOU, MHCSO and BBID must negotiate a supply agreement before BBID can take the next steps to deliver recycled water to the East Altamont Energy Center. The MOU provides that BBID and the East Altamont Energy Center would enter into a detailed service agreement prior to construction of the East Altamont Energy Center that is consistent with the terms of the MOU.

The FSA states that to date neither the Applicant nor BBID have entered into any agreement with MHCSO and the FSA states that this failure by the Applicant or BBID to have entered into such an Agreement compels Conditions of Certification SOIL & WATER-5 and 6. However, there are sound reasons why neither the Applicant nor BBID have entered into an Agreement as of this date.

Given the current status of the MHCSO development, it is perfectly understandable that negotiations would not have progressed very far.

It is important to recognize that the Staff's intent to create obligations on the East Altamont Energy Center to develop recycled water supplies have already interfered with BBID's ability to negotiate for recycled water from MHCSD. In the first place, MHCSD would be reluctant to agree to terms without seeing whether the CEC would require BBID to bear a greater burden or otherwise assume logical obligations of MHCSD. Also with the San Joaquin Board of Supervisors acting as the governing Board of MHCSD, there is an apparent desire to withhold an offer of recycled water if such an offer would improve the chances of the East Altamont Energy Center being built.

But even ignoring the impediments that these proceedings pose to the negotiation of a service agreement, there are considerable practical impediments to negotiating such a contract at this time, primarily due to the uncertainty that MHCSD would have as to the costs and values associated with the project prior to MHCSD having some experience with the wastewater operations.

If we contemplate a contract for supply of wastewater by MHCSD to BBID it would necessarily include detailed provisions regarding wastewater volume, quality, price, and term in addition to establishing obligations for capital facilities. Both MHCSD and BBID lack sufficient information about the nature of the recycled water and the best options to manage that supply. MHCSD has no current volume of wastewater to sell. It has estimates of volume that will be produced but it has no certainty of the timing for generation of quantities of wastewater and it cannot guarantee that any specific quantity would be available. This is further complicated because MHCSD does not understand its own obligations to use recycled water and thus there is even greater uncertainty of how much water MHCSD would have to sell to one another. The most reasonable estimates of the available supply have come from BBID and Applicant but MHCSD cannot determine its ability to meet BBID's needs.

Because no wastewater currently exists, there is no information available as to the quality of MHCSD effluent. MHCSD does not have information as to its costs to provide the quality of water BBID would require nor does it have hard data as to the alternative costs to either reuse the wastewater elsewhere or the cost of complying with the Discharge Permit. The lack of quality information prevents BBID from establishing a value for the water. In general the lack of hard cost data on which to evaluate alternatives prevents either party from determining its costs or benefits. Over time these costs will become known and both parties would have incentive to develop recycled water to the extent that it is cost effective. Both parties have indicated a desire to reach an agreement to sell recycled water, but only to the extent that the actual agreement provides the benefits they seek. With no hard data and uncertainty as to future regulatory requirements on MHCSD neither party would understand its position well enough to negotiate a service agreement.

When and as the MHCSD develops, all of these impediments to negotiation should disappear. Presuming that the CEC does not require the East Altamont Energy Center, to guarantee development of facilities to serve the East Altamont Energy Center the ability of MHCSD to block the development of the project would be eliminated and MHCSD would tend to negotiate based upon its interests in achieving water recycling and not based upon its interests to interfere with the East Altamont Energy Center. Also, once residents begin moving into the development they can petition to replace the Governing Board and have a

Governing Board elected by the residents. These residents would pay costs and receive benefits and thus would logically be driven to seek the most cost effective solution instead of being driven by other influences or considerations for other areas not affected by the strong need to beneficially reuse the effluent from MHCSD.

Moreover, as wastewater is generated the quality will be understood, the quantities will be understood, development standards for later phases of the development will be established, requirements to use recycled water will be known and the costs of alternatives to reuse the effluent compared to discharge will be better understood. Thus the climate for negotiations will be much more favorable and the natural give and take of negotiations could proceed with each party having a much better understanding of its costs and benefits.

Finally, it is not appropriate, from a legal standpoint, for MHCSD to have a direct service relationship with the Applicant³ because Applicant intends to receive all water service from BBID including fresh water and future recycled water sources.

B. Current Storm Water Runoff

Currently, storm water runoff from the project site runs by sheet flow to the north, where it is collected in an east-west running drainage ditch which in turn, discharges into a north-south running drainage ditch that runs along the east side of the property. The north-south running drainage ditch drains to the north and discharges into the intake channel of the CVP's Delta-Mendota Canal. Storm water developed over the 40 acres for the East Altamont Energy Center generation facilities will be managed separately between process and non-process areas.

C. New East Altamont Energy Center Storm Water Facilities

Storm water from non-process areas will be conveyed to a storm water detention pond. The storm water detention pond will serve to temporarily store runoff, and discharge flows into the existing drainage channel along the eastern boundary of the proposed East Altamont Energy Center site, which flows northerly into the intake channel of the Delta-Mendota Canal. The storm water facilities will be sized to accept the 25-year, 24-hour design storm runoff consistent with the criteria specified by the Alameda County Flood Control and Water Conservation District's criteria for sizing storm water facilities.

³ See Letter from Paul Sensibaugh to Cheri Davis dated June 20, 2002 which states in part "The MHCSD County Counsel has reviewed the Service Duplication Law, Public Utilities Code 1501 et seq.; Water Recycling Act of 1991, Water Code 13575 et seq.; and the Water Recycling in Landscaping Act, Government Code section 65601, and has determined that in order to provide recycled water to an industry within the Byron-Bethany Irrigation District (BBID) service area MHCSD must contract with BBID for such distribution."

As a customer of BBID, the East Altamont Energy Center would not want to interfere in any way with BBID's fulfillment of its obligation to serve the East Altamont Energy Center. Applicant views the potential negotiation directly with MHCSD as causing such interference with BBID. MHCSD is not able to provide the East Altamont Energy Center with retail service commensurate with the service offered by BBID nor is there any reason why MHCSD should offer the East Altamont Energy Center superior terms compared to those it would offer BBID. On the contrary, the East Altamont Energy Center's direct negotiations with MHCSD would only serve to undermine BBID in its own negotiation for those same water supplies.

D. Applicable LORS – Water Use

The East Altamont Energy Center will comply with all applicable laws, ordinances, regulations and standards (“LORS”). These LORS are listed in Section 8.14.8 of the AFC and at pages 5.14-1 to 5.14-3 of the FSA. Both the Applicant and Staff agree that the project complies with the LORS listed under the heading “Laws, Ordinances, Regulations and Standards in the AFC.”

The primary responsibility for enforcing LORS related to water use and water supply rests with BBID and DWR. Both agencies have determined that the project is in compliance with all applicable LORS.

1. BBID Service Policies

BBID is responsible for providing water service to the East Altamont Energy Center. BBID’s Board of Directors establishes terms and conditions for service for all customers within its service territory. As a public water supplier, BBID is responsible for operating in accordance with state and federal law pertaining to water supply. As a customer of BBID, the Applicant will at all times comply with service regulations and conditions of service.

BBID has adopted policies concerning the future development of recycled water within its boundaries. These policies describe how BBID will develop recycled water supplies and the requirements that BBID may impose upon its customers to use recycled water as it is made available, consistent with mandatory use provisions of state law. BBID intends to develop recycled water supplies and act as the provider of recycled water to meet the needs of its customers. BBID’s policies are intended to ensure that recycled water is developed efficiently and in a manner that maximizes the benefits to BBID’s service area. (BBID Policy Resolution)

2. DWR Review

The California Department of Water Resources (DWR) is the agency within the State of California best able to validate and interpret the State LORS. DWR confirmed that the water service as proposed is consistent with BBID’s water rights and otherwise complies with all applicable state laws. At the May 10, 2002 Scheduling Conference, Dan Flory, representing the Department of Water Resources, reported DWR had determined that the proposed service of water to the East Altamont Energy Center would have minimal impacts on DWR and that the service was consistent with BBID’s historical operations. Therefore, Mr. Flory stated, DWR is satisfied that the CEC could proceed with its evaluation of water service to the East Altamont Energy Center without awaiting the conclusion of DWR’s negotiations with BBID. This is consistent with Staff’s Record of Conversation of a meeting with DWR held April 23, 2002: “Because the East Altamont Energy Center’s proposed fresh water use does not have the potential to injure SWP contractors, DWR is willing to have the CEC move forward in processing the AFC.”

E. Other Policies

The FSA also refers to other “statutory and policy guidance.” Staff implicitly concedes that these statutes and policies are not actually applicable to the East Altamont Energy Center. Staff appears to cite these policies for the limited purpose of arguing that the Staff’s proposed conditions are “consistent” with these statutes and policies. (FSA, p. 5.14-32.) The policies cited by the FSA encourage and promote the use of reclaimed water for non-potable uses. However, none of the cited policies, either individually or collectively, require the East Altamont Energy Center to receive any particular quantity of recycled water by a specific date or from a specific source. Moreover, none of these policies authorizes the Commission to override the authority of BBID to operate an irrigation district or to require BBID to give priority of use to a particular customer by a specific date.

In fact, the Conditions of Certification proposed by the Staff are inconsistent with the State policies cited in the FSA. For example, State Water Resources Control Board Resolution 75-58, adopted in 1975, encourages that sources of powerplant cooling water should come from certain sources in this order of priority depending *on site specifics such as environmental technical and economic feasibility consideration:...*” (emphasis added). The Staff’s proposed Conditions of Certification SOIL & WATER-5 and 6 are inconsistent with this policy because they would override the authority of BBID to determine the priority of use for the East Altamont Energy Center based on the District’s evaluation of environmental, technical and economic feasibility. The Staff’s proposed conditions would instead mandate a specific priority of use based on a specific timetable and from a specific source regardless of BBID’s evaluation of the factors identified in Resolution 75-58.

Another policy, but not an applicable LORS, cited by the FSA is Section 13550 *et seq.* of the California Water Code. Staff asserts that this statute specifies the standard for comparison of fresh and recycled water supplies. However, as the passage of the statute quoted in the FSA clearly indicates, this statute is not at all relevant to the East Altamont Energy Center.

As quoted in the FSA, Section 13550 *et seq.* applies to the use of “potable domestic water” for certain non-potable uses. The East Altamont Energy Center proposes to use water provided by BBID from the Sacramento-San Joaquin Delta. Such water does not fall within the definition of “potable domestic water” under California law. See Cal. Health & Safety Code Section 113843-113844.

Even assuming, for the sake of discussion, that Section 13550 is applicable in this proceeding, there is no factual or legal basis for a finding that the use of fresh water by the East Altamont Energy Center constitutes a waste or unreasonable use of water under California law. It is well established that what is a reasonable use of water varies with the facts and circumstances of the particular case. In re Waters of Long Valley Creek Stream System, 25 Cal.3d 339, 354 (1979). Rather than making a full and fair evaluation of the facts and circumstances of this case in relation to the availability of alternative sources of water for the East Altamont Energy Center, the authors of the FSA are attempting to read into Section 13550 a blanket prohibition against the use of fresh water for power plant cooling purposes. In so doing they ignore the express language of the statute, which provides that the use of

potable water for industrial purposes is unreasonable only when a source of recycled water is "available" at "reasonable cost."

The record is clear that recycled water is not available to serve the East Altamont Energy Center. As the FSA itself concedes, Mountain House is only now initiating residential construction of the first of twelve phases. And while the General Manager of MHCS D has written a letter expressing an interest in selling water to BBID, the MHCS D is not prepared to enter into a contractually binding agreement with BBID at this time. As the FSA admits, the actual amount and cost of water which may be provided by MHCS D will be subject to the rate at which the community develops. The offer of MHCS D to provide its recycled water at unspecified cost and quantities in the indefinite future does not constitute an "available" supply under section 13550.

Whatever the circumstances that lead BBID to construct facilities to make recycled water available to the East Altamont Energy Center, Applicant has committed in the MOU with BBID to use such supply of water as soon as it becomes available. As the San Joaquin County Counsel has stated, it is up to BBID and MHCS D to determine the timing of construction of facilities to serve the East Altamont Energy Center and thus the timing of the availability of recycled water supply. Similarly, BBID must develop a means of allocating available recycled water between the East Altamont Energy Center and other non-potable uses, which will determine the ultimate quantities of recycled water available to the East Altamont Energy Center.

F. Project Impacts

1. *The supply of fresh water to the East Altamont Energy Center will have no significant adverse impact upon the adequacy of BBID's water supplies.*

BBID has determined that it has adequate supplies of fresh water to meet the needs of its customers.

The current demand estimate from BBID is detailed in testimony from BBID. BBID has revised its estimates. A summary of those demand projections is reproduced in the table below.

BBID Projected Average Annual Demands (acre-feet per year)

Demand Type	2000	2010	2020	2030	2040
Total District Water Right	50,000	50,000	50,000	50,000	50,000
Supply from Recycled Water ⁽¹⁾	-	2,372	5,337	5,930	5,930
Total Water Supply	50,000	52,372	55,337	55,930	55,930
<i>Agricultural Use</i>	31,400	35,400	31,028	31,028	31,028

Identified Municipal and Industrial Use

BBID Projected Average Annual Demands (acre-feet per year)

Demand Type	2000	2010	2020	2030	2040
Mountain House (RWSA 1)	-	4,641	9,415	9,415	9,415
East Altamont Energy Center ⁽²⁾	-	4,616	4,616	4,616	4,616
Tracy Hills (RWSA 2)	-	1,700	3,006	3,006	3,006
Subtotal--Identified M&I Use	-	10,957	17,037	17,037	17,037
<i>Predicted Additional M&I Use</i> ⁽³⁾					
Unimin Industrial Use	125	500	500	500	500
East County Airport	-	-	500	750	1,000
Byron	-	-	500	600	600
Subtotal--Predicted Additional M&I Use	125	500	1,500	1,850	2,100
Subtotal--Predicted+ Identified M&I Use	125	11,457	18,537	18,887	19,137
Subtotal--Agricultural + Identified and Predicted M&I Use	31,525	46,857	49,565	49,915	50,165
Available Supplies	18,475	5,515	5,772	6,015	5,765

(1) From June 20, 2002 letter to CEC from MHCSD

(2) From March 2001 AFC for East Altamont Energy Center

(3) Placeholder for future unknown demand

2. *BBID's use of fresh water to supply the East Altamont Energy Center would not affect the environment.*

The determination that the supply of water to the East Altamont Energy Center will not cause a significant impact was confirmed by the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS) and the California Department of Water Resources (DWR). As detailed in the Testimony of Rick Gilmore, BBID and DWR are in the process of executing an agreement regarding the diversion of water from the Delta by BBID on a year round basis for agricultural, municipal and industrial use.

The water supply requirements of the East Altamont Energy Center will be so small relative to the water supplies in the Delta that the diversion will not have a measurable impact. Moreover, the BBID intake to the Delta is downstream of the Skinner Fish Screen, which is a state of the art facility capable of providing effective screening at approximately 1000 times the rates of flow associated with the East Altamont Energy Center. Also, since BBID is a senior rights holder, often the effects of a change in its pattern of diversion are offset by an opposite change in the diversion pattern of a junior water rights holder.

3. Cumulative Impacts

The FSA expresses a concern as to the potential cumulative effects of diversion of water by all users from the Delta and whether the East Altamont Energy Center will lead to adverse cumulative effects within the Delta. However, this question was carefully examined by NMFS and DWR and the East Altamont Energy Center was found to have no cumulative impacts on the environment.

Most significantly, the Delta is a highly managed environment. The massive State Water Project (SWP) and Federal Central Valley Project (CVP) dominate Delta operations with their management activities. In general, the two projects are legally responsible for meeting all water quality requirements in the Delta, including outflow and salinity requirements. Typically the projects meet these requirements through releases of water from project reservoirs, reductions in export diversions, or a combination of the two. Senior water right holders such as BBID have no obligation to modify operations to meet Delta water quality requirements. So if BBID makes an incremental change in the Delta operations, then the change is either insignificant to the DWR and CVP operations or the operations of these facilities will adjust to offset the change by BBID. In either case, the environment is not affected by the change in BBID operations. (See IWR-2 for a full description of Delta Operating Criteria).

In general terms, the seasonal pattern of use of the East Altamont Energy Center is easier for the Delta system to sustain than the historic agricultural demand pattern of BBID when considering cumulative needs by all users. This is because summer period diversions from the Delta are largely restricted for the CVP and SWP during the summer months. The CVP and SWP utilize massive storage facilities south of the Delta to draw upon each summer period when Delta diversions cannot sustain the deliveries. To the extent that BBID's diversion pattern is shifted to increase diversions in winter months and reduce diversions in summer months, the water available for diversion in the Delta by the SWP and CVP is increased and the need to draw down south-of-Delta storage is reduced.

In any event, since summer-period diversions are already restricted and managed under strict operating rules, the East Altamont Energy Center does not have the potential to increase cumulative summer period diversions. However, in the winter-period when natural flows in the Delta can greatly exceed consumptive demand of all users, the East Altamont Energy Center does have the potential to increase the total cumulative diversions of water from the Delta. This potential was conservatively estimated in the Biological Assessment for the East Altamont Energy Center and thus the NMFS and USFWS consultations were based upon this conservative assessment.

Specifically, the Biological Assessment was based upon the conservative assumption that all of the East Altamont Energy Center maximum potential demands in the winter period will cumulatively represent a new demand for Delta water. Thus, the NMFS and USFWS evaluated the potential for a 9 cubic foot per second increase in winter period demands from the Delta based upon a new demand of 9 cubic feet per second from BBID's intake. NMFS and USFWS concluded that this potential increase in demand did not interfere with efforts to limit take of listed species during these periods. Thus, the NMFS and USFWS concluded that

the potential cumulative increase in Delta diversions associated with the East Altamont Energy Center will not have a significant effect on the environment or listed species. These interpretations were entirely consistent with the Applicant's expectations.

The manner by which NMFS evaluated the potential impacts of the East Altamont Energy Center is consistent with the manner in which the State and Federal agencies evaluate potential impacts in the Delta from changes in operation or development. They are reflective of the complex water rights situation in the Delta, Coordinated Operating Agreements and ongoing programs to restore the Delta environment.

Since the use of fresh water does not have a significant impact upon the environment a Condition of Certification to require actions to reduce the use of fresh water by developing recycled water or taking other measures will not serve to mitigate a significant impact.

G Proposed Changes to the Conditions of Certification.

As an overview, the Conditions of Certification SOIL & WATER-5 and 6 do not serve to ensure compliance with LORS nor are they required to ensure mitigation of any significant impact. The Conditions of Certification also interfere with BBID's ability to negotiate a commercial agreement with MHCSO and may limit or otherwise interfere with BBID's ability to provide water service to the East Altamont Energy Center. They impose an unreasonable and unjustified limit on the total water use at the project

The proposed Conditions of Certification will interfere with BBID's negotiation with MHCSO with broad unknown consequences. Absent the CEC's interference, negotiations between MHCSO and BBID will be based upon the interest that each agency has in achieving water recycling. BBID is interested in achieving the water supply benefits from the development of a recycled water supply, and MHCSO's interests will be to either avoid a discharge of wastewater in accordance with the regulatory directives from the RWQCB or to achieve beneficial re-use of the effluent in a more cost effective means than alternative re-use projects within the MHCSO development.

Applicant believes that the ability of BBID and MHCSO to effectively balance interests will be substantially altered by a requirement that the East Altamont Energy Center build a pipeline to MHCSO.

One key consideration is that a CEC-imposed requirement for the East Altamont Energy Center to develop a recycled water supply may actually serve to prevent that supply from being made available to the East Altamont Energy Center. By making the development of recycled water from MHCSO a prerequisite to starting construction of the East Altamont Energy Center, it would afford the opportunity to MHCSO to withhold the supply as a means of preventing construction of the power plant. The San Joaquin Board of Supervisors, which presently serves as the Board of MHCSO, is opposed to the East Altamont Energy Center. The requirement to develop and use MHCSO effluent would give the Board of Supervisors the discretion to withhold recycled water as a means to preventing the East Altamont Energy Center from being constructed.

The discussion below describes in detail the Applicants objections to Conditions of Certification SOIL & WATER-5, 6, 7 and 10

Soils and Water 5

The Applicant finds many elements of this Condition of Certification to be objectionable.

The Proposed Limit on Average Water use.

The proposed condition would require that Applicant limit average water use over a consecutive 5 year period to 4,616 acre-feet. While the Applicant estimates that *typical* year demands will be approximately 4, 616 acre-feet per year, Applicant has expressly noted that annual demands could vary to as much as 7,000 acre-feet and the will-serve commitment of BBID is valid up to a supply of 7,000 acre-feet per year. The consequences of this requirement have not been analyzed and this element of the condition has never been proposed previously in this proceeding. This limitation does not serve to mitigate any impact or ensure compliance with any LORS.

This proposed condition could limit operation of the power plant and in particular the operation of peaking capacity associated with maximum duct firing. The Applicant has been diligent to ensure that all aspects of the design and regulatory limits for the facility will enable operating flexibility. Applicant's design was developed in part due to the need for and high value of peaking power, and this condition effectively limits the peaking operation. The limiting of water use over a 5 year period arbitrarily limits the Applicant's operating flexibility while serving no beneficial purpose. From a statistical perspective it can be guaranteed that if the average is limited to any amount over any consecutive 5 year period, over a longer period the average would have to be lower. Thus the condition effectively reduces Applicant's available water supply to less than the projected need over the life of the project.

The Proposed Requirement to use 100 % Recycled Water by 2020

This proposed Condition of Certification would require the East Altamont Energy Center to use recycled water for "all of its nonpotable operational requirements" by January 1, 2020. This requirement should be rejected for many reasons. First, the East Altamont Energy Center is not designed to use 100 percent recycled water. As described in the project description the East Altamont Energy Center would treat incoming fresh water with reverse osmosis to provide steam makeup requirements in excess of production of distillate from the brine concentrator component of the zero liquid discharge system. Thus, the project would always have a fresh water demand. Under the MOU with BBID, the project will use recycled water for cooling tower makeup but will always use fresh water for makeup of process flow other than cooling tower makeup.

Second, it is far too speculative at this time to not merely encourage but absolutely mandate that a specific quantity must be made available from a specific source by a specific date. Indeed, the record clearly indicates such quantities of recycled water would not be available under the conditions specified in this proposed condition.

Third, a requirement that the East Altamont Energy Center must use recycled water to meet all of its nonpotable operational requirements unreasonably restricts the discretion of BBID (as the project's water supplier) to distribute fresh water and available recycled water supplies among all of its customers in the manner which is most efficient, economical and environmentally sound.

For the reasons stated above, Applicant recommends that Condition of Certification SOIL & WATER-5 be deleted.

Soils and Water 6

This proposed Condition of Certification would require the project owner to submit a request pursuant to Cal. Water Code Section 13580.7 to BBID requesting that BBID obtain recycled water from MHCSO. Because the Applicant has already executed the MOU with BBID which contemplates negotiations between BBID and MHCSO concerning a recycled water supply, such a request would serve no purpose. More significantly, it appears that the authors of the FSA are attempting to utilize Section 13580.7, which by its terms is discretionary in nature, as a mechanism for imposing upon the East Altamont Energy Center (and, indirectly, BBID) *mandatory* obligations to utilize MHCSO wastewater regardless of cost. This attempt to subvert the letter and spirit of Section 13580.7 must be rejected.

After submittal of this request, the proposed Condition would require BBID and the project owner to enter into a "Water Supply Service Contract" no later than 120 days after the request is submitted. The proposed condition would require this Contract to contain the following mandatory obligations:

- *The contract must contain the rates and terms of service for both fresh water and recycled water* even if BBID and MHCSO may not be able to determine the rates and terms of service of recycled water at the time the proposed condition would require the Contract between BBID and the project owner to be executed. As discussed above, there are many practical impediments to negotiating an agreement between BBID and MHCSO which may not allow an agreement to be reached by the date of Staff's arbitrary deadline. This condition could have the consequence of either (1) forcing BBID to set rates and conditions of supply of recycled water before the costs and conditions of service are actually known to BBID – an extraordinary risk to BBID, or (2) forcing BBID to enter into an agreement prematurely with a recycled water supplier at terms less favorable to BBID ratepayers than would have been attained if BBID was not forced to meet an arbitrary deadline.

- *The contract must give the East Altamont Energy Center first priority for allocation of recycled water with the BBID service territory*, thus overriding the authority of BBID to allocate water supplies among its customers in the manner which is most equitable, efficient and environmentally sound. Therefore, even if BBID determined a higher or better use for a portion of its recycled water supply, this proposed condition requiring "first priority" to the East Altamont Energy Center would override the authority and duty of the District to manage its water supplies to the benefit of all of its customers.

Allocation preferentially to the East Altamont Energy Center would not increase total recycled water supply or change BBID's intent to use all available recycled water. Dictating an allocation of water preferentially to the East Altamont Energy Center would undermine BBID's obligation to provide service on terms commensurate with other BBID customers and may in fact serve to limit the adequacy of the East Altamont Energy Center supplies. Alternatively, a requirement to preferentially allocate MHCS D recycled water to the East Altamont Energy Center may prevent BBID from securing other recycled customers or limit BBID's ability to serve other customers needs. The Commission should allow BBID to retain full ability to develop and allocate water supplies in order to ensure BBID's ability to meet the water needs of its customers:

- The contract must set forth the project owner and BBID's responsibilities for constructing a recycled water supply pump station and pipeline, the pipeline must come from the MHCS D, the pipeline must be capable of conveying 5.4 mgd to the East Altamont Energy Center, and the pipeline to convey recycled water from the MHCS D must be completed prior to the start of plant operation.

Each of the above elements of Condition 6 is inappropriate.

The provision which requires the contract to set forth the project owner and BBID's responsibilities for constructing a recycled water pipeline from Mountain House ignores the fact that MHCS D must be a party to any agreement to provide recycled water and that the terms for construction of the recycled water pipeline must be negotiated between MHCS D and BBID. Moreover, this condition erroneously determines that the responsibility will fall only on BBID or the East Altamont Energy Center and apparently intends to relieve MHCS D of any responsibility. To arbitrarily assign the costs and responsibilities to only two of the three parties is simply irresponsible. Moreover, this condition assumes that the East Altamont Energy Center will only be served by MHCS D, which would impair or preclude BBID 's ability to serve the project from alternative supplies of recycled water.

It is equally irresponsible to require the outlay of a major capital expenditure for a new pipeline without any guarantee that there will be sufficient quantities of water to be conveyed. MHCS D cannot presently guarantee delivery of any quantity of water prior to operation of the East Altamont Energy Center. Thus, the Staff's proposed condition would require the construction of a facility long before it may can be used. Even the pattern of development within the MHCS D is so uncertain that premature installation of a pipeline may cause a need to relocate the pipeline to accommodate the actual development of MHCS D

Similarly, the proposed requirement that the reclaimed pipeline have a 5.4 MGD capacity should be rejected. BBID and MHCS D should be permitted to determine the appropriate capacity for a pipeline based upon the available and projected supply of recycled water and the demands of BBID's customers. It has not been determined that 5.4 MGD is necessarily the correct size for this pipeline. This provision also conflicts with the requirement of Condition 7 that the pipeline be built equal to the peak flow requirement of the East Altamont Energy Center. (9.2 MGD)

For the reasons stated above, Applicant recommends that Condition of Certification SOIL & WATER-6 be deleted.

Condition of Certification 7

This condition is acceptable to the Applicant with the exception of provisions e, f and g

Provision 7 e

This provision would require that the pipeline be sized to meet the peak demands of the East Altamont Energy Center. This provision has not previously been proposed by the Staff. Further, it is not contemplated that the future Pipeline to MHCS D will be sized to meet the peak demands of the East Altamont Energy Center. The pipeline will not be sized larger than necessary to capture the maximum amount of available water from MHCS D. As related in Alternatives section below, Applicant estimates that a system capable of delivering approximately 300 acre-feet per month will maximize use of available recycled water and a larger pipeline will not be cost justified. The appropriate size for the pipeline has not been finalized by BBID because it depends upon future evaluations.

Provision 7 f

This provision will require the project owner to double on-site storage from the proposed 5 million gallons of on-site tank storage to a minimum of 10 million gallons. This requirement was never presented by the Staff prior to the issuance of the FSA. It is completely unjustified. In the first place, no evaluation has been performed to justify the increased storage. Applicant believes that the proposed use of fresh water as supply prior to the availability of recycled water and the use of fresh water as a backup to recycled water provides a highly reliable delivery system to serve the East Altamont Energy Center. The AFC describes improvements to the canal system of BBID that will be constructed to ensure that the closed conduit conveyance facilities serving the East Altamont Energy Center will be highly reliable. There is simply no basis to determine that the BBID water system will be unreliable. Moreover, no engineering evaluation of the proposed change has been presented. The FSA estimates the cost of adding the storage to be \$3 million but no evaluation has been presented as to site configuration impacts and the impacts on Applicants air and biological mitigation programs. Also, there is no presentation of the improvement in reliability that the addition of this storage will afford. In summary, the addition of 5 million gallons of on-site storage is not be justified based upon reliability of the East Altamont Energy Center nor is it justified to mitigate a potential impact from the project.

Provision 7 g

This provision will require the Applicant to design its water system to utilize water from its on-site stormwater detention basin within the zero liquid discharge system. Again, this is the first time this suggestion has been presented. The staff states that all that is required to reuse the stormwater is a \$10,000 pipe. Applicant believes that this evaluation is completely inadequate. Moreover, the suggestion is irrelevant to the impacts of the project or compliance with any LORS.

Applicant is unaware of any LORS that will justify this change and staff does not suggest any applicable LORS. The project does not cause any adverse impact from runoff of stormwater from the site so the reuse of stormwater does not serve to mitigate an impact. Moreover, the potential water savings of the proposal are insignificant. Staff suggests that the modification to the design is economical but no competent engineering evaluation has been performed. The Staff assertions ignore potential issues related to size of the detention basin, operations when the power plant is not operating, treatment requirements for reuse, and regulatory compliance issues associated with the proposal.

For the reasons stated above, Applicant recommends that provisions e, f, and g of Condition of Certification SOIL & WATER-7 be deleted.

Condition of Certification 10

This Condition of Certification would require that the East Altamont Energy Center provide the CPM with a copy of a Building Permit from Contra Costa County for the Fresh Water Pump Station that would be added to the BBID system in order to serve the East Altamont Energy Center.

This condition appears in the FSA with no reference or justification. BBID will not normally require a building permit for the construction of a water pump station and thus this Condition of Certification creates an entirely new requirement. It is not justified to mitigate any impact nor required to comply with any LORS. For these reasons, Applicant recommends that Condition of Certification SOIL & WATER-10 be deleted.

H. Alternatives to Applicant's proposed Water Supply

During the course of these proceedings, Applicant provided feasibility evaluations of several alternatives to the proposed water supply for the East Altamont Energy Center. These evaluations included studies on the potential to develop new recycled water supplies and studies of dry cooling.

Applicant concluded that the use of MHCS D effluent as proposed by BBID appeared to be reasonable and feasible, but that for a variety of reasons detailed below, the use of Discovery Bay effluent was considered infeasible as was the potential use of City of Tracy effluent. In the Preliminary Staff Assessment, the Staff concluded that the use of City of Tracy and Discovery Bay effluent will be infeasible only considering the potential downstream impacts that removal of these fresh water discharges will have on the sensitive Delta environment. In the FSA, the staff apparently changes its determination but provides no explanation for the change. The LORS section of the FSA does not discuss the requirements of the SWRCB for environmental review or the administrative process to obtain SWRCB permission to use such effluent. See Cal. Water Code Section 1211. Nor does the FSA examine the potential regulatory hurdles involved in changing the use of Discovery Bay or City of Tracy effluent discharge. This appears to be deliberately misleading considering that the staff explained in January 2002 workshops that they understood these requirements and would list the administrative process as a LORS in the FSA.

In any event, the alternatives evaluation in the FSA is misleading. Presented below are summaries of the Applicant's evaluation of the feasibility of dry cooling and the feasibility of developing recycled water.

Dry Cooling

Applicant prepared Data Response 84, which presented a summary of the principal advantages of wet cooling vs. dry cooling at the facility. The following are some of the significant conclusions from that Data Response. These data are the only cost data produced in these proceedings and they are apparently used by the staff in presentation of cost. Below are some of the significant findings from that evaluation.

- Dry Cooling will reduce overall water use by approximately 98%.
- Based upon a comparison of all capital costs associated with dry cooling and all capital costs for wet cooling, there is an approximate \$36.8 million capital cost advantage to wet cooling.
- Based upon an evaluation of all operating costs and reduced revenues from power generation with the dry cooling alternative, Applicant estimated that the annual operating costs of dry cooling compared to wet cooling was \$8.61 million per year. Based upon the CEC staff assumptions regarding the present value of this annual operating obligation (7% discount, 30-year term) the annual cost of 8.61 million annually will have a present value of approximately \$114 million.

Recycled Water Alternatives

Overarching Principles

BBID is the only water supplier with available supplies to serve the East Altamont Energy Center

Applicant's evaluation of alternative water supplies considered the proposition from the perspective of both the Applicant and BBID. With respect to the feasibility of Applicant developing recycled water supplies, it is important to remember that the East Altamont Energy Center could not have a direct service relationship with potential suppliers of recycled water⁴. Also, none of the potential recycled water suppliers could meet the East Altamont Energy Center's total water needs, so the East Altamont Energy Center would have to buy at least a portion of its water from BBID. Finally, the facilities to deliver fresh water are sized to meet 100% of the East Altamont Energy Center's requirement to provide service until recycled water is available and to serve as a backup to recycled water thereafter.

⁴ Applicant presented its concerns relative to establishing a direct service relationship with MHCSO in Data Response's 86 and 138. Per the July letter from MHCSO the San Joaquin County Counsel has concluded that MHCSO could not legally establish a direct service relationship with the East Altamont Energy Center.

Thus recycled water development by Applicant separate from BBID is infeasible. Yet BBID could potentially develop recycled water. In this regard the Applicant has negotiated a MOU with BBID that provides that BBID will develop recycled water to the maximum feasible extent. Moreover, the Applicant evaluated the feasibility of recycled water development considering BBID's perspective and strong interests in developing recycled water.

To the extent that the East Altamont Energy Center will utilize treated wastewater that is already being discharged to a watercourse, SWRCB approval of the change in point of discharge, and place of use and purpose of use will be required under California Water Code Section 1211. The SWRCB will review the change proposal under the "no injury" provisions of Water Code Section 1702, and any legal user of water that will be affected by the proposed change will have an opportunity to protest the change. Thus, from a regulatory standpoint, there is a distinct advantage in utilizing a source of wastewater such as MHCSO that has not been previously discharged to a watercourse and for which other legal users of water have not developed reliance.

MHCSO Feasibility

The use of MHCSO effluent as proposed by BBID appears to be feasible. While neither party may have sufficient interests on its own to develop recycled water, both have indicated their strong interest in establishing service and collectively the interests of the parties will seem to justify a water supply project to serve the East Altamont Energy Center recycled water from MHCSO as identified by BBID.⁵

From a cost perspective it appears that the BBID plan is both economically attractive and financially feasible. Opportunity costs are approximately \$8 million consisting of costs for facilities to convey the recycled water to the East Altamont Energy Center. This economic cost appears justified considering the value of the investment at reducing discharge to the Delta, and the value of a new permanent water supply to BBID. Based upon a use of 2,861 acre-feet per year recycled water by the East Altamont Energy Center and the annualized cost of the \$8 million opportunity costs (7%, 30 yr) the cost of the new water will be approximately \$225 per acre foot which is in line with the Applicant's estimate of the economic value of this new water supply of \$200 to \$300 per acre-foot provided at the PSA workshop. This development project also appears to be financially feasible because BBID will have the capacity to generate revenues in line with the economic value of the water resources from either water sales within its service area or, to the extent supplies are in excess of BBID's in service area needs, the excess could be sold to users outside BBID. Moreover, BBID and or MHCSO may be able to receive grant monies for the development of the recycled water system. Thus, the conclusion that the project is feasible is well founded.

⁵ BBID Recycled Water Feasibility Study.

Discovery Bay CSD

The development of recycled water from Discovery Bay effluent was considered to be infeasible for a combination of institutional and economic considerations. As mentioned above, a key institutional consideration will be if Discovery Bay could legally market its recycled water. Discovery Bay will have to perform environmental evaluations in support of an application to beneficially re-use its effluent before such determination will be possible. Also, Discovery Bay and BBID have no service relationship and Discovery Bay is only partially within BBID's service area.

In addition, the development of a recycled water supply from Discovery Bay CSD does not appear to be economically feasible. Opportunity costs for the development of a recycled water system from Discovery Bay will include: (Data Response-86)

- Costs for Facilities to Convey Recycled Water to the East Altamont Energy Center – \$12 million
- Costs for Upgrades to Discovery Bay Treatment to meet Title 22 – \$ 5 million
- Cost impacts on the East Altamont Energy Center Zero Liquid Discharge – \$1.3 million capital plus \$6.25 million NPV Operating Cost Impact (\$471,000 annually in DR 86)

Based upon the ultimate potential supply of 2,352 acre-feet, and only the costs identified above, the cost will be approximately \$850/acre-foot which is approximately three times the economic value estimated by the Applicant.

City of Tracy

BBID is not pursuing the development of City of Tracy recycled water. Several key institutional considerations exist. As discussed above, City of Tracy has not completed environmental review of potential reuse of effluent that is discharged to the Delta. The City has not obtained approval from the SWRCB to change the point of discharge, place of use or purpose of use of its effluent and has not completed environmental reviews necessary to support such a change petition. It is not clear that the City could obtain SWRCB approval to change the use of its effluent, and such a change petition may generate opposition by downstream water users that will be affected by the change. There are also potential institutional difficulties in reaching a deal between BBID and City.

The option also appears to be economically infeasible. The opportunity costs of development of recycled water will include

- Costs for conveyance system to deliver recycled water to the East Altamont Energy Center – \$17.2 million

WATER RESOURCES

- Costs for Upgrades to City of Tracy Treatment Plant – \$2.8 million⁶
- Increased Costs for Zero Liquid Discharge system (\$1.3 million capital, 6.25 million NPV operating cost impact)

Based upon only the total cost of \$27.5 million identified above and a potential use of 4,500 acre-feet per year this economic cost will be approximately \$490/acre-foot which is approximately twice the economic value estimated by the Applicant.

⁶ Costs for full upgrade are estimated to be \$11.2 million; \$2.8 million refers to incremental cost of upgrading disinfection system only and presumes that costs for tertiary treatment are independent of the project to reuse the effluent because the City must incur these costs with or without reuse. (DR 86)

WORKER SAFETY AND FIRE PROTECTION

I. INTRODUCTION

A. Names: Tricia Danby and James McLucas

B. Purpose: This testimony addresses issues associated with worker protection, industrial safety, and fire protection.

C. Qualifications: Tricia Danby is a Certified Industrial Hygienist with 14 years of experience in environmental regulatory compliance, including worker health and safety programs for industrial facilities. Her qualifications are summarized more completely in the attached resume (Appendix A).

James McLucas is a Regional Engineer with Calpine Corporation. He has over 21 years engineering experience in the energy field. His qualifications are summarized more completely in the attached resume (Appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.16 of the AFC
- Data Response Set #3, Number 132, Filed October 9, 2001
- Supplement A, Filed on May 3, 2001
- Supplement B, Filed on October 9, 2001
- Letter from William J. McCammon to Cheri Davis, Dated January 30, 2002
- Supplement C, Filed on February 6, 2002
- Informal Data Response Regarding Emergency Response History for Calpine's Western Region Power Plants, Filed July 3, 2002

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that two Conditions of Certification be adopted to address worker safety issues. These conditions: WORKER SAFETY-1 and WORKER SAFETY- 2 are described on pages 5.15-15 through 5.15-16 of the Final Staff Assessment.

WORKER SAFETY AND FIRE PROTECTION

We have reviewed the Conditions that were proposed in the FSA and do not believe that there are any outstanding disputes between the Staff and the Applicant regarding the Conditions for Worker Safety and Fire Protection.

III. SUMMARY

- A. Affected Environment:** The East Altamont Energy Center site is formally within the Alameda County Fire Department (ACFD) jurisdiction and as stated in the ACFD letter to the CEC dated January 30, 2002, ACFD is the first responder agency. ACFD Station No. 8 at 1617 College Avenue in Livermore is the nearest station to the East Altamont Energy Center site and would respond to a call from the site in approximately 20 minutes. Station No. 8 is staffed by four fire fighters and has one engine and a patrol truck. ACFD is planning, however, to relocate Station No. 8. The new location near Interstate 580 and Greenville Road would reduce the response time to approximately 10 minutes.

For a major structural fire, Station No. 8 relies on the assistance of Station No. 4, located at 20336 San Miguel Avenue in Castro Valley and the Lawrence Livermore National Laboratory, located on East Avenue in Livermore. The Livermore Lab has one engine and Station No. 4 can provide assistance with a water tender and two engines. Station No. 8 also has a mutual assistance agreement with the City of Tracy Fire Department located at 325 E. 10th Street in Tracy. The Tracy Fire Department can devote one engine with three firefighters to Station No. 8.

In the event of an emergency offsite release, plant personnel will defer to the County Haz Mat Team based at ACFD Station No. 4 in Castro Valley. Station No. 4 is staffed by six trained personnel and is able to manage hazardous materials emergencies, including incidents involving anhydrous ammonia. The response time to an emergency call from the East Altamont Energy Center site is 35 to 40 minutes.

The East Altamont Energy Center will comply with the Laws, Ordinances, Regulations, and Standards (LORS) related to Worker Safety and Fire Protection. Compliance with these LORS will assure that worker safety is a dominant concern during construction and operation of the facility. The Fire Protection and Prevention measures will provide a safe facility for both workers and the surrounding community.

- B. Construction Impacts:** There are no unique construction impacts. The types of activities associated with the construction and operation of the facility are addressed both in LORS and in standard safe work practices. A review of all safety procedures and systems by qualified safety professionals will ensure that a safe working environment is provided to workers and that the community will be impacted below any threshold of significance.
- C. Operational Impacts:** There are no unique operational impacts. Fires or work related injuries requiring emergency response occur infrequently at gas-fired power plants. For the 13 Western Region gas-fired power plants owned by Calpine Corporation (the parent company of the Applicant) or its subsidiaries there have only been 2 small fire incidents and only one work related medical incident since the plants became operational or under Calpine's control.

WORKER SAFETY AND FIRE PROTECTION

The types of activities associated with the construction and operation of the facility are addressed both in LORS and in standard safe work practices. A review of all safety procedures and systems by qualified safety professionals will ensure that a safe working environment is provided to workers and that the community will be impacted below any threshold of significance.

D. Cumulative Impacts: No cumulative impacts are anticipated

E. Mitigation

1. Construction Mitigation: During construction of the East Altamont Energy Center, a comprehensive Construction Health and Safety Program will be implemented. The major elements of this construction safety program will include:

- Construction Injury and Illness Prevention Program
- Personal Protective Equipment
- Fire Protection and Prevention
- Materials Handling, Storage, Use and Disposal
- Tools – Hand and Power
- Welding and Cutting
- Electrical
- Scaffolds
- Fall Protection
- Cranes, Derricks, Hoists, Elevators, and Conveyors
- Motor Vehicles
- Concrete and Masonry
- Ladders
- Hazard Communication
- Unfired Pressure Vessel
- Excavation

Construction activities will not commence until the above programs have been prepared and are in place, and all of the applicable training requirements have been implemented.

WORKER SAFETY AND FIRE PROTECTION

2. Operational Mitigation: During operation on the East Altamont Energy Center, a comprehensive Operational Health and Safety Program will be implemented. The major elements of this program will include:

- Injury and Illness Prevention
- Emergency Action
- Fire Protection
- Personal Protective Equipment
- Confined Space Entry
- Fall Protection
- Electrical Safety
- Materials Handling, Storage, Use and Disposal
- Tools – Hand and Power
- Welding and Cutting
- Scaffolds
- Ladders
- Hazard Communication
- Unfired Pressure Vessel
- General Operations and Maintenance (i.e., how to safely operate and maintain the plant)

Operation and maintenance of the plant will not commence until the appropriate H&S procedures are in place and all of the applicable training requirements have been implemented.

In addition, the East Altamont Energy Center will be equipped with several fire protection systems to be used in the unlikely event a fire occurs. These systems include: the Facility Firewater Supply System; Water Based Fire Suppression System; FM200 Fire Suppression System; and Fire Alarm System. These systems are described in more detail below:

Facility Firewater Supply System: For the Facility Firewater Supply System, a 5 million-gallon (nominal capacity) onsite raw water storage tank will be located at the project site. This tank will include a minimum of 240,000 gallons of water dedicated to the fire protection system. The dedicated water supply is sized in accordance with NFPA 850 to provide 2 hours of protection from the onsite worst-case single fire.

WORKER SAFETY AND FIRE PROTECTION

Water-Based Fire Suppression Systems: The Water-Based Fire Suppression Systems will be included for the following buildings and areas: Administration, Maintenance, Warehouse, and Control Building; Water Treatment Building (if justified by combustible loading); Fire Pump Building; Transformers; and Steam Turbine and Generator Bearings, Lube Oil Equipment and Reservoir.

FM200 Fire Suppression Systems: FM200 fire suppression systems will be provided for designated portions of all three gas-fired turbine generators. Protected areas will include: the turbine and gas fuel compartments, generators, and accessory equipment compartments. In addition, the system will also have fire detection sensors in all compartments. Actuating one sensor will provide a high-temperature alarm on the combustion turbine control panel. Actuating a second sensor will trip the combustion turbine, turn-off ventilation, close ventilation openings, and automatically release FM200. The FM200 will be discharged at a design concentration adequate to extinguish the fire.

Fire Alarm Systems: The East Altamont Energy Center will have a fire alarm and detection system. In addition to providing occupant notification for the buildings, the system also will monitor numerous smoke and heat detectors, fire suppression system alarm and supervisory devices, manual pull stations, and fire pump status.

Employees trained in fire protection include operators, maintenance technicians, plant manager, operations manager, plant engineer, and maintenance manager. In the event of a fire, an alarm will sound on the fire alarm control panel in the plant Control Room. The operator will sound the internal fire alarm and report the fire by dialing 911. If the fire is small, is not spreading rapidly, and is not threatening further danger by explosion or contact with toxic gases, an operator or other trained staff member mentioned above, will put the fire out by using a fire extinguisher or other fire-fighting equipment.

For a large fire, the operator will sound the evacuation siren for plant personnel and dial 911. The operator will then assign someone to meet fire department personnel at the plant entrance gate. Depending on the location of the fire, the operator will consider: 1) stopping all material transfers; 2) tripping the deluge system; 3) disconnecting the electrical feed to the building. In addition, an emergency shutdown of the plant will occur and the employees on site will be evacuated. Trained fire department personnel will fight the fire.

**DECLARATION OF
Patricia Danby**

I, Tricia Danby, declare as follows:

1. I am presently employed by CH2M HILL as a Certified Industrial Hygienist.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Worker Safety and Fire Protection for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

**DECLARATION OF
Jim McLucas**

I, Jim McLucas, declare as follows:

1. I am presently employed by Calpine Corporation as a _____
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Worker Safety and Fire Protection for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

III. ENGINEERING ASSESSMENT

FACILITY DESIGN, POWER PLANT RELIABILITY, AND POWER PLANT EFFICIENCY

PALEONTOLOGICAL RESOURCES

GEOLOGIC HAZARDS AND RESOURCES

TRANSMISSION SYSTEM ENGINEERING

FACILITY DESIGN, POWER PLANT RELIABILITY, AND POWER PLANT EFFICIENCY

I. INTRODUCTION

- A. Name:** James McLucas
- B. Purpose:** This testimony addresses the Facility Design, Power Plant Reliability, and Power Plant Efficiency issues associated with the proposed East Altamont Energy Center.
- C. Qualifications:** Mr. James McLucas is a Regional Engineer with Calpine. He has over 21 years of engineering experience in the energy, water and wastewater fields. His qualifications are summarized more completely in the attached resume contained in Appendix A.
- D. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Section 10 of the AFC
 - Appendices 10A through 10F to the AFC
 - Response to CEC Data Adequacy Data Request Set 1, Filed May 1, 2001
 - Supplement A to the AFC, Filed on May 3, 2001
 - Supplement B to the AFC, Filed on October 9, 2001
 - Comments on the Preliminary Staff Assessment, Filed January 14, 2002
 - Supplement C to the AFC, Filed on February 6, 2002
 - Informal Data Request Responses Set #3, Filed November 21, 2001
 - Response to Informal Data Request Set 2, Filed October 12, 2001

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that Conditions of Certification be adopted to address Facility Design issues. These conditions, GEN-1 through GEN-8, CIVIL-1 through CIVIL-4, STRUC-1 through STRUC-4, MECH-1 through MECH-3, and ELEC-1 are described on pages 6.1-6 through 6.1-22 of the Final Staff Assessment. Design and construction of the proposed facility in accordance with the

FACILITY DESIGN, POWER PLANT RELIABILITY,
AND POWER PLANT EFFICIENCY

requirements of these Conditions of Certification would ensure that the facility would be in compliance with the applicable federal, state, and local laws, ordinances, regulations, and statutes.

The Applicant has reviewed the Staff’s proposed Conditions of Certification related to Facility Design, and agree with them all with the exception of GEN-2. The Applicant proposes that Table 1 in GEN-2 be replaced with the table below, which reflects the results of a discussion between Calpine’s Jon Maring and CEC staff and focuses Chief Building Official (CBO) review on life safety items. No Conditions of Certification are proposed in the areas of Power Plant Reliability or Power Plant Efficiency.

GEN-2 Prior to submittal of the initial engineering designs for CBO review, the project owner shall furnish to the CPM and to the CBO a schedule of facility design submittals, a Master Drawing List, and a Master Specifications List. The schedule shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM when requested.

At least 60 days (or project owner and CBO approved alternative timeframe) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, the Master Drawing List, and the Master Specifications List of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent design documents for the major structures and equipment listed in **Table 1** below. Major structures and equipment shall be added to or deleted from the Table only with CPM approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Table 1:
Major Structures and Equipment List

Equipment/System	Quantity (Plant)
Combustion Turbine (CT) Foundation and Connections	3
CT Mechanical Accessories (e.g. lube oil cooler, static motor starter, No_x control system, compressor wash system, fire detections system, fuel heating system, etc.) Foundation(s) and Connections	3
CT Structure Shell and Façade Foundation and Connections	3
CT Inlet Air Plenum and Filter Structure, Foundation and Connections	3
CT Inlet Air Evaporative Cooler Foundation and Connections	3
Combustion Turbine Generator (CTG) Foundation and Connections	3
Heat Recovery Steam Generator (HRSG) Structure, Foundation and Connections	3
HRSG Exhaust Stack, Foundation and Connections	3
HRSG Transition Duct Burner and Forced Draft Structure, Foundations and Connections	3

FACILITY DESIGN, POWER PLANT RELIABILITY,
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Equipment/System	Quantity (Plant)
Selective Catalytic Reduction Unit Foundation and Connections	3
Steam Turbine (ST) Foundation and Connections	1
ST Structure Shell and Façade Foundation and Connections	1
Steam Turbine Generator (STG) Foundation and Connections	1
STG Lube Oil Skid Foundation and Connections	1
STG Hydraulic Control System Foundation and Connections	1
Mechanical Draft Evaporative Cooling Tower, Support Structures, Foundations and Connections	1 Lot
Pipe and Cable Way Structures, Foundations and Connections	1 Lot
Electrical MCC, Building Structure, Foundation and Connections	1
18KV Auxiliary Step Down Transformer Foundation and Connections	2
230KV Step Up Transformer, Fire Protection System Foundation and Connections	4
Load Center Transformers (4,160 to 480 Volt) Foundation(s) and Connections	1 Lot
125 VDC Power Supply System	1 Lot
Electrical Control Centers, Switchgear and Switchyard Equipment Foundations and Connections	1 Lot
Power Distribution Center Foundation and Connections	1 Lot
Generator— Natural Gas Fired 1,000-KW Emergency, Foundation and Connections	1
Natural Gas Filter/Scrubber/Separator Foundation and Connections	1 Lot
Natural Gas Separator/Heater Foundation and Connections	1 Lot
Natural Gas Metering and Regulating Station Foundations and Connections	1 Lot
All Building Structures, Foundations and Connections (e.g. Control Room, Administration Building, Warehouse, Bulk Storage Building, Equipment Shelter, De Mineralized Water Treatment Building, Mechanical Shop, Fire Pump Building, Fuel Gas Compressor Building, Compressor Building, Switchyard Control Building, Boiler Feed Pump Building, etc.)	1 Lot
Skid— Amonia Blower Injection Foundation and Connections	1 Lot
Tank— Ammonia Storage, Foundation and Connections	1
Tank— Raw/Fire Water, 5,000,000 Gallon, Foundation and Connections	2
Tank— Oily Water Separator, Foundation and Connections	1 Lot
Tank— Combustion Turbine Water, Foundation and Connections	1

FACILITY DESIGN, POWER PLANT RELIABILITY,
AND POWER PLANT EFFICIENCY

Equipment/System	Quantity (Plant)
Tank—Demineralized Water, 500,000 Gallon, Foundation and Connections	2
Tank—Boiler Blowdown, Foundation and Connections	1 Lot
Tanks—Water Treatment Facilities (e.g. Sulfuric Acid, Scale Inhibitor, Sodium Hypochlorite, Bromine, Non Oxidizing Biocide, Oxygen Scavenger, Amine, Phosphate, etc.) Foundation and Connections (as required by CBC)	1 Lot
Pump—Fire Water Pump Skid (electric jockey pump, electric main pump, and diesel back-up pump) Foundation and Connections	1 Lot
Pump—HSRG Feedwater Foundation and Connections	6
Pump—Boiler Water Feed Pump Foundation and Connections	1 Lot
Pump—Demineralized Water Transfer Pump Foundation and Connections	1 Lot
Pump—Condensate Pump Foundation and Connections	3
Pump—Circulating Water Foundation and Connections	2
Pumps—Water Treatment and Cooling Systems (e.g. Auxiliary Cooling Water, Aqueous Ammonia Transfer, Aqueous Ammonia Unloading, Closed Loop Cooling Water, Oily Water Sump, Raw Water, Sulfuric Acid, Scale Inhibitor, Sodium Hypochlorite, Bromine, Non Oxidizing Biocide, Oxygen Scavenger, Amine, Phosphate, etc.) Foundation and Connections (as required by CBC)	1 Lot
Cooling Tower/Air Cooled Condenser Structure, Foundation and Connections	1 Lot
Boiler—Auxiliary, Stack, Foundation and Connections	1
Auxiliary Boiler SCR System Foundation and Connections	1 Lot
Ammonia Injection Skid Foundation and Connections	1 Lot
Compressors—Air Foundation(s) and Connections	1 Lot
Compressors—Fuel Gas Foundation(s) and Connections	1 Lot
Pipeline—Water Supply	1
Pipeline—Recycled Water Supply	1
Pipeline—Natural Gas	1
Potable Water Systems	1 Lot
Chemical Containment Systems	1 Lot
Fire Suppression Systems	1 Lot
Drainage Systems (including sanitary, storm drain, and waste)	1 Lot
Waste Water Evaporation Ponds (5 Acres Each)	2
Building Energy Conservation Systems	1 Lot

FACILITY DESIGN, POWER PLANT RELIABILITY,
AND POWER PLANT EFFICIENCY

Equipment/System	Quantity (Plant)
Temperature Control and Ventilation Systems (including water and sewer connections)	1 Lot
High Pressure Piping	1 Lot
HVAC and Refrigeration Systems	1 Lot

Table 1. Major Structures and Equipment List

Equipment/System	Notes/Comments
<u>Combustion Turbine(s) (CT)</u>	<u>To include all applicable code plan review and inspection for foundations & connections to foundations. "Black Box" packages to have supporting documentation from factory. Black Box definition and procedures applicable.</u>
<u>Steam Turbine(s) (ST)</u>	<u>To include all applicable code plan review and inspection for foundations & connections to foundations. "Black Box" packages to have supporting Black Box definition and procedures applicable documentation from factory.</u>
<u>Combustion Turbine Generator(s) (CTG)</u>	<u>To include all applicable code plan review and inspection for foundations & connections to foundations. "Black Box" packages to have supporting documentation from factory. Black Box definition and procedures applicable.</u>
<u>Steam Turbine Generator(s) (STG)</u>	<u>To include all applicable code plan review and inspection for foundations & connections to foundations "Black Box" packages to have supporting documentation from factory. Black Box definition and procedures applicable.</u>
<u>Heat Recovery Steam Generator(s) (HRSG)</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation, and assembly of field assembled structures. Black Box definition and procedures applicable.</u>
<u>Auxiliary Transformer(s)</u>	<u>To include all applicable code plan review and inspection for foundations & connections to foundations. Transformer to be shipped with supporting inspection documentation from factory. Black Box definition and procedures applicable.</u>
<u>CT Inlet Air Plenum Structure(s),</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation, and assembly of field assembled structures. "Black Box" packages to have supporting documentation from factory. Black Box definition and procedures applicable.</u>
<u>CT Inlet Air Evaporative Cooler(s)</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation, and assembly of field assembled structures. "Black Box" packages to have supporting documentation from factory. Black Box definition and procedures applicable.</u>
<u>HRSG Exhaust Stack(s)</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation, and assembly of field assembled structures. Black Box definition and procedures applicable.</u>
<u>Cooling Tower/Air Cooled Condenser</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation, and assembly of field assembled structures. Black Box definition and procedures applicable.</u>
<u>CT & ST Building Structure(s) including generator auxiliary compartment (GAC), primary electrical center (PEC) & mechanical accessory compartment</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation. "Black Box" packages to have supporting documentation from factory. Black Box definition and procedures applicable.</u>

FACILITY DESIGN, POWER PLANT RELIABILITY,
AND POWER PLANT EFFICIENCY

Table 1. Major Structures and Equipment List

<u>Equipment/System</u>	<u>Notes/Comments</u>
<u>Secondary Unit Substation/Transformer(s)</u>	<u>To include all applicable code plan review and inspection for foundations & connections to foundations. Transformer to be shipped with supporting inspection documentation from factory. Black Box definition and procedures applicable.</u>
<u>Electrical/Control Center(s) (switchgear)</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation. Black Box definition and procedures applicable.</u>
<u>CEMS Building</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation. "Black Box" packages to have supporting documentation from factory. Black Box definition and procedures applicable.</u>
<u>Boiler Feed Water Pump(s)</u>	<u>To include all applicable code plan review and inspection for foundation & connection to foundation. Black Box definition and procedures applicable.</u>
<u>Condenser Structure</u>	<u>To include all applicable code plan review and inspection for foundation & connection to foundation. Condenser to be shipped with inspection documentation from factory. Black Box definition and procedures applicable.</u>
<u>CT static starter motor</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation. "Black Box" packages to have supporting documentation from factory. Black Box definition and procedures applicable.</u>
<u>CT & ST step up transformer(s) (GSU)</u>	<u>To include all applicable code plan review and inspection for foundations & connections to foundations. Transformer to be shipped with supporting inspection documentation from factory. Black Box definition and procedures applicable.</u>
<u>Fuel Gas Compressor(s)</u>	<u>To include all applicable code plan review and inspection for foundations, connections to foundation & any field assembled components. Black Box definition and procedures applicable. "Black Box" packages to have supporting documentation from factory.</u>
<u>Fuel Gas Compressor Building</u>	<u>To include all applicable code plan review and inspection for foundation & connections to foundation & any field-assembled components.</u>
<u>ST Lube Oil Package</u>	<u>To include all applicable code plan review and inspection for foundation & connections to foundation. "Black Box" packages to have supporting documentation from factory. Black Box definition and procedures applicable.</u>
<u>Ammonia Tank</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation and any field assembled components. Vessel to be shipped with inspection documentation from factory.</u>
<u>Ammonia Blower Injection Skid</u>	<u>To include all applicable code plan review and inspection for foundation, connections to foundation and any field assembled components. "Black Box" skid to be shipped with inspection documentation from factory. Black Box definition and procedures applicable.</u>
<u>Pipe Rack(s)</u>	<u>To include all applicable code plan review and inspection for foundation & field assembled structure. No pipe hangers/supports intended for review. Individual ground mounted pipe supports not intended for review. Representative pipe hangers / supports to be reviewed.</u>
<u>High Pressure Piping</u>	<u>Review of design philosophy and criteria. Representative larger diameter and high pressure pipe designs to be individually reviewed.</u>
<u>Stairways, Ladders & Platforms</u>	<u>To include all applicable code plan review and inspection of all stairways and ladders providing equipment access. Miscellaneous ladders & platforms designed for equipment access less than 30" above grade not included. To be reviewed only for proper handrails.</u>
<u>Fire/Service Water Storage Tank</u>	<u>To include all applicable code plan review and inspection for foundation & field assembled structure.</u>

FACILITY DESIGN, POWER PLANT RELIABILITY,
AND POWER PLANT EFFICIENCY

Table 1. Major Structures and Equipment List

<u>Equipment/System</u>	<u>Notes/Comments</u>
<u>De-mineralized Water Storage Tank</u>	<u>To include all applicable code plan review and inspection for foundation & field assembled structure.</u>
<u>Fire Water Pump Skid</u>	<u>To include all applicable code plan review and inspection for foundation & connection to foundation. Black Box definition and procedures applicable.</u>
<u>De-mineralized Water Treatment Building</u>	<u>To include all applicable code plan review and inspection for foundation & field assembled structure. Black Box definition and procedures applicable to water treatment equipment within building. Not intended for handicap access or continual occupation.</u>
<u>Administration/Warehouse/Mechanical Shop Building(s)</u>	<u>To include all applicable plan review code inspections.</u>
<u>Fire Pump Building(s)</u>	<u>To include all applicable code plan review and inspection for foundation & field assembled structure. Not intended for handicap access or continual occupation.</u>
<u>Switchyard Control Building</u>	<u>To include all applicable code plan review and inspection for foundation & field assembled structure. Not intended for handicap access or continual occupation.</u>
<u>Switchyard, Busses & Towers</u>	<u>If designed & inspected by utility standards, no CBO review required. Any portion designed and installed by applicant to include all applicable code plan review and inspection.</u>
<u>Boiler Feed Pump Building</u>	<u>To include all applicable code plan review and inspection for foundation & field assembled structure. Not intended for handicap access or continual occupation.</u>
<u>Potable Water Systems</u>	<u>To include all applicable code plan review and inspections.</u>
<u>Drainage Systems</u> <u>(Including sanitary drain and waste)</u>	<u>To include all applicable code plan review and inspections. To include all applicable code inspections.</u>
<u>Building Energy Conservation Systems</u>	<u>To include all applicable code plan review and inspections. To include all applicable code inspections.</u>
<u>Temperature Control and Ventilation Systems (Including water and sewer connections)</u>	<u>To include all applicable code plan review and inspections. To include all applicable code inspections.</u>
<u>HVAC and Refrigeration Systems</u>	<u>To include all applicable code plan review and inspections. To include all applicable code inspections.</u>
<u>Permanent Eye Stations and Locations</u>	<u>To include all applicable code plan review and inspections.</u>
<u>Chemical Feed System Containment</u>	<u>To include all applicable code plan review and inspections.</u>
<u>Water Treatment System Chemical Containment</u>	<u>To include all applicable code plan review and inspections.</u>
<u>Ammonia System Design</u>	<u>To include all applicable code plan review and inspections.</u>
<u>Electrical Systems</u>	<u>All building energy conservation installations, exiting installations, and all hazardous location installations to include all applicable code plan review and inspections. All other electrical installations subject to applicable code inspections. Final scope of electrical plan review subject to submission by applicant of proposed plan list.</u>

Black Box Definition and Procedures

A black box is one or more components, an assembly, and/or package designed fabricated and factory assembled by a manufacturer containing single or multiple mechanical and/or electrical parts and connections.

The manufacturer or owner certifies that the black box has been designed and assembled in conformance with applicable codes and standards as specified in the design and product specifications.

Components within the assembly have appropriate third party testing and certifications where applicable.

Appropriate engineers licensed by the State have signed and certified where applicable.

III. SUMMARY

- A. Affected Environment:** The East Altamont Energy Center (East Altamont Energy Center) will be a nominal 1,100-megawatt (MW) natural-gas-fired combined-cycle generating facility, with a 230-kilovolt (kV) switchyard and approximately 0.5 mile of two new 230-kV transmission lines. The switchyard, which will be owned by Western Area Power Administration (Western), will function as an extension of Western's existing Tracy substation, located across Mountain House Road, immediately to the west of the project site. Natural gas for the facility will be delivered via approximately 1.8 miles of new 20-inch pipeline that will connect to Pacific Gas and Electric's (PG&E) existing gas transmission line southeast of the Bethany gas compressor station located to the west of the site near the intersection of Bruns Road and Kelso Road. Roughly 4,600 acre-feet per year (AFY) of raw water for cooling tower and process makeup water will be supplied by the Byron Bethany Irrigation District (BBID) via an approximately 2.1-mile pipeline. It is anticipated that when available, recycled water originating at the Mountain House Community Services District will be supplied to the East Altamont Energy Center by BBID. The East Altamont Energy Center will also employ zero liquid discharge technology whereby brine crystallizers/dryers will be used to treat the effluent from the plant cooling system.
- B. Construction Impacts:** The construction of the East Altamont Energy Center and the associated linear facilities will create impacts in a number of areas. These anticipated impacts and the proposed mitigation measures are described and analyzed in the various environmental discipline sections of the AFC and the associated Data Responses and Testimony.

The generating facility and all of the associated linear facilities will be designed and constructed in accordance with the requirements of all applicable federal, state, regional, and local laws, ordinances, regulations, and standards. The equipment and technologies to be employed in the facility are well proven, and the specific technical requirements of the project are well within the ranges encountered in the design of combined cycle power generating facilities. The design is therefore not expected to present any unusual engineering challenges. The materials and methods to be employed in the construction of the proposed

FACILITY DESIGN, POWER PLANT RELIABILITY,
AND POWER PLANT EFFICIENCY

project are typical of many previously constructed power plants in California and elsewhere, and are therefore not expected to present any unusual challenges to the constructor. The characterizations of the construction impacts of the proposed project presented in the AFC, the Supplements, and Applicant's Data Responses are therefore based on extensive experience with similar projects.

- C. Operational Impacts:** The East Altamont Energy Center will be a reliable source of clean, economical electric power. The project's equivalent availability factor is estimated to be in the general range of 92 to 98 percent. The facility will be designed to operate between 25 and 100 percent of the base load to support dispatch service in response to customer demands for electricity. The maximum thermal efficiency that can be expected from a large natural-gas-fired combined-cycle plant such as the East Altamont Energy Center is approximately 55 to 57 percent (LHV basis). This level of efficiency is achieved when a facility is base-loaded. Other types of operations, particularly those at less than full gas turbine output, will result in lower efficiencies. The design of the facility will make it environmentally benign in all respects. The net operational impacts of the East Altamont Energy Center will be increased energy efficiency and increased electrical system reliability for the Central Valley, San Francisco Bay Area, and the State of California.
- D. Cumulative Impacts:** The construction and operation of the East Altamont Energy Center will not produce any significant negative cumulative impacts. To the extent that its superior efficiency and reliability result in the retirement of less efficient and reliable generators earlier than would otherwise have occurred, the East Altamont Energy Center will produce a positive cumulative impact on the economy of the San Francisco Bay Area and the State of California.
- E. Mitigation:** The design of the East Altamont Energy Center will include technologies that will limit its off-site impacts to insignificant levels. With the implementation of the proposed project mitigation measures and the Conditions of Certification, the project will comply with all applicable federal, state, and local laws, ordinances, regulations, and standards.

FACILITY DESIGN, POWER PLANT RELIABILITY,
AND POWER PLANT EFFICIENCY
DECLARATION OF
James McLucas

I, James McLucas, declare as follows:

1. I am presently employed by Calpine as a Regional Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Facility Design, Power Plant Reliability and Power Plant Efficiency for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

PALEONTOLOGICAL RESOURCES

I. INTRODUCTION

A. Name: David Lawler

B. Purpose: This testimony addresses the Paleontological Resource issues associated with the proposed East Altamont Energy Center.

C. Qualifications: David Lawler has over 26 years experience conducting paleontological studies for a variety of infrastructure and power-related projects. He has previously conducted paleontological resources investigations for 16 power plants either reviewed or licensed by the California Energy Commission. His qualifications are summarized more completely in the attached resume (Appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 8.16 of the AFC
- Appendix 8.16A of the AFC
- Supplement A, Filed on May 3, 2001
- Supplement B, Filed on October 9, 2001
- Comments on the Preliminary Staff Assessment, Filed January 14, 2002
- Supplement C, Filed on February 6, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that Conditions of Certification be adopted to address Paleontology issues. These conditions: PAL-1 through PAL-7 are described on pages 6.2-8 through 6.2-13 of the FSA. Design and construction of the proposed facility in accordance with the requirements of these Conditions of Certification will ensure that the facility will be in compliance with the applicable federal, state, and local laws, ordinances, regulations, and standards (LORS). I have reviewed the Staff's proposed Conditions of Certification set forth in the FSA and with minor modifications to Conditions of Certification PAL-1, PAL-4, PAL-5, and PAL 6, I conclude that the project will result in no significant impacts to paleontological resources. The proposed language modifications to Conditions PAL-1, PAL-4, PAL-5, and PAL-6 are located at the end of this testimony.

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Condition PAL-1 pertains to the selection of the Paleontological Resources Specialist (PRS) and Paleontological Resource Monitors (PRM). There are three minor modifications to this condition. This first modification pertains to the CEC approval of PRMs. The Applicant believes that CEC approval of the monitors is unnecessary and is inconsistent with the requirements of other sections of the FSA. As an example, for cultural resource monitors, the Applicant is not required to obtain CPM approval. The Applicant proposes that the requirement that paleontological monitors be approved by the CPM be removed.

The second modification to PAL-1 concerns the required qualifications of the Paleontological Resource Specialist. The Applicant questions the need to have a PRS who has had publications in scientific journals and recommends that this particular requirement be deleted.

The last modification to PAL-1 adds a provision for the selection of an emergency replacement for the Paleontological Resource Specialist, if one is necessary.

There are two minor modifications to Condition PAL-4. This condition requires the Paleontological Resource Specialist (PRS) to conduct in-person training for each new employee involved with ground disturbing activities, while these activities are occurring in highly sensitive geologic areas. This is an unreasonable requirement as the Applicant will not be able to predict which employees will be involved in ground disturbing activities in sensitive areas. The process that the Applicant's parent company uses for the Worker Environmental Awareness Program (WEAP) is to train all employees, regardless of roles or responsibilities via video tape. This process has shown on the Delta/Los Medanos Energy Center project sites that employees trained via video tape are able to identify cultural and paleontological resources and are knowledgeable about the requirements to report any suspected finds to the appropriate resource specialist. The Applicant does not see any merit in having in-person training and thinks that this requirement will needlessly increase monitoring costs and/or divert the PRS's attention away from monitoring. The Applicant requests that PAL-4 be rewritten to allow for the use of video training in lieu of in-person training.

The PAL-4 Verification requires the Applicant to submit a script and final video for interim use, for approval by the CPM. From past experiences with this approach on other project sites, this approach tends to increase the approval time for the WEAP program and results in numerous editorial changes to the script and final video with no tangible benefit to the environment or paleontological resources. Furthermore, if the CPM is to approve the script and final video for the Paleontological WEAP program, how can the video provided be considered a final video. The Applicant requests that this provision be deleted from the condition.

Lastly, Condition PAL-4 requires that provision be made to provide WEAP training for workers not fluent in English. The Applicant believes this is overly burdensome and requests that it be deleted.

There are two clarifying modifications to Condition PAL-5. The first modification clarifies that the PRS prepare a summary of the "general descriptions of training and construction

activities.” The Applicant would like it clarified that the PRS is providing a summary of the “monitored” construction activities. Descriptions of other construction activities are already part of the Monthly Compliance Report and shouldn’t be the responsibility of the PRS.

The second modification is to the Verification language. The Applicant would like it clarified that the PRS submits the summary of monitoring and paleontological activities to the project owner and the project owner then includes the summary in the Monthly Compliance Report.

There are two minor modifications to the Verification language in Condition PAL-6. The Applicant recommends that the last sentence be revised as follows: “The project owner shall be responsible to pay any curation fees required for fossils...” The distinction here is that the original wording implies that fees are always required, which may or may not be the case.

III. SUMMARY

- A. Affected Environment:** Although the interpretation is complex, it appears that the coarse-grained, proximal alluvial fan deposits in the project vicinity belong to the Tulare Formation and the overlying, undeformed layers of younger, unnamed Quaternary alluvium could be the equivalent of the Rancholabrean-age Modesto Formation.

Sediments referable to the Tulare Formation have yielded an abundance of invertebrate, vertebrate, and plant fossils, including microfossils. Several previously recorded fossil localities are found near the proposed project site, including numerous sites 1.5 to 3.5 miles south of the East Altamont Energy Center site. Because the Tulare Formation has in the past produced significant fossils, it is judged to be highly sensitive. Additional identifiable fossil remains recovered from the Tulare Formation during project construction would be scientifically important.

Although no previously reported fossils are known to directly underlie the proposed project site, the presence of a previously recorded fossil site in unnamed Quaternary alluvium within one-half mile of the proposed project site suggests that there is a high potential for additional similar fossil remains to be uncovered by excavations at the proposed East Altamont Energy Center site. Therefore, the unnamed Quaternary alluvium has a high sensitivity for producing additional paleontological resources. Identifiable fossil remains recovered from sediments of the unnamed Quaternary alluvium during construction of the East Altamont Energy Center project would be scientifically important.

- B. Construction Impacts:** The planned site filling and grading is not expected to result in significant adverse impacts to paleontological resources, as the ground surface in this area is already relatively flat and has already been disturbed by farming.

However, deeper excavations at the plant site for foundations for the new turbines, trenching for the natural gas pipeline, the water supply pipelines, and electrical transmission line will disturb unnamed Quaternary alluvium that contains Rancholabrean-age vertebrate fossils elsewhere. The excavation will also disturb older sediments of the underlying Tulare Formation that could contain Irvintonian-age vertebrate fossils. Thus, deep excavations could

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have adverse impacts on significant paleontological resources in either or both stratigraphic units.

- C. Operational Impacts:** No impacts to paleontological resources are expected to occur from the continuing operation of the project or any of its related facilities.
- D. Cumulative Impacts:** If the project were to encounter paleontological finds during construction, the potential cumulative effect would be low, as long as mitigation measures were implemented to recover the resources. The mitigation measures identified in the Conditions of Certification would effectively recover the value to science of significant fossils recovered.
- E. Mitigation:** The design and construction of the East Altamont Energy Center and associated facilities will include measures that will limit impacts to paleontological resources to a less-than-significant level. With the implementation of the proposed project mitigation measures and the Conditions of Certification, the project will comply with all applicable LORS.

**APPLICANT'S MODIFICATIONS TO
CONDITIONS PAL-1, PAL-4, AND PAL-5**

PAL-1 The project owner shall provide the CPM with the resume and qualifications of its Paleontological Resource Specialist (PRS) ~~and Paleontological Resource Monitors (PRMs)~~ for review and approval. If the approved PRS ~~or one of the PRMs~~ is replaced prior to completion of project mitigation and report, the project owner shall obtain CPM approval of the replacement.

The resume shall include the names and phone numbers of contacts. The resume shall also demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontologists (SVP) guidelines of 1995. The experience of the PRS shall include the following:

- a. institutional affiliations or appropriate credentials and college degree;
- b. ability to recognize and recover fossils in the field;
- c. local geological and biostratigraphic expertise;
- d. proficiency in identifying vertebrate and invertebrate fossils;
- e. ~~publications in scientific journals;~~ and
- f. the PRS shall have at least three years of paleontological resource mitigation and field experience in California, and at least one year of experience leading paleontological resource mitigation and field activities.

The PRS shall obtain qualified paleontological resource monitors to monitor as necessary on the project. Paleontologic resource monitors (PRMs) shall have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and one year experience monitoring in California; or
- AS or AA in geology, paleontology or biology and four years experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

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At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter ~~with resumes~~ naming anticipated monitors for the project and stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters ~~and resumes~~ to the CPM identifying the monitor and attesting to the monitor's qualifications. ~~for approval.~~ The letter shall be provided to the CPM no later than one week prior to the monitor beginning on-site duties.

Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval. Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of the proposed replacement specialist.

PAL-4 Prior to ground disturbance and for the duration of construction, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for all project managers, construction supervisors and workers who operate ground disturbing equipment or tools. The training may be presented in the form of a video. Workers to be involved in ground disturbing activities ~~in sensitive units~~ shall not operate equipment prior to receiving worker training. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

The Worker Environmental Awareness Program (WEAP) shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. ~~In-person~~ Training shall be provided for each new employee involved with ground disturbing activities, ~~while these activities are occurring in highly sensitive geologic units, as detailed in the PRMMP. The in-person training shall occur within four days following a new hire for highly sensitive sites and as established by the PRMMP for sites of moderate, low, and zero sensitivity. Provisions will be made to provide the WEAP training to workers not fluent in English.~~

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. For ~~training in~~ locations of high sensitivity, ~~the PRS shall provide~~ good quality photographs or physical examples of vertebrate fossils that may be expected in the area shall be provided;
3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;
4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;

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5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A Certification of Completion of WEAP form signed by each worker indicating that they have received the training; and
7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

Verification: At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP including the brochure with the set of reporting procedures the workers are to follow.

~~At least 30 days prior to ground disturbance, the project owner shall submit the script and final video to the CPM for approval if the project owner is planning on using a video for interim training.~~

~~If an alternate paleontological trainer is requested by the owner, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval. Alternate trainers shall not conduct training prior to CPM authorization.~~

The project owner shall provide in the Monthly Compliance Report the WEAP copies of the Certification of Completion forms with the names of those trained for each training offered that month. The Monthly Compliance Report shall also include a running total of all persons who have completed the training to date.

PAL-5 The PRS and PRM(s) shall monitor consistent with the PRMMP, all construction-related grading, excavation, trenching, and augering in areas where potentially fossil-bearing materials have been identified. In the event that the PRS determines full time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the PRS shall notify and seek the concurrence of the CPM.

The PRS and PRM(s) shall have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring different from the accepted schedule presented in the PRMMP shall be proposed in a letter from the PRS and the project owner to the CPM prior to the change in monitoring. The letter shall include the justification for the change in monitoring and submitted to the CPM for review and approval.
2. PRM(s) shall keep a daily log of monitoring of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

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3. The PRS shall immediately notify the project owner, and the project owner and PRS together shall immediately notify and the CPM of any incidents of non-compliance with any paleontological resources conditions of certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the conditions of certification.
4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM immediately (no later than the following morning after the find, or Monday morning in the case of a weekend) of any halt of construction activities.
5. The PRS shall prepare a summary of the monitoring and other paleontological activities that will be placed in the Monthly Compliance Reports. The summary will include the name(s) of PRS or monitor(s) active during the month; general descriptions of training and monitored construction activities and general locations of excavations, grading, etc. A section of the report will include the geologic units or subunits encountered; descriptions of sampling within each unit; and a list of fossils identified in the field. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring including any incidents of non-compliance and any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the project shall include a justification in summary as to why monitoring was not conducted.

Verification: The PRS shall submit the summary of monitoring and paleontological activities to the owner, and the owner shall include this summary in the Monthly Compliance Report.

PAL-6 The project owner, through the designated PRS, shall ensure the recovery, preparation for analysis, analysis, identification and inventory, the preparation for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during the monitoring, data recovery, mapping, and mitigation activities related to the project.

The project owner shall maintain in their compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved PRR. The project owner shall be responsible to pay any curation fees required for fossils collected and curated as a result of paleontological monitoring and mitigation.

**DECLARATION OF
David Lawler**

I, David Lawler, declare as follows:

1. I am presently employed as an independent contractor.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Paleontological Resources for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____ Sacramento, California

GEOLOGIC HAZARDS AND RESOURCES

I. INTRODUCTION

- A. Name:** Thomas A. Lae, R.G.
- B. Purpose:** This testimony addresses the Geology Hazard and Resource issues associated with the proposed East Altamont Energy Center.
- C. Qualifications:** Thomas A. Lae has over 12 years experience in geology and is a State of California Registered Geologist. He has previously conducted geologic resources and hazards investigations for power plants. His qualifications are summarized more completely in the attached resume (Appendix A).
- D. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Section 8.15 of the AFC
 - Appendix 10B of the AFC, Structural Engineering Design Criteria
 - Supplement A, Filed on May 3, 2001
 - Supplement B, Filed on October 9, 2001
 - Geotechnical Services Report, Filed on October 30, 2001
 - Comments on the Preliminary Staff Assessment, Filed January 14, 2002
 - Supplement C, Filed on February 6, 2002

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project recommends that Conditions of Certification be adopted to address Geologic Hazards and Resources. These conditions: GEN-1, GEN-5, and CIVIL-1 in the Facility Design section of the FSA, on pages 6.1-6, 6.1-11 through 6.1-13, and 6.1-15. Design and construction of the proposed facility in accordance with the requirements of these Conditions of Certification will ensure that the facility will be in compliance with the applicable federal, state, and local laws, ordinances, regulations, and standards (LORS).

III. SUMMARY

A. Affected Environment: The structural geology of the area in which the East Altamont Energy Center project will be constructed is dominated by deformation associated with historical tectonic activity, the numerous faults in the region, and the more recent (Quaternary) alluvial fan deposition off the Diablo Range. In the project vicinity, an alluvial fan has been created by rock debris deposited by Mountain House Creek and adjacent smaller, intermittent streams, all of which drain off the foothills of the Diablo Canyon Range. Some landslides have occurred in the Diablo Range. These slides are localized, however, and have not been mapped in the vicinity of the East Altamont Energy Center site, which is more than 1 mile from the base of the mountains.

The most significant geologic hazard at the East Altamont Energy Center site is most likely strong ground-shaking due to an earthquake. During strong ground-shaking, loose saturated, cohesionless soils can experience a temporary loss of shear strength, or liquefaction. The southeastern-most corner of Contra Costa County has been designated as having a “Generally High” liquefaction potential by the Contra Costa General Plan. However, based upon the site geotechnical investigation liquefaction is not a significant concern for the East Altamont Energy Center site.

Expansive soils shrink and swell with wetting and drying. The shrink-swell capacity of expansive soils can result in differential movement beneath foundations. Based upon the site geotechnical investigation, expansive soils are present under the East Altamont Energy Center site. However, any impacts associated with this can be mitigated.

B. Construction Impacts: Construction of the East Altamont Energy Center will require minor grading and excavation, thereby altering the terrain of the East Altamont Energy Center site. Impacts to the geologic conditions involve dust generation, changes in drainage, cuts, and fills. Since the site is generally level, site grading is not expected to adversely impact the geologic environment. The generating facility and all of the associated linear facilities will be designed and constructed in accordance with the requirements of all applicable federal, state, regional, and local laws, ordinances, regulations, and standards.

C. Operational Impacts: The project will be designed and constructed in accordance with the requirements of all applicable federal, state, regional and local laws, ordinances, regulations, and standards. This will minimize any operational impacts to a level of insignificance.

D. Cumulative Impacts: The construction and operation of the East Altamont Energy Center will not produce any significant negative cumulative impacts to geologic resources.

E. Mitigation: The East Altamont Energy Center and linear facilities will be constructed in accordance with CBC, Seismic Zone 4 requirements and standards adopted by the Alameda County Public Works Department that will minimize the exposure of people to risks associated with large seismic events and liquefaction.

The design and construction of the East Altamont Energy Center and linear facilities will include measures that will limit impacts to less than significant levels. With the

GEOLOGIC HAZARDS AND RESOURCES

implementation of the proposed project mitigation measures and the Conditions of Certification, the project will comply with all applicable LORS.

**DECLARATION OF
Thomas A. Lae**

I, Thomas A. Lae, declare as follows:

1. I am presently employed by CH2M HILL as a _____.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Geologic Hazards and Resources for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

TRANSMISSION SYSTEM ENGINEERING

I. INTRODUCTION

A. Names: Alan Roth, P.E. and Amanali Amirali, P.E.

B. Purpose: This testimony addresses the electrical Transmission System Engineering issues associated with the proposed East Altamont Energy Center (East Altamont Energy Center).

C. Qualifications: Alan Roth has 26 years of engineering experience in the power plant and petrochemical industry. Mr. Roth has been with Calpine for 4 years where he has been involved with various power plant engineering, operations, and project permitting functions. His qualifications are summarized more completely in the attached resume (Appendix A).

Amanali Amirali has twelve years of electric utility experience, with a background in system planning and engineering. He has worked for PG&E, the California Independent System Operator (ISO), and Calpine Corporation. He actively participated in ISO efforts to address the resource deficiency issues in California, and served as the ISO's environmental expert on electrical power issues in the State. His qualifications are summarized more completely in the attached resume (Appendix A).

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Section 5 of the AFC
- Appendices 5.1A, 5.4A, and 5.5A through 5.5D of the AFC
- Supplement A to the AFC, Filed on May 3, 2001
- Supplement B to the AFC, Filed on October 9, 2001
- Supplement C to the AFC, Filed on February 6, 2002
- Data Requests and Responses, Set 2, Responses 121 through 124, Filed on August 17, 2001
- Informal Data Request Response, Set 3, Filed on November 30, 2001
- Data Adequacy Response Set 3, Filed on May 8, 2001
- Informal Data Request Response, Set 6, Filed on January 18, 2002
- Data Requests and Responses, Set 6, Responses 156 through 160, Filed on April 22, 2002

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions,

such opinions are consistent with our own. We make these statements and render these opinions freely and under oath, for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project filed by the CEC recommends that Conditions of Certification be adopted to address Transmission System Engineering issues. These conditions TSE-1 through TSE-3, described on pages 6.5-18 to 6.5-19 of the FSA, address applicable federal, state, and local laws, ordinances, regulations, and standards (LORS) and minimize the project's transmission engineering impacts. We have reviewed the Conditions of Certification set forth in the FSA and find them to be acceptable.

III. TRANSMISSION SYSTEM ENGINEERING

A. Introduction

The site of the proposed East Altamont Energy Center project is located in the far northeastern corner of Alameda County, approximately 8 miles northwest of the city of Tracy, California. This location was selected, in part, for its ability to serve several energy markets due to its proximity to Western's Tracy substation. The site is immediately east across Mountain House Road from the Tracy substation. The proximity of the Tracy Substation to the East Altamont Energy Center allows for a short transmission line alignment for the electrical interconnection.

PG&E, Western, and Modesto and Turlock Irrigation Districts (MID and TID) all own and operate high-voltage transmission lines in the vicinity of the East Altamont Energy Center. The Tracy substation serves as a connecting point for the above-mentioned electric utilities. The lines owned by PG&E are part of their San Joaquin Valley (Stockton Division) operating region. The lines owned by Western are part of their Sierra Nevada operating region. This existing transmission network will deliver the power generated at the East Altamont Energy Center to the California electric grid.

B. Transmission Interconnection

The preferred interconnection between the proposed new East Altamont Energy Center Substation ("Tracy B") and Tracy A (Western's existing Tracy Substation) will consist of the following major facilities:

- Two new double-circuit overhead lines on two parallel tower structures extending approximately 2,200 feet from Tracy B to loop into the existing Tracy- Westley (MID/TID) 230-kV transmission line near the existing Tower No. 7.
- New 230-kV breaker-and-a-half switchyard (Tracy B) adjacent (south side) to the East Altamont Energy Center power block.
- Modifications at Tracy A to uncouple the two existing 230-kV circuits between the MID/TID Westley Substation and Tracy A.

- Modifications at Westley Substation to uncouple the two existing 230-kV circuits between the Westley and Tracy A Substations.

As a result of the East Altamont Energy Center's physical orientation on the proposed site, the transmission interconnection will exit the switchyard directly to the south for approximately 2,200 feet to the existing Tracy- Westley 230-kV transmission line. It is anticipated that the interconnecting transmission will occupy a ROW approximately 380 feet wide.

C. Mitigation

With the implementation of the proposed Conditions of Certification contained in the FSA, the project will comply with the applicable federal, state, and local laws, ordinances, regulations, and standards. The Detailed Facilities Interconnection Study (DFIS) prepared by Western and approved by CEC staff has identified no major transmission impacts resulting from the interconnection of the East Altamont Energy Center to Western's transmission grid. Furthermore, the applicant has worked closely with Western, PG&E, SMUD, MID and TID to ensure that potential impacts, if any, are mitigated to a level of less than significant.

**DECLARATION OF
Alan Roth, P.E.**

I, Alan Roth, declare as follows:

1. I am presently employed by Calpine as a Senior Electrical Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Transmission System Engineering for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

**DECLARATION OF
Amanali Amirali**

I, Amanali Amirali, declare as follows:

1. I am presently employed by Calpine as Manager of Contracts.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Transmission System Engineering for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

IV. ALTERNATIVES

ALTERNATIVES

I. INTRODUCTION

A. Name: Alicia Torre and Jerry Salamy

B. Purpose: This testimony addresses the Alternatives issues associated with the proposed East Altamont Energy Center (East Altamont Energy Center).

Qualifications: Alicia Torre is a consultant with almost 20 years experience in the siting and development of independent energy facilities. Her qualifications are summarized more completely in the attached resume (Appendix A).

Jerry Salamy has over 16 years experience in preparing environmental documentation for power plants and 10 years experience preparing Applications for Certification. His qualifications are summarized more completely in the attached resume (Appendix A).

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Application for Certification Section 9.0
- Application for Certification Section 5.0 Electric Transmission, Subsection 5.3 Proposed Transmission Interconnection Alternatives
- Application for Certification Section 6.0 Natural Gas Supply, Subsections 6.2 Alternative Routes and 6.3 Selection Criteria (as revised by Supplement C);
- Application for Certification Section 7.0 Water Supply, Subsection 7.1.6 Alternatives
- Data Requests and Responses Set #2, Alternatives Data Requests/Responses 10-12, Filed August 17, 2001
- Comments on Preliminary Staff Assessment, Filed on January 14, 2002
- Supplement A, Filed on May 3, 2001
- Supplement B, Filed on October 9, 2001
- Supplement C, Filed on February 6, 2002

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The Final Staff Assessment (FSA) for the project did not recommend that Conditions of Certification be adopted for Alternatives.

III. SUMMARY

A “No Project” Alternative was considered and rejected. The “no project” alternative fails to meet the basic project objectives of the East Altamont Energy Center as described in the Application for Certification. For example, the “no project” alternative is inconsistent with one of the primary business objectives of the East Altamont Energy Center LLC’s parent company, Calpine Corporation, to develop merchant power generation facilities, which is to generate and sell electric power in the deregulated power market. In addition, the “No Project” Alternative could result in greater fuel consumption and air pollution in the state, because older, less efficient plants with higher air emissions would continue to generate power instead of being replaced with cleaner, more highly efficient plants, such as the East Altamont Energy Center.

Six possible alternative sites in the general vicinity of the proposed site were reviewed. The proposed site location is superior to all of the alternative sites. In most cases, its impacts are the same as, or in some cases less than, the best alternative site. In addition, since the proposed site will require less development of linear facilities than most of its alternatives, the overall impact to the environment is likely to be lower.

A complete discussion of project alternatives is presented in AFC Section 9. Similarly, alternative routes for the natural gas line, electric transmission line, raw water line, and reclaimed water line were also reviewed and found to be either infeasible or less preferable because they were longer or had the potential for greater environmental impacts. Natural gas pipeline alternatives, electric transmission connection alternatives, and water line alternatives are also presented in AFC Section 9 and in Section 5.0 Electric Transmission; Section 6.0 Natural Gas Supply; Section 7.0 Water Supply, and Supplement C.

Several alternative generating technologies were reviewed in a process that led to the selection of a modern, yet conventional, natural gas-fired combustion turbine combined-cycle arrangement for the East Altamont Energy Center. The alternative technologies included conventional oil and natural gas-fired plants, simple-cycle combustion turbines, biomass-fired plants, solar plants, wind generation plants, and others. None of these technologies was considered better than or equal to the combined-cycle technology selected for the East Altamont Energy Center.

**DECLARATION OF
Jerry Salamy**

I, Jerry Salamy, declare as follows:

1. I am presently employed by CH2MHill as a Project Manger.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Alternatives for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____ Sacramento, California _____

**DECLARATION OF
Alicia Torre**

I, Alicia Torre, declare as follows:

1. I am presently a consultant to Calpine Corporation serving as Project Development Manager for the East Altamont Energy Center.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on Alternative sites and linear facilities for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: _____

V. GENERAL CONDITIONS INCLUDING COMPLIANCE MONITORING AND CLOSURE PLAN

GENERAL CONDITIONS INCLUDING COMPLIANCE MONITORING AND CLOSURE PLAN

I. INTRODUCTION

- A. Name:** Steven A. De Young
- B. Purpose:** This testimony addresses general conditions for compliance monitoring and facility closure.
- C. Qualifications:** Mr. De Young has over 21 years of experience in general environmental compliance, permitting, and closure of facilities including power generation facilities. His qualifications are summarized more completely in the attached resume (Appendix A).
- D. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Section 4 of the AFC

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath, for the purpose of constituting sworn testimony in this proceeding.

II. PROPOSED LICENSING CONDITIONS

The General Conditions Including Compliance Monitoring and Closure Plan section of the Final Staff Assessment (FSA) consists of General Conditions of Certification and General Conditions of Facility Closure. These conditions, COM-1 through COM-16 on pages 8.4 through 8.16 of the FSA, address the process for complying with the CEC's Conditions of Certification and the process to be followed in the event of a planned or unplanned facility closure. Based upon my review of the Final Staff Assessment I do not believe that there are any outstanding disputes between the Staff and the Applicant regarding the Conditions of Certification for General Conditions Including Compliance Monitoring and Closure Plan. Applicant commits to comply with all of the general conditions specified in the General Conditions Including Compliance Monitoring and Closure Plan section of the FSA.

GENERAL CONDITIONS INCLUDING
COMPLIANCE MONITORING AND CLOSURE PLAN
DECLARATION OF
Steven De Young

I, Steven De Young, declare as follows:

1. I am presently a consultant contracted to Calpine Corporation as Project Environmental Manager for the East Altamont Energy Center.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the attached testimony on General Conditions Including Compliance Monitoring and Closure Plan for the East Altamont Energy Center based on my independent analysis and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____ Signed: _____

At: Dublin, California