Final Staff Assessment

LOS ESTEROS CRITICAL ENERGY FACILITY PHASE I

Application For Certification (03-AFC-2)
Santa Clara County

CALIFORNIA ENERGY COMMISSION

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STAFF REPORT

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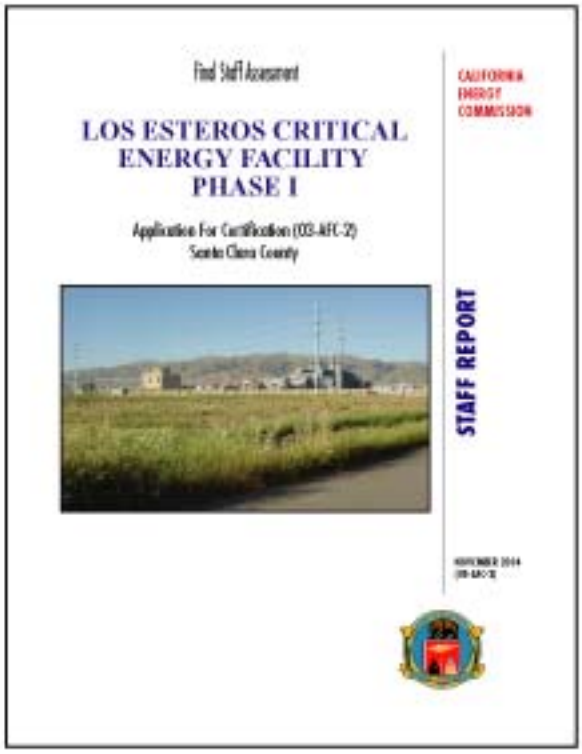

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EXECUTIVE SUMMARY

The Los Esteros Critical Energy Facility (LECEF) was originally licensed by the Energy Commission on July 2, 2002, as a simple-cycle gas fired power plant. This license was issued under the emergency provisions of Public Resources Code section 25552, which require relicensing of the project or conversion to combine-cycle operation within three years of the original license date. The project is owned and operated by the Los Esteros Critical Energy Facility, LLC, a wholly-owned subsidiary of Calpine. The owner is seeking two actions with this application (03-AFC-2): Phase 1 seeks a recertification of the license for the existing 180 megawatt (MW) simple-cycle facility for the life of the project; and Phase 2 seeks a license to convert the LECEF to combined-cycle operation, adding equipment that will increase the output by 140 MW to a generating capacity of 320 MW.

The assessment contained in this document contains The Energy Commission staff's independent analysis of the Los Esteros Critical Energy Facility Application for Certification Phase 1 only. The Phase 2 Assessment will be completed in a separate document to be published at a later date.

The LECEF and related facilities such as the electric transmission lines, natural gas line, water supply lines and wastewater lines are under the Energy Commission's jurisdiction (Pub. Resources Code § 25500). When issuing a license, the Energy Commission acts as lead state agency (Pub. Resource Code § 25519(c)) under the California Environmental Quality Act (Pub. Resource Code §§ 21000 et seq.), and its process is functionally equivalent to the preparation of an environmental impact report (Cal. Code Regs., tit. 14 § 15251(k)).

It is the responsibility of the staff to complete an assessment of the project's potential effects on the environment, the public's health and safety, and whether the project conforms with all applicable laws, ordinances, regulations and standards (LORS). The staff also recommends measures to mitigate potential significant adverse environmental effects of construction, operation, and eventual closure of the project, if approved by the Energy Commission. The analyses contained in this document were prepared in accordance with Public Resources Code section 25500 et seq.; the California Code of Regulations, Title 20, section 12001 et seq.; and the California Environmental Quality Act (Pub. Resources Code § 21000 et seq.) and its guidelines (Cal. Code Regs., tit. 14 § 15000 et seq.).

This Final Staff Assessment is not the decision document for these proceedings nor does it contain findings of the Energy Commission related to environmental impacts or the project's compliance with local/state/federal legal requirements. The final decision will be made by the Commissioners of the California Energy Commission only after the completion of evidentiary hearings. The Commissioners will consider the recommendations of all interested parties, including those of the Energy Commission staff, the applicant, interveners, concerned citizens, and local, state, and federal agencies, before making a final decision on the application to recertify the license for the simple-cycle facility (Phase 1).

BACKGROUND

Information for both Phases 1 and 2 are detailed in the single AFC filed December 30, 2003 (03-AFC-2). The original LECEF (01-AFC-12) project was filed with the Energy Commission on August 7, 2001 as an emergency project under provisions of Public Resources Code, section 25552. These provisions allowed for expedited review of the project and contained a provision requiring conversion to combined-cycle operation, or closing the facility within 3 years of the original certification by the Energy Commission (Pub. Resources Code, § 25552 (e)(5)(B)). This provision was modified by Senate Bill 28X (effective May 22, 2001) which added the option to recertify (renew the license) the project as a simple-cycle facility. The current license expires July 2, 2005.

LECEF, approved by the Energy Commission on July 2, 2002, licensed construction and operation of the 180 MW simple-cycle project at the current location, and discussed the plan to convert the facility to combined-cycle operation at a later date. Also analyzed was the potential development of the U.S. Dataport (USDP) server farm project, possibly providing an opportunity for a phase 3 project which would provide critical reliable energy and cooling that would be needed by such a facility. Though discussed in concept, the USDP construction was deemed too speculative for full analysis based upon market conditions and projections from the developer. USDP is still a speculative project, not likely to be constructed in the near future, and is not analyzed further in this document.

Calpine has changed the ownership of the LECEF project from the original owner/operator C* Power, LLC to the Los Esteros Critical Energy Facility, LLC. Both companies are wholly-owned Calpine subsidiaries. Additionally there has been a change in the designated address of the facility from 1515 Alviso-Milpitas Road to the current 800 Thomas Foon Chew Way, the official designation for the completed 2,700 foot access road connecting from Zanker Road to the LECEF facility.

PROJECT DESCRIPTION

Located in Township 6S, Range 1W (the USGS Milpitas 7.5-minute quadrangle) in north San Jose, Santa Clara County, at 800 Thomas Foon Chew Way, the project is a fenced 21-acre site within a 34 acre parcel. Thomas Foon Chew Way is a 2,700 foot private access road curving through the adjacent buffer lands leading East to the project site and the Pacific Gas & Electric (PG&E) Los Esteros Substation from Zanker Road. The area is currently zoned light-industrial and the parcel is covered by a proposed development zone designation specifically allowing the current power plant with a 180 MW output. No additional zoning action is required for Phase 1 recertification.

The project site is fenced on all sides with the south and east bounded by a sound wall on an elevated berm. The San Jose/Santa Clara Water Pollution Control Plant (WPCP) is across Zanker Road to the northwest of the site. The larger site is bounded on the west by city buffer lands, and Zanker Road, and on the north by a strip of land on which Silicon Valley Power plans to build a 230 kV switching station, and the PG&E Los Esteros Substation. Undeveloped buffer lands and the WPCP sludge drying ponds lie

further north of the project. The southern 13-acres of the parcel lie outside the fenceline of the power plant and are bordered by Alviso-Milpitas Road and State Route 237.

The current LECEF is powered by four LM6000 combustion turbine generators (CTGs) with spray intercooling injection (SPRINT) to enhance power, and operates with selective catalytic reduction (SCR) to reduce carbon monoxide and nitrous oxide (NO_x) emissions. The project was designed to accommodate conversion to combined-cycle operation and the four housings for the heat recovery steam generator equipment (HRSG's) and combustion exhaust stacks were constructed as part of the original project. The HRSGs also contain the equipment for the SCR emissions reduction systems. LECEF has a 180 megawatt (MW) net capacity. LECEF utilizes recycled water from the South Bay Water Recycling Program (SBWR) through one 18-inch diameter line, 1,500 feet in length, connecting with the SBWR recycled water main located in the City of San Jose's buffer lands west of the LECEF. After use LECEF directs waste water back to the WPCP facility through a waste water collection pipeline to the west at Zanker Road. Electricity from LECEF is delivered to the grid through an interconnection to the PG&E 115 kV Los Esteros Substation-Nortech line at a point adjacent to the plant access road. Natural gas is supplied through a 550 foot-long 10-inch diameter line connecting to PG&E lines 101 and 109 located to the south and adjacent to State Route 237. Storm water run-off from the facility is collected and discharged to the Coyote Creek high-flow channel to the west. Completion of the discharge line, scheduled for 2005, will direct the stormwater run-off to the Coyote Creek low-flow channel.

Construction of the LECEF was completed and the facility became fully operational on March 7, 2003.

PUBLIC AND AGENCY COORDINATION AND OUTREACH

The Committee assigned to the current LECEF proceedings by the Energy Commission conducted an Informational Hearing and Site Visit on May 4, 2004. This hearing provided a forum for the public to learn about the project, the Energy Commission's process, ask questions, and voice their opinions regarding the proposed power plant.

When the AFC was filed, staff mailed a notice to all property owners adjacent to the proposed project informing them of the proposal, and the Energy Commission's review process. Staff's notice also informed the property owners of the methods available for participating in the Commission's review of the proposal. In addition to these efforts and to insure reaching a broad spectrum of the community, the Public Advisers Office (PAO) prepared posters for local distribution, prepared and distributed flyers to community organizations, malls, sensitive receptors, and local officials indicating the location of the AFC's in local and adjacent community libraries. In preparation for the Informational Hearing and Site Tour, the PAO sent personal letters of invitation to area elected officials, prepared and distributed a newsletter about the project, the site visit and the Informational Hearing to area school districts, neighborhood associations and numerous community groups, employers, and organizations. PAO also distributed 12,000 one-page newspaper inserts with this information through three local newpapers.

Staff also coordinated their review of the LECEF Phase 1 AFC with relevant local, state and federal agencies, including the City of San Jose, the City of Milpitas, Santa Clara County, the California Independent System Operator, the Bay Area Air Quality Management District, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the California Department of Fish and Game. This SA provides agencies and the public the opportunity to review the Energy Commission staff's analysis of the proposed project.

No written comments on the Staff Assessment were received. Comments on the AFC, and the process, or requesting additional information were received earlier from the U.S. Fish and Wildlife Service, the California Department of Toxic Substances Control, the California Air Resources Board, and relevant discussion resulting from these earlier comments has been incorporated into the Biology, Waste Management, and Public Health sections of the SA and this FSA.

ENVIRONMENTAL JUSTICE SUMMARY

As part of the original LECEF staff analysis, staff completed a review of Census 2000 information that showed the minority population is greater than 50 percent within a six-mile radius of the LECEF power plant. The Census 2000 data indicates that the minority population within the six-mile radius of the project site is 69 percent. The percent of population considered low-income or living below the poverty level is less than nine percent within a six-mile radius of the LECEF. Since there is a greater than 50 percent minority population, staff completed a focused Environmental Justice assessment at that time. Because staff had originally determined that there are pockets or clusters of minority population within the six-mile radius, environmental justice concerns were incorporated into the original LECEF analysis (please refer to CEC, 2001a, p. 4.8-14, and the associated **Socioeconomics Figures 1and 3**).

Potential Environmental Justice issues were then examined in ten technical areas: air quality, public health, visual resources, noise, hazardous material handling, transmission line safety and nuisance, land use, water, waste disposal, and traffic and transportation. Each of these areas found no unmitigated significant impacts, and no disproportionate environmental justice impacts. Energy Commission staff review of that material, along with new information provided by the applicant, indicates that there is no change in the status or the determinations affecting environmental justice and there remain no unmitigated significant impacts and no disproportionate environmental justice impacts from the continuation of the project through relicensing LECEF for the life of the project.

STAFF'S ASSESSMENT

Each technical area section of the Phase 1 Final Staff Assessment contains a review of the Commission Decision, the new AFC, and changes in laws, ordinances, regulations and standards (LORS) since the project was completed. Staff's assessment also includes a discussion of impacts, and where appropriate, suggested modification of mitigation measures and conditions of certification.

The Phase 1 Staff Assessment includes staff's assessments of changes to the following:

- the environmental setting of the proposal;
- impacts on public health and safety, and measures proposed to mitigate these impacts;
- environmental impacts, and measures proposed to mitigate these impacts;
- the engineering design of the proposed facility, and engineering measures proposed to ensure the project can be constructed and operated safely and reliably;
- project closure;
- compliance of the project with all applicable laws, ordinances, regulations and standards (LORS) during construction and operation; and
- proposed conditions of certification for recertification of the LECEF simple-cycle license.

SUMMARY OF STAFF'S CONCLUSIONS

With the mitigation measures proposed in the conditions of certification, staff believes that the project's potential adverse environmental impacts would be reduced to levels of less than significant in all areas. Staff also believes that if the proposed conditions of certification are adopted, the project would conform to all federal, state, and local laws and ordinances. Below are summaries of potential adverse environmental impacts and LORS compliance for each technical area for Phase 1. The last column in the table below notes whether staff is recommending any changes to the Conditions of Certification contained in the July 2, 2002 Commission Decision.

Technical Discipline	Environmental Impacts	LORS Conformance	Changes to Conditions of Certification
Air Quality	Impacts mitigated	Yes	Yes
Biological Resources	Impacts mitigated	Yes	Yes
Cultural Resources	Impacts mitigated	Yes	No
Facility Design	No impacts	Yes	No
Geology	Impacts mitigated	Yes	No
Hazardous Materials	Impacts mitigated	Yes	No
Land Use	Impacts mitigated	Yes	No
Noise	Impacts mitigated	Yes	No
Power Plant Efficiency	Impacts mitigated	Yes	Yes
Power Plant Reliability	No impacts	N/A	No
Public Health	Impacts mitigated	Yes	Yes
Socioeconomics	No impacts	Yes	No
Traffic and Transportation	Impacts mitigated	Yes	No
Transmission Line Safety	Impacts mitigated	Yes	No
Transmission System Engineering	Impacts mitigated	Yes	Yes
Visual Resources	Impacts mitigated	Yes	Yes
Waste Management	Impacts mitigated	Yes	Yes
Water and Soils	Impacts mitigated	Yes	Yes
Worker Safety	Impacts mitigated	Yes	No

The following discussion highlights some of the more noteworthy changes staff is recommending to the original Commission Decision.

Air Quality

In addition to regulated criteria pollutants, the combustion of natural gas produces air emissions known as greenhouse gases. These include primarily carbon dioxide and methane (unburned natural gas). Greenhouse gases are known to contribute to the warming of the earth's atmosphere. Climate change from rising temperatures represents a risk to California's economy, public health, and environment due to changes in sea levels that could lead to flooding of coastal communities, drought, forest fires, decline of fish populations, reduced hydropower opportunities, and loss of habitat. In 1998 the Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p.5). In 2003 the Energy Commission recommended that the state should require reporting of greenhouse gas emissions as a condition of state licensing of new electric generating facilities (CEC 2003b, p. 42). Staff recommends Condition of Certification **AQ-SC6** which requires the project owner to report the quantities of each greenhouse gas emitted as a result of facility operation. Such reporting would be done in accordance with accepted reporting protocol as specified.

Staff also believes that the PM10 emissions reductions required by condition of certification **AQ-SC4** have not been completely satisfied. The amount of PM10 emissions reductions achieved at this time remains approximately 6.13 tons per year (tpy). The approved PM10 Mitigation Plan from the original LECEF Decision required

17.50 tpy, leaving a balance of 11.37 tpy. Staff and Calpine have negotiated revisions to **AQ-SC4** clarifying the remaining amount of PM10, and agreeing than an additional 34.11 tons of Sox, credited at a 3:1 ratio for PM10, will provide the necessary additional mitigation required under revised the condition.

Biological Resources

To mitigate the impacts to burrowing owls, the applicant has been approved as the leasee and manager of a nearly five acre burrowing owl preserve along the southern edge of the primary access road. Staff recommends the addition of Condition of Certification **BIO-19** to ensure that the mitigation package accepted by staff will continue to benefit the species during the operation of the simple-cycle power plant.

Deposition of nitrogen resulting from plant emissions of NOx and ammonia (NH_3) used as a catalyst for emissions control have the potential to damage serpentine soil habitat critical to the Bay checkerspot butterfly and certain plant species, each of which are listed as endangered. Through the evaluation of actual operations data, staff determined the nitrogen deposition modeling used during the original LECEF analysis was conservative for the impact of the power plant. The applicant has provided a mitigation package (the purchase and management of 40 acres of serpentine habitat) that effectively mitigates the indirect and cumulative NOx and NH_3 emission impacts to sensitive species to less than significant levels. Additionally, the project owner has initiated consultation with the U.S. Fish and Wildlife Service to develop the original mitigation package into a Habitat Conservation Plan, and to engage in formal consultation under Section 10 of the Federal Endangered Species Act regarding potential impacts from the Phase 2 conversion to combined-cycle operation. No action affecting the Phase 1 simple-cycle recertification is being sought as a part of this consultation.

Power Plant Efficiency

Staff has recommended removal of the Condition of Certification **EFF-1**, which requires conversion of LECEF to combined-cycle operation or closure of the facility by July 2, 2005. This is consistent with the revision of Public Resources Code 25552 discussed in the Background section above, and this recertification process.

Public Health

The Energy Commission has recognized that cooling towers at power plants can potentially pose risks to the public from Legionnaires' disease. Adopting a cautious approach, the Commission has started to require that power plant licensees design and implement programs to abate such risks. The addition of a standard condition of certification, **PH-1**, requiring a program for abating these risks has been added and review of the projects current protocol for managing these risks is being undertaken.

Soils and Water

Staff analysis of reported water use and wastewater return operations data from the first year of LECEF operations indicated that potential adverse impacts to the San Jose/Santa Clara Water Pollution Control Plant, and the South Bay Water Recycling Program could occur during continued operation of the Phase 1 simple-cycle power

plant. Staff initially recommended consideration of a zero liquid discharge (ZLD) system as an effective means of resolving the potential water problems. Additional work with Calpine and the Environmental Services Watershed Protection staff at the City of San Jose determined that adjustment to plant equipment, changes in current operating protocol by Calpine, and appropriate revisions of the City recycled water delivery and waste return permits would adequately resolve the potential water and waste water impacts of LECEF's continued Phase 1 simple-cycle operations.

Transmission System Engineering

The Commission Decision specified a 2,000-foot long temporary transmission line interconnection to the electrical grid, to be replaced by a permanent, underground interconnection with the adjacent PG&E Los Esteros Substation once the substation was built. However, after the Los Esteros Substation was completed, Calpine did not construct the permanent interconnection, and instead replaced the 2,000-foot long temporary line with a new 152-foot long temporary line supported by three 65-foot tall wooden poles. Though this connection to the Los Esteros Substation-Nortech line was different from the interconnection approved by the Energy Commission Decision of July 2, 2002, the new tap was approved by the January 21, 2004 Commission Order 04-121-06: Approving Project Modification. This resulted in adding conditions of certification **TSE-A1 and TSE-A2** by amendment, and these are included in this analysis for recertification. Staff, after reviewing additional information from Calpine, PG&E, and the California Independent System Operator regarding system reliability recommends that the current tap be approved for the life of the simple-cycle project beyond 2005 consistent with the license recertification recommendation of this Final Staff Assessment.

Visual Resources

On November 13, 2002, Energy Commission staff approved an "Insignificant Project Change" allowing phased construction of the LECEF cooling tower cells, whereby a single cell would be installed during the initial simple-cycle phase, and the second cell constructed at a later date if needed. The visual impacts of the approved temporary transmission line and the associated wood poles were analyzed and remain less than significant.

Waste Management

The presence of residual pesticides and metals remaining in the soils of the LECEF site that could be disturbed by future activities should LECEF cease operations or if unused portions of the site are leased or sold is a potential concern. Staff proposes new condition of certification **WASTE-6** requiring a Soils Management Plan to insure that contractors and others who may be involved in site work are protected through site-specific information allowing routine work to go forward and contingency plans to be in place. Staff proposes condition of certification, **WASTE-7**, imposing appropriate land use limitations and requiring Calpine to undertake clean-up of the residual contamination, as needed and appropriate to the intended use, should the land or parts of it ever undergo a change in ownership or be converted to other uses.

CONCLUSIONS AND RECOMMENDATIONS

Staff provided public notice and conducted a workshop on October 22, continued to the 28th, and November 3rd of 2004 for the purpose of receiving public comment on this SA, and to resolve the above issues prior to release of this Final Staff Assessment.

Staff and Calpine have been able to resolve the issues noted above for Air Quality, Public Health, Soils and Water, and Waste Management. If the recommended conditions of certification are implemented during the continuing operation of the Los Esteros Critical Energy Facility simple-cycle power plant the project would comply with LORS and not cause any unmitigated adverse significant impacts to the environment, public health and safety, and the transmission system.

LOS ESTEROS CRITICAL ENERGY FACILITY PHASE I
FINAL STAFF ASSESSMENT
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INTRODUCTION

Robert Worl

PURPOSE OF THIS REPORT

The Final Staff Assessment (FSA) presents the California Energy Commission (Energy Commission) staff's independent analysis of the Los Esteros Critical Energy Facility Application for Certification (AFC). This FSA is a staff document. It is neither a Committee document, nor a draft decision. The
fSA describes the following:

- the existing environmental setting;
- the proposed project;
- whether the facilities can be constructed and operated safely and reliably in accordance with applicable laws, ordinances, regulations and standards (LORS);
- the environmental consequences of the project including potential public health and safety impacts;
- cumulative analysis of the potential impacts of the project, along with potential impacts from other existing and known planned developments;
- mitigation measures proposed by the applicant, staff, interested agencies and interveners that may lessen or eliminate potential impacts;
- the proposed conditions under which the project should be constructed and operated, if it is certified;
- project alternatives; and
- project closure requirements.

The analyses contained in this FSA are based upon information from: 1) the AFC; 2) subsequent submittals; 3) responses to data requests; 4) supplementary information from local and state agencies and interested individuals; 5) existing documents and publications including the Commission Decision for the original LECEF; 6) independent field studies and research; 7) a Staff Assessment published October 13, 2004; and 8) Workshops on the Staff Assessment held in San Jose on October 22, and continued to Sacramento on October 28 and November 3, 2004. The analyses for most technical areas include discussions of proposed conditions of certification. Each proposed condition of certification is followed by a proposed means of "verification." The verification is not part of the proposed condition, but is the Energy Commission Compliance Unit's method of ensuring post-certification compliance with adopted requirements.

The Energy Commission staff's analyses were prepared in accordance with Public Resources Code section 25500 et seq. and Title 20, California Code of Regulation section 1701 et seq., and the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.).

ORGANIZATION OF THE FINAL STAFF ASSESSMENT

This FSA contains the Phase 1 analysis of Calpine's request to recertify the existing simple-cycle operations license of the LECEF. The FSA contains an Executive Summary, Introduction, Project Description, and Project Alternatives. The FSA also contains the environmental, engineering, and public health and safety analysis of the proposed phase of the project in a discussion of 19 technical areas. Each technical area is addressed in a separate chapter. These chapters include the following: air quality, public health, worker safety and fire protection, transmission line safety, hazardous material management, waste management, land use, traffic and transportation, noise, visual resources, cultural resources, socioeconomics, biological resources, soil and water resources, geological and paleontological resources, facility design, power plant reliability, power plant efficiency, and transmission system engineering. These chapters are followed by a discussion of facility closure, project construction and operation compliance monitoring plans, and a list of staff that assisted in preparing this report.

Each of the 19 technical area assessments for the LECEF Phase 1 recertification of the simple-cycle license includes a discussion of:

- laws, ordinances, regulations and standards (LORS);
- the regional and site-specific setting;
- project specific and cumulative impacts;
- mitigation measures;
- closure requirements;
- conclusions and recommendations; and
- conditions of certification for both construction and operation (if applicable).

Because the analyses and recommendations for the recertification of LECEF is the original Energy Commission Decision the Conditions of Certification are presented with changes indicated in ~~strikethrough~~/<u>underline</u> format.

ENERGY COMMISSION SITING PROCESS

The California Energy Commission has the exclusive authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, §25500). The Energy Commission must review power plant AFCs to assess potential environmental and public health and safety impacts, potential measures to mitigate those impacts (Pub. Resources Code, §25519), and compliance with applicable governmental laws and standards (Pub. Resources Code, §25523 (d)).

The Energy Commission's siting regulations require staff to independently review the AFC and assess whether the list of environmental impacts it contains is complete, and whether additional or more effective mitigation measures are necessary, feasible and

available (Cal. Code Regs., tit. 20, §§ 1742 and 1742.5(a)). Staff's independent review is presented in this report (Cal. Code Regs., tit. 20, §1742.5).

In addition, staff must assess the completeness and adequacy of the health and safety standards, and the reliability of power plant operations (Cal. Code Regs., tit. 20, § 1743(b)). Staff is required to coordinate with other agencies to ensure that applicable laws, ordinances, regulations and standards are met (Cal. Code Regs., tit. 20, § 1744(b)).

Staff conducts its environmental analysis in accordance with the requirements of the California Environmental Quality Act. No Environmental Impact Report (EIR) is required because the Energy Commission's site certification program has been certified by the Resources Agency (Pub. Resources Code, §21080.5 and Cal. Code Regs., tit. 14, §15251 (k)). The Energy Commission acts in the role of the CEQA lead agency and is subject to all other applicable portions of CEQA.

Staff prepared both a staff assessment and a Final Staff Assessment for the project. The Staff Assessment (SA) presents for the applicant, interveners, agencies, other interested parties and members of the public, the staff's preliminary analysis, conclusions, and recommendations.

Staff uses the SA to resolve issues between the parties and to narrow the scope of adjudicated issues in the evidentiary hearings. During the period between publishing the SA and the Final Staff Assessment, staff conducted a workshop in the project area (San Jose) which was continued to telephonic workshops in order for staff and parties to discuss their findings, proposed mitigation, and proposed compliance monitoring requirements. Based on the workshops and written comments, staff has refined their analysis, corrected errors, and finalized conditions of certification to reflect areas where staff has reached agreement with the parties. This refined analysis, along with responses to comments on the SA, is published in this Final Staff Assessment. The FSA serves as staff's testimony on the LECEF Phase 1 proposal.

This final staff assessment is only one piece of evidence that will be considered by the Committee (two Commissioners who have been assigned to this project) in reaching a decision on whether or not to recommend that the full Energy Commission approve the proposed project. At the public hearings, all parties will be afforded an opportunity to present evidence and to rebut the testimony of other parties, thereby creating a hearing record on which a decision on the project can be based. The hearing before the Committee also allows all parties to argue their positions on disputed matters, if any, and it provides a forum for the Committee to receive comments from the public and other governmental agencies.

Following the hearings, the Committee's recommendation to the full Energy Commission on whether or not to approve the proposed project will be contained in a document entitled the Presiding Members' Proposed Decision (PMPD). Following publication, the PMPD is circulated in order to receive written public comments. At the conclusion of the comment period, the Committee may prepare a revised PMPD. A revised PMPD will be circulated for a comment period to be determined by the Committee. At the close of the comment period for the revised PMPD, the PMPD is

submitted to the full Energy Commission for a decision. Within 30 days of the Energy Commission decision, any intervener may request that the Energy Commission reconsider its decision.

Agency Coordination

As noted above, the Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). However, the Commission typically seeks comments from and works closely with other regulatory agencies that administer LORS that may be applicable to proposed projects. These agencies include the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, California Department of Fish and Game, and the California Air Resources Board. Comments received have been incorporated into the analyses of the appropriate technical sections.

PROJECT DESCRIPTION

Robert Worl

INTRODUCTION

Phase 1 of this Application for Certification (03-AFC-2) seeks a license from the California Energy Commission (CEC) for continued operation of the Los Esteros Critical Energy Facility simple-cycle power plant (LECEF1) located in San Jose, Santa Clara County, California. **PROJECT DESCRIPTION Figure 1** is a 2004 LECEF photograph. The existing LECEF is a nominal 180 megawatt (MW) natural gas-fired peaking power plant consisting of four combustion turbine generators and associated equipment. LECEF is owned by the Los Esteros Critical Energy Facility, LLC, (applicant) a wholly-owned subsidiary of Calpine Corporation. A legal change of ownership from C* Power, LLC, the original licensee, to Los Esteros Critical Energy Facility, LLC was acknowledged by the Energy Commission at the Business Meeting on August 25, 2004. Both are wholly-owned subsidiaries of Calpine Corporation. Throughout documents referring to this project the acronym "LECEF" is used constantly. The current application for certification, with two separate phases being analyzed, increases the possibility for confusion. For clarity, the following acronyms will be used throughout this document:

LECEF:	the originally licensed project, a simple-cycle power plant (01-AFC-12), and the site generally;
LECEF2:	the current application (03-AFC-2), with Phases 1 and 2
Phase 1:	the application to recertify or relicense the simple-cycle LECEF;
Phase 2:	the application to license the conversion of LECEF to combined-cycle.

Calpine originally applied for a license to build and operate the simple-cycle LECEF in August 2001, under the expedited licensing provision promulgated under California Public Resources Code (PRC) Section 25552. To qualify for expedited licensing under PRC Section 25552, LECEF had to meet several important criteria, among them:

- Not have a significant adverse effect on the environment;
- Not have a significant adverse effect on the electrical system;
- Be equipped with Best Available Control Technology (BACT) for air emissions control;
- Not be a major stationary emissions source under the Clean Air Act;
- Comply with all laws, ordinances, regulations, and standards; and,
- Be recertified, converted to combined-cycle operation, or cease operation within three years (Pub. Resources Code 25552 (e)(5)(B).

The Energy Commission granted the original license for LECEF on July 2, 2002, and the power plant was constructed and became operational in March 2003. The purpose of Phase 1 of this current AFC is to meet the requirements of PRC section 25552 by recertifying (relicensing) the 180 MW simple-cycle LECEF for the life of the project. The current AFC also requests a license to convert LECEF to combined-cycle operation (Phase 2 of this AFC) which will achieve much higher efficiency and increase output by

140 MW for a total of 320 MW. Because the construction and operation of Phase 2 depends entirely on Phase 1 being in place and operational, the two licensing proceedings, in part, draw on a single evidentiary record. For the purpose of this Energy Commission analysis, and to facilitate independent assessment, information is separated specific to the Phase 1 and Phase 2 license actions. This Final Staff Assessment (FSA) covers only the analysis of the application for relicense of the simple-cycle LECEF. Phase 2, the combined-cycle conversion analysis, will be published separately.

PHASE 1: LECEF SIMPLE-CYCLE PLANT RECERTIFICATION

The LECEF is located within a 21-acre project site that includes the fenced area of the LECEF and the facility's surrounding landscaping. The project site is located within a larger, 34-acre parcel. The parcel originally analyzed in the first LECEF proceedings was a 55-acre parcel which now contains the 34-acre project parcel, the PG&E Los Esteros Substation, and the strip of orphan land between that substation and the LECEF project. Silicon Valley Power (SVP) will construct a 230 kV switching station on the orphan land area currently scheduled for completion in December 2004.

The LECEF project site is located at 800 Thomas Foon Chew Way in north San Jose. South of the project parcel is State Route 237. **PROJECT DESCRIPTION Figure 1** is a photograph of the existing facility, the substation and transmission lines. To the east is agricultural land, and further east is Coyote Creek. The PG&E Los Esteros Substation and the area that will contain the Silicon Valley Power (SVP) Switching Station are immediately north and adjacent to the LECEF. **PROJECT DESCRIPTION Figure 2**, shows the general vicinity of North San Jose with the project location. Further to the north is agricultural land, San Jose/Santa Clara Water Pollution Control Plant (WPCP) buffer land that is open space, and the WPCP sludge drying yards and ponds. To the west is undeveloped WPCP buffer land. A 5-acre easment south of the access road has been purchased by Calpine to be managed as burrowing owl habitat consistent with condition of certification **BIO-11** from the original LECEF Commission Decision. Zanker Road runs north-south about 2,500 feet west of the project.

The project parcel and several surrounding parcels are located within an area designated as Light Industrial in the San Jose General Plan. The area is zoned Planned Development Zoning Project (PDZ). The PDZ zoning was originally requested by U.S. Dataport (USDP) for the purpose of constructing a large computer server center, including an energy center to provide reliable power and chilled water. The City of San Jose approved that PD zone designation in April 2001 (City Council Ordinance #26343, April 3, 2001; specific zoning PDSCH # 00-06-048). Subsequently, after agreeing to the current LECEF design, USDP and Calpine jointly applied for a revision to the PD zone to include the LECEF as the energy source for the potential data center and capable of independent operation. The City of San Jose approved the new PD zone designation in March 2002. (City Council Ordinance #26579, March 5, 2002; specific zoning PDSCH # 01-09-088.) Due to current market conditions, construction of the proposed USDP has not occurred and is unlikely in the near future.

As licensed and constructed, the LECEF currently consists of the following listed features that are also depicted in **PROJECT DESCRIPTION Figure 3**: LECEF General Equipment Arrangement, and **PROJECT DESCRIPTION Figure 4**: LECEF Project Site Plan. As proposed, there would be no additional physical changes at the site required for re-certification of Phase 1:

- Four GE LM6000 SPRINT combustion turbine generators (CTGs) with water injection;
- oxidation catalysts and selective catalytic reduction (SCR) pollution control equipment, installed within four HRSG casings and stacks (these casings were installed during Phase 1 in anticipation of a later conversion to combined-cycle);
- a single-cell cooling tower (2 cells were originally permitted);
- a 115-kilovolt-(kV) switchyard;
- a 152-foot-long, wood pole transmission line to the Pacific Gas & Electric Company's (PG&E's) 115 kV Los Esteros Substation-Nortech transmission line, immediately to the west of the LECEF switchyard;
- a 2,700-foot-long primary access road, named Thomas Foon Chew Way, linking LECEF with Zanker Road;
- a 470-foot-long emergency access road, linking Thomas Foon Chew Way and Alviso-Milpitas Road;
- a 550-foot-long, 10-inch-diameter natural gas supply line between the facility and PG&E lines 101 and 109;
- one 1,500-foot-long recycled water supply line between the facility and the WPCP's recycled water supply pipeline in Zanker Road;
- a 2,000-foot-long sanitary sewer discharge line to the City of San Jose's sewer main in Zanker Road;
- a 1,000-foot-long storm water line between the facility and the Coyote Creek high – flow channel to the east. In accordance with existing Conditions of Certification, permit applications are currently in process for construction of a permanent stormwater outfall that extends the drain approximately 250 feet into the low-flow channel of Coyote Creek; and,
- a 370-horsepower diesel fire pump.

Originally the Energy Commission and the air district permits had licensed a natural gas-fired emergency generator that will not be constructed.

The applicant owns the 34-acre project parcel on which the 21-acre LECEF facilities and the 13-acre vacant area to the south are situated. The parcel is located in Township 6 South, Range 1 West; Latitude 37° 25'30", Longitude 121° 55' 50"; UTM zone 10, easting 594,500, northing 4,142,530 (NAD 27, UTM Zone 10). The project site is at an elevation of approximately 15 feet above sea level. The nearest residences are located approximately 0.6 mile southwest, 0.8 mile east, and 1.4 miles southeast of the project site center. San Francisco Bay lies approximately 7 miles west-northwest of the site.

CONDITIONS OF CERTIFICATION FOR RELICENSING

The basis for the conditions of certification in each technical section are those found in the Commission Decision for the original LECEF (CEC, 2002b). Analysis of the application to relicense the project is based upon an already-constructed and operating project, from information presented in the current AFC, and the answers to data requests. The relicensing of the project requires that changes to laws, ordinances, regulations and standards (LORS), and the environment are considered in developing conditions of certification that reflect changes through modification of the existing conditions and the development of new conditions where appropriate.

WATER

The recycled water supply for Phase 1 of the project is provided from the Water Pollution Control Plant (WPCP) through the South Bay Water Recycling (SBWR) program. The cities of San Jose and Santa Clara jointly own the WPCP facility, but the City of San Jose operates and maintains the facility (see Figure 2). Water from the SBWR recycled water main comes to the site via a 1,500-foot-long pipeline, as shown on **PROJECT DESCRIPTION FIGURE 3,** which shows the layout of project equipment and associated linear facilities. The pipeline is routed south of the project site and turns west, along an existing utility corridor, to connect to the existing SBWR recycled-water pipeline parallel to State Route 237 on the adjacent WPCP buffer lands. The facility is in the SBWR's recycled water service area, and the City of San Jose has adequate recycled water supplies to serve the facility. Potable water for the operation of the facility is currently trucked to the facility. No potable water pipelines are planned to be added for Phase 1 relicensing. The facility also minimizes freshwater use. Recycled water from the SBWR program is used for plant cooling and process water needs.

STORM WATER

A 1,000-foot-long storm water line between the facility and the Coyote Creek high-flow channel to the east was completed during construction of the LECEF 1. In accordance with existing Conditions of Certification (**SOIL & WATER 3, 4, and 10**), permit applications are currently in process for completing the construction of a permanent stormwater outfall that extends the drain approximately 250 feet into the low-flow channel of Coyote Creek (see **PROJECT DESCRIPTION Figures 3** and **4**). Completion is scheduled for 2005.

NATURAL GAS SUPPLY

Natural gas for the project is supplied at 250 to 400 pounds per square inch gauge through a 550-foot-long, 10-inch-diameter natural gas supply line between the facility and PG&E lines 101 and 109 which run parallel to the SR 237, south of the project site (see **PROJECT DESCRIPTION Figure 3**). On-site compressors provide consistent pressure to the four turbines which are designed to burn a maximum 48,000 million British Thermal Units (MMBTU) per day (higher heating value basis).

ELECTRICAL DISTRIBUTION

Electricity generated by LECEF is distributed through a 152-foot-long, wood pole transmission line to the PG&E's 115 kV Los Esteros Substation-Nortech transmission line, immediately to the west of the LECEF switchyard.

Currently this interconnection has been approved by the Energy Commission until July 2, 2005 (Energy Commission Order No. 04-121-06, January 21, 2004). However, staff has reviewed information from Calpine, PG&E, the California Independent System Operator supporting a recommendation that the LECEF remain on the current tap connection as long as the simple-cycle output does not exceed the current maximum of 195 MW (Amendment Number 3 for Los Esteros Critical Energy Facility 01-AFC-12, filed July 28, 2004).

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PROJECT DESCRIPTION - FIGURE 1

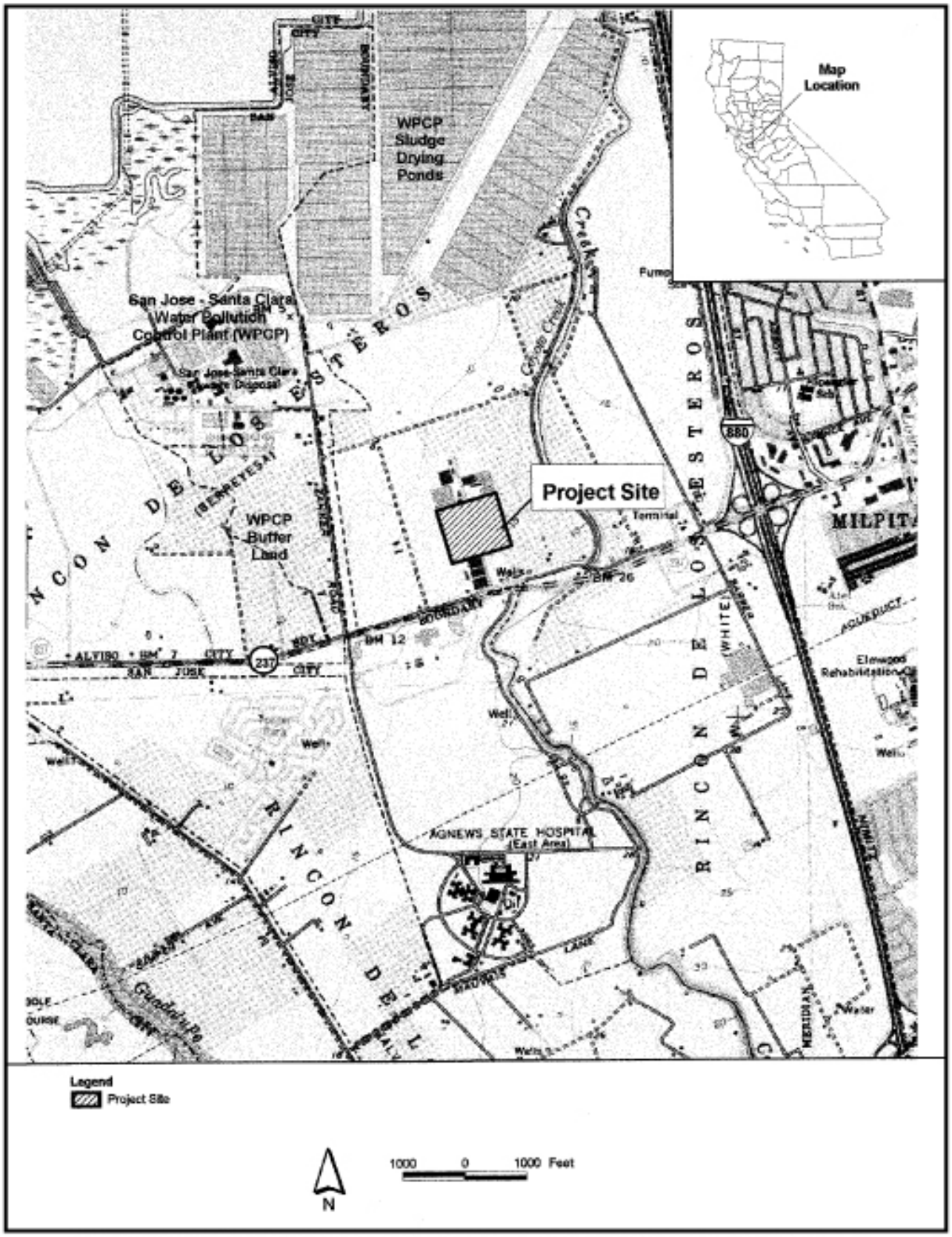
Current Los Esteros Critical Energy Facility

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, NOVEMBER 2004

SOURCE: Staff Photo

PROJECT DESCRIPTION - FIGURE 2

Los Esteros Critical Energy Facility II - Phase I - Local Area

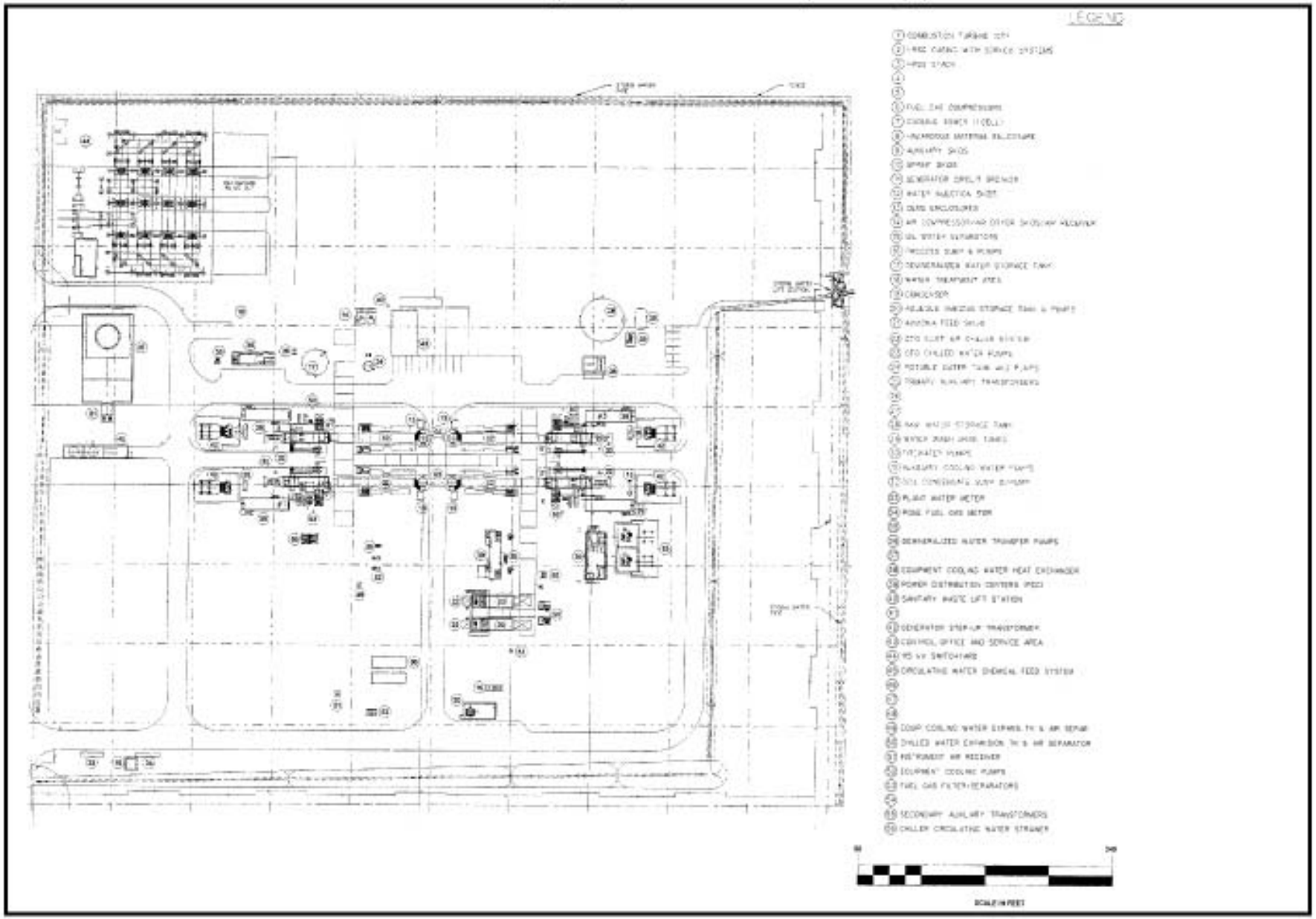


CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, NOVEMBER 2004

SOURCE: AFC Figure 1.1-2

PROJECT DESCRIPTION - FIGURE 3

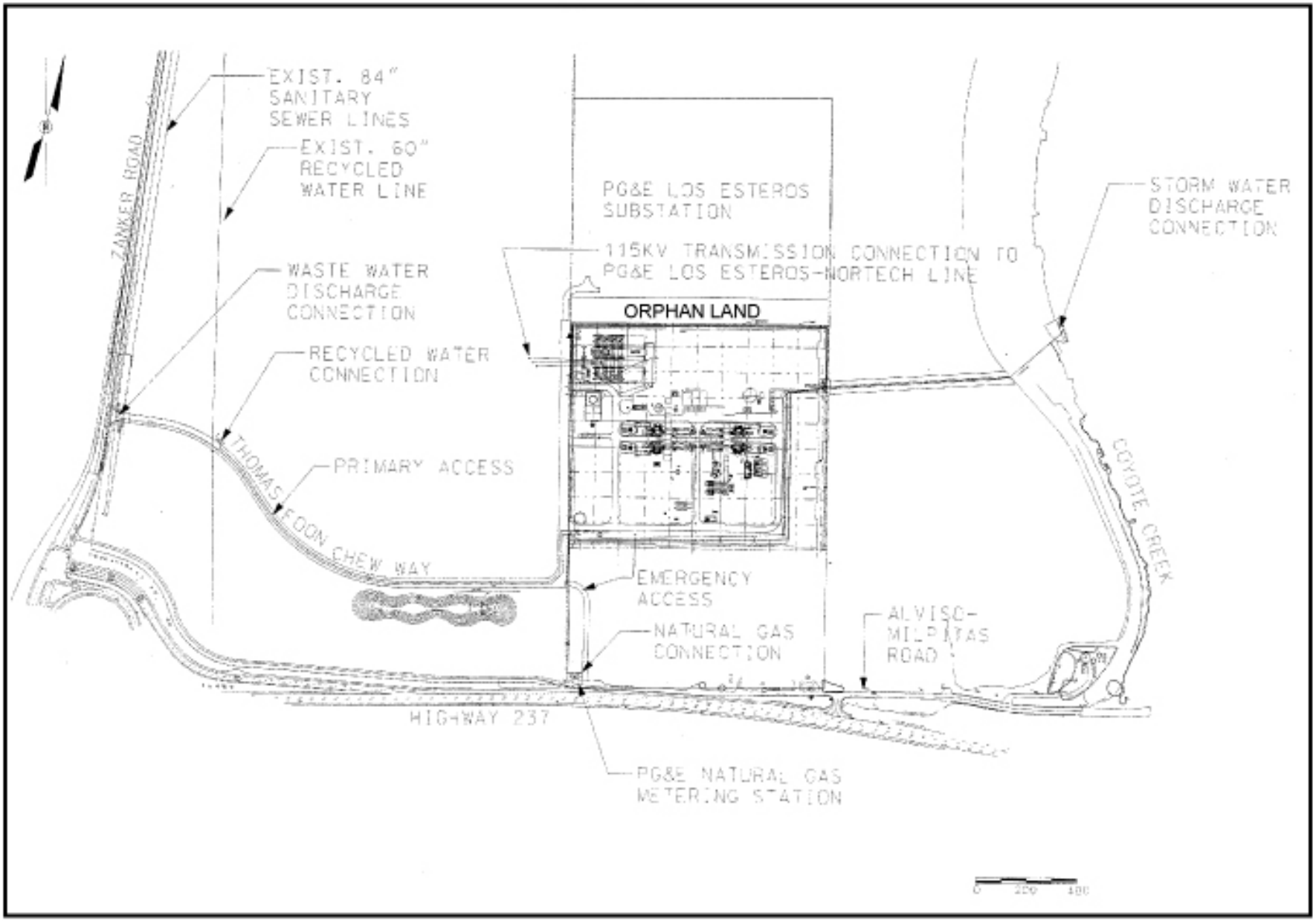
Los Esteros Critical Energy Facility II - Phase 1 - Site Layout and Equipment



SOURCE: AFC Figure 2.3-3

PROJECT DESCRIPTION - FIGURE 4

Los Esteros Critical Energy Facility II - Phase 1 - Site Plan and Services



SOURCE: AFC Figure 2.3-1

ENVIRONMENTAL ASSESSMENT

AIR QUALITY

Testimony of Gabriel D. Taylor

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

The California Energy Commission originally granted a provisional three-year license to the Calpine Corporation (Calpine) for the Los Esteros Critical Energy Facility (Los Esteros) in July 2002. The Energy Commission's Final Decision found that particulate emissions from the facility could contribute to violations of the state 24-hour average Ambient Air Quality Standard (AAQS) for particulate matter less than 10-microns in diameter (PM10) during fall and winter months, and that such emissions thus contribute to a significant cumulative impact on air quality requiring mitigation.

The PM10 mitigation required by the Final Decision for the three-year provisional license was based on negotiations between Energy Commission staff and Calpine. Originally, Calpine had wanted to commit a specific dollar amount to the air district for unspecified PM10 abatement programs rather than identifying specific mitigation. Staff insisted that the mitigation should be specific emissions reductions rather than a simple monetary payment; only specific reductions could mitigate the project's contribution to the overall impact. As a result of these negotiations, a final PM10 Mitigation Plan (Sierra 2002) was prepared by Calpine and approved by staff.

The applicant provided funding for specific PM10 abatement programs administered by the air district, consistent with the strictures of the Final Decision and the approved PM10 Mitigation Plan. However, the funded programs have failed to sufficiently mitigate the PM10 emissions of the project. The funded mitigation programs have resulted in approximately 6.13 tons per year (tpy) of PM10 reductions, which falls short of the 17.50 tpy of PM10 agreed upon in the approved PM10 Mitigation Plan. Staff believes that the mitigation requirement in the three-year license was not fulfilled, and that any new license for the facility should correct the shortfalls of the earlier mitigation attempt. Accordingly, Staff proposes a Condition of Certification to require Calpine to provide the outstanding 11.37 tpy of PM10 mitigation. A detailed analysis of this issue is presented in the PM10 Mitigation section below.

Based upon review of the Commission Decision of July 2, 2002, for Los Esteros, related documents, and new information presented in the current Los Esteros AFC (03-AFC-2), staff concludes that Calpine should provide additional mitigation for the project's PM10 emissions to avoid or reduce the project's contribution to cumulative impacts resulting from the recertification of the Los Esteros simple-cycle 180 MW power plant (03-AFC-2, Phase 1). With the additional emissions reductions proposed by staff, the project would comply with all LORS, provided the staff's proposed Conditions of Certification are adopted as part of the final Energy Commission decision.

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

The Air Quality emissions and impacts from the proposed Phase 1 project are identical to the previously analyzed impacts from the existing Los Esteros project (CEC 2002b; LECEF, LLC 2003 & Sierra 2004).

Changes Resulting from Final Design and Current Operations

PM10 Mitigation

Although the Bay Area Air Basin is classified as nonattainment for the state PM10 AAQS, the project is not required by the district to provide PM10 offsets because the 43.8 tons per year permit limit is below the district's PM10 Offset Threshold of 100 tons per year (as set by District Rule 2-6-212.1). However, the project's emissions would contribute to violations of the state 24-hour PM10 standard, a cumulative impact that requires mitigation pursuant to CEQA.

As part of the Energy Commission Decision for the original project (CEC 2002b), Condition of Certification AQ-SC4 required Calpine to develop and implement a PM10 Mitigation Plan sufficient to mitigate the facility emissions from October through May of each year. Calpine's final PM10 Mitigation Plan (Sierra 2002) was approved by staff in July 2002, and Calpine immediately started working with the district to secure PM10 emissions reductions. To achieve these reductions, Calpine agreed to participate in an ongoing district woodstove replacement and fireplace retrofit program. This program provides a cash incentive to local residents who replace or retrofit their wood burning stove or fireplace with a less polluting natural gas burning device. On July 16, 2004, the District submitted a status report to the CEC (BAAQMD 2004b) detailing the retrofits and replacements funded thus far through the program. The data is summarized in AIR QUALITY Table 1 below, along with the calculated emissions reductions achieved from the program.

AIR QUALITY Table 1
Total Emissions Reductions from the
Woodstove/Fireplace Retrofit Program (July 2004) (lbs)

Device	NOx	SOx	CO	POC	PM10
84 Replacement Stoves	650.0	100.8	46,869.8	7,811.4	7,836.6
570 Fireplace Retrofits	420.7	56.8	43,191.2	5,296.9	5,923.8
Total Reductions (lbs)	1,070.7	157.5	90,061.0	13,108.3	13,760.4
Total Reductions (tons)	**0.54**	**0.08**	**45.03**	**6.55**	**6.88**

Source: BAAQMD 2004b (Report on the Woodstove Rebate Program) and Sierra 2002

The District however indicated that Calpine has provided only 81.64 percent of the wood stove and fireplace retrofit program funding (BAAQMD 2004b, p. 2) and has credited the achieved reductions of PM10, NO_x and SO_x to Calpine accordingly. Based on the information provided by the District and in AIR QUALITY Table 1 above, 81.64 percent of the reductions corresponds to 5.62 tons of PM10, 0.44 tons of NO_x, and 0.06 tons of SO_x.

In addition to the woodstove and fireplace program, Calpine arranged to replace three local diesel school buses with alternative diesel school buses that emit significantly less criteria pollutants. Calpine funded the purchase of three model year 2002 school buses; each equipped with catalytic soot filters and new low emissions engines. These buses replaced a 1988 model year bus at the Santa Clara Unified School District, and two buses (a 1981 and a 1977 model year) at the East Side Union High School district. All

three old school buses were scrapped. These replacements provided a total of 88 lbs of PM10 credit and 933 lbs of NO_x credit (Sierra 2002, pg. 5).

Because SO_x is a precursor pollutant to PM10, staff proposes to accept SO_x reductions for PM10 credit at a trading ratio of 3:1. This is based on District Rule 2-2-301.1, which allows SO_x emission reduction credits (ERCs) to be used in place of PM10 ERCs at a trading ratio set by the APCO (Air Pollution Control Officer). The most recent case where such a ratio was set was the East Altamont case, where the 3:1 ratio was proposed and accepted. Thus, staff is proposing that an interpollutant trade of 3 pounds of SO_x reductions be accepted for each pound of PM10 emissions required to mitigate the project. In addition, because NO_x is a precursor pollutant to PM10, staff proposes to accept the NO_x reductions from both the wood burning retrofits and the school bus replacements as PM10 credit at a 2:1 ratio (i.e. 2 lbs of NO_x offset 1 lb of PM10).

Combining the PM10, SO_x and NO_x reductions from both the wood burning retrofits and the school bus replacements yields the total Equivalent PM10 Credited to Calpine for Los Esteros. This data is presented in AIR QUALITY Table 2 below:

AIR QUALITY Table 2
Total Equivalent PM10 Credited to Los Esteros

Source	Ref.	Reductions Achieved (lbs)	Credit Ratio	Equivalent PM10 (lbs)
Wood Burning Retrofits (PM10)	1,2	11,234.0	1:1	11,234.0
Wood Burning Retrofits (SO_x)	1,2,3	128.6	3:1	42.9
Wood Burning Retrofits (NO_x)	1,2	874.1	2:1	437.0
School Bus Replacement (PM10)	4	88.0	1:1	88.0
School Bus Replacement (NO_x)	4	933.0	2:1	466.5
Total Equivalent PM10 Credited (lbs)				12,268.4
Total Equivalent PM10 Credited (tons)				**6.13**

1. Reductions Achieved are 81.64 percent of the total from AIR QUALITY Table 1
2. BAAQMD 2004b (Report on the Woodstove Rebate Program)
3. CEC 2003a (East Altamont Final Decision)
4. Sierra 2002 (PM10 Mitigation Plan Los Esteros Critical Energy Facility)

Subtracting this Equivalent PM10 from the 17.50 tons of PM10 reductions agreed to in the PM10 Mitigation Plan yields an outstanding requirement of 11.37 tons of PM10. Calpine has indicated in workshop discussions that the required PM10 mitigation will be provided in the form of SOx Emissions Reduction Credits (ERC) at the 3:1 interpollutant trading ratio proposed by staff. Staff thus proposes a revised AQ-SC4 that requires surrender of 34.11 tons of SOx ERCs as a condition of recertification.

Changes in Laws, Ordinances, Regulations, and Standards

Staff has identified two changes to LORS that will impact the Phase 1 relicensing.

Elimination of the Sunset Condition

The Bay Area Air Quality Management District (BAAQMD) issued a project modification letter on June 22, 2004 (BAAQMD 2004a), which administratively removed the "Sunset Condition" from their permit. This condition was not required by District rules and regulations, and was only included at the request of the Energy Commission based on

California Public Resources Code section 25552(e)(5)(B) which required the power plant to be “modified, replaced, or removed” within 3 years. Changes were made to that section of 25552 since the permitting of this project that added the option to “recertify” the existing simple-cycle power plant. With the recommendation that the Los Esteros simple-cycle facility be recertified per that condition if the conditions of certification recommended here are adopted, staff proposes deletion of the corresponding Energy Commission Condition of Certification, AQ-38.

Greenhouse Gas Emissions Reporting

In addition to regulated criteria pollutants, the combustion of natural gas produces air emissions known as greenhouse gases. These include primarily carbon dioxide and methane (unburned natural gas). Greenhouse gases are known to contribute to the warming of the earth’s atmosphere. Climate change from rising temperatures represents a risk to California’s economy, public health, and environment due to changes in sea levels that could lead to flooding of coastal communities, drought, forest fires, decline of fish populations, reduced hydropower opportunities, and loss of habitat. In 1998 the Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p.5). In 2003 the Energy Commission recommended that the state should require reporting of greenhouse gas emissions as a condition of state licensing of new electric generating facilities (CEC 2003b, p. 42). Staff recommends Condition of Certification AQ-SC6 which requires the project owner to report the quantities of each greenhouse gas emitted as a result of facility operation. Such reporting would be done in accordance with accepted reporting protocol as specified.

Changes in the Environment

There were no significant changes in the ambient air quality environment since the original permit was issued. Staff will provide updated ambient monitoring data, including the past two years, in the Staff Analysis for the Phase 2 of this project.

CONDITIONS OF CERTIFICATION

Staff proposes the following Conditions of Certification, with changes from the previously permitted LECEF permit shown in underline/~~strikeout~~ format. Staff notes that the commissioning conditions were deleted from the district permit on June 22, 2004, since all commissioning activities have been completed (condition numbers 1-11 in the district permit corresponding to Energy Commission conditions AQ-1 through AQ-11).

AQ-SC1 The project owner shall prepare a Fugitive Dust Mitigation Plan (FDMP) that will specifically identify fugitive dust mitigation measures that will be employed for the construction of the Los Esteros Critical Energy Facility and related facilities. The CEC shall approve a Fugitive Dust Mitigation Manager(s) (FDMM) who shall be onsite during all construction activities until released by the CPM. The FDMM shall be responsible for monitoring and enforcing the effectiveness of all mitigation measures for construction as outlined in conditions of certification AQ-SC1 and AQ-SC5. The owner/operator shall be

responsible for funding the costs of the FDMM, however, the FDMM shall report to the CPM.

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

1. the identification of the employee parking area(s) and the surface composition of those parking area(s);
2. the frequency of watering of unpaved roads and disturbed areas;
3. the application of chemical dust suppressants;
4. the use of gravel in high traffic areas;
5. the use of paved access aprons;
6. the use of posted speed limit signs;
7. the use of wheel washing areas prior to large trucks leaving the project site;
8. The methods that will be used to clean up mud and dirt that has been tracked-out from the project site onto public roads;
9. The use of windbreaks at appropriate locations;
10. The suspension of all earth moving activities under windy conditions; and
11. The use of on-site monitoring devices.

In monitoring the effectiveness of all mitigation measures included in the FDMP, the FDMM shall take into account the following:

a. Onsite spot checks of soil moisture content at locations where soil disturbance, movement and/or storage is occurring;
b. Visual observations of all construction activities; and
c. The results of measurements by portable PM10 instruments (as described in AQ-SC5).

The FDMM shall implement the following procedures for additional mitigation measures if the FDMM determines that the existing mitigation measures are not resulting in adequate mitigation:

- The FDMM shall direct more aggressive application of the existing mitigation methods within fifteen (15) minutes of making such a determination;
- The FDMM shall direct implementation of additional methods of dust suppression if the step specified above fails to result in adequate mitigation within thirty (30) minutes of the original determination;
- The FDMM shall direct a temporary shutdown of the source of the emissions if both steps specified above fail to result in adequate mitigation within one (1) hour of the original determination. The activity shall not

restart until one (1) full hour after the shutdown. The owner/operator may appeal a directive from the FDMM to shutdown a source to the CPM, provided that the shutdown shall remain in effect unless reversed by the CPM.

Verification: At least fifteen (15) days prior to site mobilization, the project owner shall provide the CEC Compliance Project Manager (CPM) with a copy of the Fugitive Dust Mitigation Plan (FDMP) for approval. Ground breaking shall not commence until the project owner receives approval of the FDMP from the CPM.

AQ-SC2 The project owner shall mitigate, to the extent practical, construction related emission impacts from off-road, diesel-fired construction equipment. Available measures which may be used to mitigate construction impacts include the following:

- Catalyzed Diesel Particulate Filters (CDPF);
- Ultra-Low-Sulfur Diesel fuel, with a sulfur content of 15 ppm or less (ULSD);
- Diesel engines certified to EPA and CARB 1996 or newer off-road equipment emission standards.

Additionally, the project owner shall restrict idle time, to the extent practical, to no more than 10 minutes.

The use of each mitigation measure is to be determined in advance by a Construction Mitigation Manager (CMM), who will be available at the project site(s). The CMM must be approved by the CPM prior to the submission of any reports.

The CMM shall submit the following reports to the CPM for approval:

- Construction Mitigation Plan;
- Reports of Change and Mitigation Implementation;
- Reports of Emergency Termination of Mitigation, as necessary

Diesel Construction Equipment Mitigation Plan

The Construction Mitigation Plan shall be submitted to the CPM for approval prior to rough grading on the project site, and must include the following:

1. A list of all diesel-fueled, off-road, stationary or portable construction-related equipment to be used either on the project construction site or the construction sites of the related linear facilities. Equipment used less than a total of 10 consecutive days need not be included in this list.

2. Each piece of construction equipment listed under item (1) must demonstrate compliance with the following mitigation requirements:

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

If compliance cannot be demonstrated as specified under item (2), then the project owner may appeal for relief to the CPM. However, the owner must demonstrate that they have made a good faith effort to comply as specified under item (2).

Report of Change and Mitigation Implementation

Following the initiation of construction activities, and if changes to mitigation measures are necessary, the CMM shall submit a Report of Change and Mitigation Implementation to the CPM for approval. This report must contain at a minimum the cause of any deviation from the Construction Mitigation Plan, and verification of any Construction Mitigation Plan measures that were implemented. The following is acceptable proof of compliance, other methods of proof of compliance must be approved by the CPM.

1. EPA or CARB 1996 off-road equipment emission standards:
   a. A copy of the certificate from EPA or CARB.
2. Purchase and use of ultra-low-sulfur fuel (15 ppm or less).
   a. Receipt or other documentation indicating type and amount of fuel purchased, from whom, where delivered and on what date; and
   b. A copy of the text included in the contract agreement with all contractors and sub-contractors for use of the ultra-low-sulfur fuel in diesel burning construction equipment as identified in the Construction Mitigation Plan.
3. Installation of CDPF:
   a. The suitability of the use of CDPFs is to be determined by a qualified LECEF mechanic or engineer who must submit a report to the CPM for approval.
   B Installation is to be verified by a qualified LECEF mechanic or engineer.
4. Construction equipment engine idle time:
   a. A copy of the text included in the contract agreement with all contractors and sub-contractors to keep engine idle time to 10 minutes or less to the extent practical.

Report of Emergency Termination of Mitigation

If a specific mitigation measure is determined to be detrimental to a piece of construction equipment or is determined to be causing significant delays in the construction schedule of the project or the associated linear facilities, the mitigation measure may be terminated immediately. However, notification containing an explanation for the cause of the termination must be sent to the CPM for approval. All such causes are restricted to one of the following justifications and must be identified in any Report of Emergency Termination of Mitigation.

1. The measure is excessively reducing normal availability of the construction equipment due to increased downtime for maintenance, and/or power output due to an excessive increase in back pressure.
2. The measure is causing or is reasonably expected to cause significant engine damage.
3. The measure is causing or is reasonably expected to cause a significant risk to nearby workers or the public.
4. Any other seriously detrimental cause which has approval by the CPM prior to the change being implemented.

Verification: The project owner will submit to the CPM for approval the qualifications of the CMM at least 15 days prior to the due date for the Diesel Construction Equipment Mitigation Plan. The project owner will submit the Diesel Construction Equipment Mitigation Plan to the CPM for approval 10 calendar days prior to rough grading on the project site or start of construction on any associated linear facilities. The project owner will submit the Report of Change and Mitigation Implementation to the CPM for approval no later than 10 working days following the use of the specific construction equipment on either the project site or the associated linear facilities. The project owner will submit a Report of Emergency Termination of Mitigation to the CPM for approval, as required, no later than 10 working days following the termination of the identified mitigation measure. The CPM will monitor the approval of all reports submitted by the project owner in consultation with CARB, limiting the review time for any one report to no more than 20 working days.

AQ-SC3 The project owner shall require as a condition of its construction contracts that all contractors/subcontractors ensure that all heavy earthmoving equipment, including but not limited to bulldozers, backhoes, compactors, loaders, motor graders, trenchers, cranes, dump trucks and other heavy duty construction related trucks, have been properly maintained and the engines tuned to the engine manufacturer's specifications. The project owner shall further require as a condition of its construction contracts, that all heavy construction equipment shall not remain running at idle for more than five minutes, to the extent practical.

Verification: The project owner shall submit to the CPM, via the Monthly Compliance Report, a list of all heavy equipment used on site during that month including the owner of that equipment responsible for its maintenance and a letter from each owner indicating that the heavy equipment in question is properly maintained and tuned to

manufacturer's specifications. The project owner shall maintain construction contracts on-site for six months following the start of commercial operation.

AQ-SC4 The project owner/operator shall surrender 34.11 tons of SOx Emissions Reduction Credits.
~~provide emission reductions sufficient to mitigate the project PM10 emissions of 44,238 lbs/year from October through March. This mitigation shall preferably be combustion sources within CPM approved proximity of the project site. This mitigation will be preferably targeted for the months of October through March of each year. This mitigation shall be approved by the CPM in total and initiated prior to first fire and must be fully realized prior to the second year of operation. This mitigation shall be developed from the following sources in order of preference:~~

~~1. The Bay Area Air Quality Management District, Wood Stove Retrofit or Replacement Program.~~
~~2. The Lower-Emission School Buses Program.~~
~~3. Other mitigation measures approved by the CPM via written CEC Air Quality Staff review.~~
~~4. The California Air Resources Board, Carl Moyer Program.~~
~~5. Emission Reduction Credits (ERCs) banked with the Bay Area Air Quality Management District and approved by the CPM via written CEC Air Quality Staff review. SO_2 ERCs may be used to satisfy all or part of this requirement using a 3:1 ratio (3.0 lbs of SO_2 ERC will count for 1.0 lb of PM10 ERC credit)~~

Verification: The owner/operator shall surrender all ERCs within three months of the date of the Final Commission Decision or the effective date of the license, whichever is later. The owner/operator shall submit all documentation of the surrender to the CPM by the same date. Copies of documentation from the district proving permanent withdrawal of any submitted ERCs from the district bank shall be submitted by the owner/operator to the CPM as soon as issued by the district. ~~At least 15 days prior to first fire the project owner shall submit to the CPM for approval, a complete description of the full mitigation strategy, including contacts, dollars to be spent, expected delivery dates, monitoring strategies (if necessary) and expected amounts of emission reductions. Periodic reports shall be required as deemed reasonable by the CPM for individual emission reduction sources~~.

AQ-SC5 The project owner shall prepare and implement a Construction Monitoring Demonstration Program (CMDP) to measure PM10 emissions during excavation, earthmoving and grading activities. The project owner shall submit the CMDP to the CPM for review and approval. The CMDP shall include, at a minimum, the following:

1. The use of real-time PM10 monitoring instruments;
2. The simultaneous use of upwind and downwind monitors continuously during these activities;
3. Description of how the monitors will be used to assess the effectiveness of the mitigation measures implemented under the

FDMP, including assessing the potential need for monitoring multiple activities on site simultaneously;

Verification: At least 15 days prior to site mobilization, the project owner shall provide the CMDP to the CPM for review and approval. Monitoring records, including monitoring data from all upwind and downwind monitors, and records of dust suppression measures implemented, shall be maintained on-site throughout construction and shall be made available to the CPM upon request. A summary of the monitoring records and the dust suppression activities shall be included in each Monthly Compliance Report. Any changes to the CMDP or associated protocols require written approval from the CPM.

AQ-SC6 The project owner shall report to the CPM the quantities of each greenhouse gas (GHG) emitted on an annual basis as a result of facility operation. GHG emissions shall be reported as equivalent CO_2 pounds and the method shall conform to the California Climate Action Registry General Reporting Protocol.

Verification: GHG emissions shall be reported to the CPM once per calendar year, as part of the first quarterly compliance report submitted each year as required in Condition of Certification AQ-34.

AQ-1 (Deleted by the District on 7/22/04) The owner/operator of the Los Esteros Critical Energy Facility shall minimize emissions of carbon monoxide and nitrogen oxides from S-1, S-2, S-3 and S-4 Gas Turbines to the maximum extent possible during the commissioning period. Conditions AQ-1 through AQ-11 shall only apply during the commissioning period.

Verification: The project owner/operator shall specifically demonstrate compliance with this Condition of Certification through the Verifications of Conditions of Certification AQ-5 and AQ-10.

AQ-2 (Deleted by the District on 7/22/04) At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the S-1, S-2, S-3 and S-4 Gas Turbine combustors shall be tuned to minimize the emissions of carbon monoxide and nitrogen oxides.

Verification: The project owner/operator shall specifically demonstrate compliance with this Condition of Certification through the Verifications of Conditions of Certification AQ-5 and AQ-10.

AQ-3 (Deleted by the District on 7/22/04) At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the SCR Systems (A-2, A-4, A-6 & A-8) and OC Systems (A-1, A-3, A-5 & A-7) shall be installed, adjusted, and operated to minimize the emissions of nitrogen oxides and carbon monoxide from S-1, S-2, S-3 and S-4 Gas Turbine.

Verification: The project owner/operator shall specifically demonstrate compliance with this Condition of Certification through the Verifications of Conditions of Certification AQ-5 and AQ-10.

AQ-4 (Deleted by the District on 7/22/04) Coincident with the steady-state operation of SCR Systems (A-2, A-4, A-6 & A-8) and OC Systems (A-1, A-3, A-5 & A-7) pursuant to AQ-3 the Gas Turbine (S-1, S-2, S-3 and S-4) shall comply with the NOx and CO emission limitations specified in Conditions AQ-19a and AQ-19c.

Verification: The project owner/operator shall specifically demonstrate compliance with this Condition of Certification through the Verifications of Conditions of Certification AQ-5 and AQ-10.

AQ-5 (Deleted by the District on 7/22/04) The owner/operator of the Los Esteros Critical Energy Facility shall submit a plan to the District Permit Services Division and the CPM for approval at least two weeks prior to first firing of S-1, S-2, S-3 and S-4 Gas Turbines describing the procedures to be followed during the commissioning of the Gas Turbines. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not be limited to, the tuning of the water injection, the installation and operation of the required emission control systems, the installation, calibration, and testing of the CO and NOx continuous emission monitors, and any activities requiring the firing of the Gas Turbines (S-1, S-2, S-3 and S-4) without abatement by their respective SCR Systems. The Gas Turbines (S-1, S-2, S-3 and S-4) shall be fired no sooner than fourteen days after the District receives the Commissioning Plan.

Verification: The project owner/operator shall submit a Commissioning Plan to the District Permit Services Division and the CPM for approval at least two weeks prior to first fire of S-1, S-2, S-3 and S-4.

AQ-6 (Deleted by the District on 7/22/04) During the commissioning period, the owner/operator of the Los Esteros Critical Energy Facility shall demonstrate compliance with conditions AQ-8 through AQ-10 through the use of properly operated and maintained continuous emission monitors and data recorders for the following parameters:

a) firing hours;

b) fuel flow rates;

c) stack gas nitrogen oxide emission concentrations;

d) stack gas carbon monoxide emission concentrations; and

e) stack gas oxygen concentrations.

The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the S-1, S-2, S-3 and S-4 Gas Turbines. The owner/operator shall use District-approved methods to calculate heat input rates, nitrogen dioxide mass emission rates, carbon monoxide mass emission rates, and NOx and CO emission concentrations, summarized for each clock hour and each calendar day. All records shall be retained on site for at least five years

from the date of entry and made available to District or Commission personnel upon request.

Verification: The project owner/operator shall specifically include the installation of the monitors required by this Condition of Certification through the Verifications of Conditions of Certification AQ-5 and AQ-10.

AQ-7 (Deleted by the District on 7/22/04) The District-approved continuous monitors specified in condition AQ-6 shall be installed, calibrated, and operational prior to first firing of the S-1, S-2, S-3 and S-4 Gas Turbine. After first firing of the turbine, the detection range of these continuous emission monitors shall be adjusted as necessary to accurately measure the resulting range of CO and NOx emission concentrations. The type, specifications, and location of these monitors shall be subject to District review and approval.

Verification: The project owner/operator shall notify the District and CPM of the date of expected first fire at least 30 days prior to first fire and shall make the project site available for inspection if desired by either the District or CPM.

AQ-8 (Deleted by the District on 7/22/04) The number of firing hours of S-1, S-2, S-3 and S-4 Gas Turbines without abatement by SCR or CO Systems shall not exceed 100 hours during the commissioning period. Such operation of the S-1, S-2, S-3 and S-4 Gas Turbine without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR or CO system in place.

Verification: Upon completion of these activities, the owner/operator shall provide written notice to the District Permit Services and Enforcement Divisions and the unused balance of the 100 firing hours without abatement shall expire.

AQ-9 (Deleted by the District on 7/22/04) The total mass emissions of nitrogen oxides, carbon monoxide, precursor organic compounds, PM10, and sulfur dioxide that are emitted by the S-1, S-2, S-3 and S-4 Gas Turbine during the commissioning period shall accrue towards the consecutive twelve-month emission limitations specified in condition AQ-22.

Verification: The project owner/operator shall specifically demonstrate compliance with this Condition of Certification through the Verification of Condition of Certification AQ-10.

AQ-10 (Deleted by the District on 7/22/04) The pollutant mass emissions from the S-1, S-2, S-3 and S-4 Gas Turbine shall not exceed the following limits during the commissioning period. These emission limits shall include emissions resulting from the start-up and shutdown of the S-1, S-2, S-3 and S-4 Gas Turbines.

Pollutant	Without Catalyst	With Catalyst		
	Lbs/day	Lbs/hr	lbs/day	lbs/hr
NOx (as NO_2)	1224	102	410	34.2
CO	1056	88	300	25
POC (as CH4)	114	-	114	-
PM10	240	-	240	-
SO_2	32	-	32	-

Verification: The project owner/operator shall submit to the CPM for approval, a monthly emissions report that includes fuel use, turbine operation, post combustion control operation, ammonia use and CEM readings on an hourly and daily basis.

AQ-11 (Deleted by the District on 7/22/04) Within 60 days of startup, the Owner/Operator shall conduct a District approved source test using external continuous emission monitors to determine compliance with condition AQ-10. The source test shall determine NOx, CO, and POC emissions during start-up and shutdown of the gas turbines. The POC emissions shall be analyzed for methane and ethane to account for the presence of unburned natural gas. The source test shall include a minimum of three start-up and three shutdown periods. Thirty days before the execution of the source tests, the Owner/Operator shall submit to the District and the CPM for approval, a detailed source test plan designed to satisfy the requirements of this condition. The Owner/Operator shall be notified of any necessary modifications to the plan within 20 working days of receipt of the plan; otherwise, the plan shall be deemed approved by both the District and CPM. The Owner/Operator shall incorporate the District and CPM comments into the test plan. The Owner/Operator shall notify the District and CPM within 10 days prior to the planned source testing date. Source test results shall be submitted to the District and CPM within 30 days of the source testing date. These results can be used to satisfy applicable source testing requirements in condition AQ-26 below.

Verification: The project owner/operator shall specifically include the source testing as required by this Condition of Certification through the Verification of Condition of Certification AQ-5. The project owner/operator shall submit the source test plan and results as required in the time frames indicated in this Condition of Certification.

OPERATIONS CONDITIONS OF CERTIFICATION

AQ-12 Consistency with Analyses: Operation of this equipment shall be conducted in accordance with all information submitted with the application (and

supplements thereof) and the analyses under which this permit is issued unless otherwise noted below.

Verification: This Condition of Certification shall be verified in the quarterly reports required under Condition of Certification AQ-34.

AQ-13 Conflicts Between Conditions: In the event that any condition herein is determined to be in conflict with any other condition contained herein, then, if principles of law do not provide to the contrary, the condition most protective of air quality and public health and safety shall prevail to the extent feasible. All such conflicts must be reported as they are discovered to the CPM.

Verification: This Condition of Certification shall be verified in the quarterly reports required under Condition of Certification AQ-34 and as needed on an interim basis.

AQ-14 Reimbursement of Costs: All reasonable expenses, as set forth in the District's rules or regulations, incurred by the District for all activities that follow the issuance of this permit, including but not limited to permit condition implementation, compliance verification and emergency response, directly and necessarily related to enforcement of the permit shall be reimbursed by the owner/operator as required by the District's rules or regulations.

Verification: The owner/operator shall maintain records for a minimum of five (5) years and provide access to records and facilities as requested by the CARB, EPA, District and CEC.

AQ-15 Access to Records and Facilities: As to any condition that requires for its effective enforcement the inspection of records or facilities by representatives of the District, the Air Resources Board (ARB), the U.S. Environmental Protection Agency (U.S. EPA), or the California Energy Commission (CEC), the owner/operator shall make such records available or provide access to such facilities upon notice from representatives of the District, ARB, U.S. EPA, or CEC. Access shall mean access consistent with California Health and Safety Code Section 41510 and Clean Air Act Section 114A.

Verification: The owner/operator shall maintain records for a minimum of five (5) years and provide access to records and facilities as requested by the CARB, EPA, District and CEC.

AQ-16 Notification of Commencement of Operation: The owner/operator shall notify the District and CPM of the date of anticipated commencement of turbine operation not less than 10 days prior to such date. Temporary operations under this permit are granted consistent with the District's rules and regulations.

Verification: The owner/operators shall notify the District and CPM of the date of anticipated commencement of turbine operation not less than 10 days prior to such date.

AQ-17 Operations: The gas turbine, emissions controls, CEMS and associated equipment shall be properly maintained and kept in good operating condition at all times when the equipment is in operation.

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-18 **Visible** Emissions: No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark or darker than Ringelmann 1 or equivalent 20 percent opacity.

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-19 Emissions Limits:

a. Oxides of nitrogen (NOx) emissions from the gas turbine shall not exceed 5.0 ppmvd @ 15 percent O_2 (three-hour rolling average), except during periods of startup and shutdown as defined in this permit. The NOx emission concentration shall be verified by a District-approved continuous emission monitoring system (CEMS) and during any required source test. (basis: BACT)

b. Ammonia emissions from the gas turbine shall not exceed 10 ppmvd @ 15 percent O_2 (three -hour rolling average), except during periods of startup and shutdown as defined in this permit. The ammonia emission concentration shall be verified by the continuous recording of the ratio of the ammonia injection rate to the NOx inlet rate into the SCR control system (molar ratio). The maximum allowable NH_3/NOx molar ratio shall be determined during any required source test, and shall not be exceeded until reestablished through another valid source test. (basis: BACT)

c. Carbon monoxide (CO) emissions from the gas turbine shall not exceed 4 ppmvd @ 15 percent O_2 (three-hour rolling average), except during periods of startup and shutdown as defined in this permit. The CO emission concentration shall be verified by a District-approved CEMS and during any required source test. (basis: BACT)

d. Precursor organic compound (POC) emissions from the gas turbine shall not exceed 2 ppmvd @ 15 percent O_2 (three -hour rolling average), except during periods of startup and shutdown as defined in this permit. The POC emission concentration shall be verified during any required source test. (basis: BACT)

e. Particulate matter emissions less than ten microns in diameter (PM10) from the gas turbine shall not exceed 2.5 pounds per hour, except during periods of startup and shutdown as defined in this permit. The PM10 mass emission rate shall be verified during any required source test. (basis: BACT & cumulative increase)

f. Oxides of sulfur emissions (SOx) from the gas turbine shall not exceed 0.33 pounds per hour, except during periods of startup and shutdown as defined in this permit. The SOx emission rate shall be verified during any required source test. (basis: BACT & cumulative increase)

g. The total NOx emissions from the exhaust emission stacks associated with gas turbines S-1, S-2, S-3 and S-4 shall not exceed 34.20 lbs in any one clock hour, excluding those hours in which a startup or shutdown has occurred. (Basis: CEC Requirement).

Verification: The project owner/operator shall verify all emission limits specified in this Condition of Certification as part of each quarterly report required in Condition of Certification AQ-34

AQ-20 Turbine Startup: Startup of the gas turbine shall not exceed a time period of 60 minutes each per occurrence, or another time period based on good engineering practice and approved in advance by the District. The startup clock begins with the turbine's initial firing and continues until the unit meets the emission concentration limits. (Basis: Cumulative increase)

Verification: The project owner/operator shall identify the occurrence of any startup as part of the quarterly report required in Condition of Certification AQ-34.

AQ-21 Turbine Shutdown: Shutdown of the gas turbine shall not exceed a time period of 30 minutes each per occurrence, or another time period based on good engineering practice and approved in advance by the District. Shutdown begins with initiation of the turbine shutdown sequence and ends with the cessation of turbine firing. (Basis: Cumulative increase)

Verification: The project owner/operator shall identify the occurrence of any shutdown as part of the quarterly report required in Condition of Certification AQ-34.

AQ-22 Mass Emission Limits: Total mass emissions from the exhaust emission stacks associated with S-1, S-2, S-3 and S-4 Gas Turbine shall not exceed the daily, and annual mass emission limits listed in Table 1 below. The owner/operator shall implement process computer data logging including running totals to demonstrate compliance with Table 1 limits without further calculations.

Table 1–Mass Emission Limits (Including Startups and Shutdowns)

Pollutant	Each turbine lb./day	Daily (4 units) (lb.)	Annual (tons)
NOx (as NO_2)	205.2	821	74.9
POC	28.3	113	20.8
CO	99.8	399	72.9
SOx (as SO_2)	7.9	32	5.8
PM10	60.0	240	43.8
NH_3	151.7	607	110.7

The daily mass limits are on a Calendar Day basis as defined under Permit Conditions. The Annual Mass Limit is based on a rolling 8760-hour period ending on the last hour. Compliance shall be based on calendar average one-hour readings through the use of process monitors (e.g., fuel use meters), CEMS, and source test results; and the monitoring, record keeping and reporting conditions of this permit. If any part of the CEM, involved in the mass emission calculations,

is inoperative for more then three hours of plant operation, the mass data for the inoperative period shall be calculated using a District approved Alternate Calculation. (Basis: Cumulative increase & record keeping)

Verification: The project owner/operator shall verify all emission limits in this Condition of Certification as part of the quarterly report required in Condition of Certification AQ-34.

AQ-23 Acid Limit: The sulfuric acid emissions (SAM) from S-1 through S-4 combined shall not exceed seven tons in any consecutive four quarters. (Basis: PSD)

Verification: The project owner/operator shall verify all emission limits in this Condition of Certification as part of the quarterly report required in Condition of Certification AQ-34.

AQ-24 Operational Limits: In order to comply with the emission limits of this rule, the owner/operator shall comply with the following operational limits:

a) The heat input to any gas turbine shall not exceed:

Hourly: 472.6 MMBtu/hr
Daily: 11,342 MMBtu/day
Four Turbines
Annual: 16,560,000 MMBtu/year

b) Only PUC Quality natural gas (General Order 58-a) shall be used to fire the gas turbine. The natural gas shall not contain total sulfur in concentrations exceeding 0.25 gr./100 scf.

c) The owner/operator of the gas turbine shall comply with the daily and annual emission limits listed in Table 1 by keeping running totals based on CEM data. (Basis: Cumulative increase)

Verification: The project owner/operator shall verify all limits in this Condition of Certification as part of the quarterly report required in Condition of Certification AQ-34.

AQ-25 Monitoring Requirements: The owner/operator shall comply with the following monitoring requirements for each gas turbine:

a) The gas turbine exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods.

b) The ammonia injection system shall be equipped with an operational ammonia flowmeter and injection pressure indicator accurate to plus or minus five percent at full scale and calibrated once every twelve months.

c) The gas turbine exhaust shall be equipped with continuously recording emissions monitor(s) for NOx, CO and O_2. Continuous emissions monitors shall comply with the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring concentrations and mass emissions during normal operating conditions and during startups and shutdowns.

d) The fuel heat input rate shall be continuously recorded using District-approved fuel flow meters along with quarterly fuel compositional analyses for the fuel's higher heating value (wet basis).

e) The total sulfur content of the fuel gas shall be analyzed on a quarterly basis. (Basis: Monitoring & record keeping)

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-26 Source Testing/RATA: Within 60 days after startup of the gas turbines, and at a minimum on an annual basis thereafter, a relative accuracy test audit (RATA) must be performed on the CEMS in accordance with 40 CFR Part 60 Appendix B Performance Specifications and a source test shall be performed. Additional source testing may be required at the discretion of the District or Energy Commission to address or ascertain compliance with the requirements of this permit. The written test results of the source tests shall be provided to the District and CPM within thirty days after testing. A complete test protocol shall be submitted to the District and CPM no later than 30 days prior to testing, and notification to the District and CPM at least ten days prior to the actual date of testing shall be provided so that a District or Energy Commission observer may be present. The source test protocol shall comply with the following: measurements of NOx, CO, POC, and stack gas oxygen content shall be conducted in accordance with ARB Test Method 100; measurements of PM10 shall be conducted in accordance with ARB Test Method 5; and measurements of ammonia shall be conducted in accordance with Bay Area Air Quality Management District test method ST-1B. Alternative test methods, and source testing scope, may also be used to address the source testing requirements of the permit if approved in advance by the District and CPM. The initial and annual source tests shall include those parameters specified in the approved test protocol, and shall at a minimum include the following:

a) NOx– ppmvd at 15 percent O_2 and LB/MMBtu (as NO_2);

b) Ammonia – ppmvd at 15 percent O_2 (Exhaust);

c) CO – ppmvd at 15 percent O_2 and LB/MMBtu (Exhaust);

d) POC – ppmvd at 15 percent O_2 and LB/MMBtu (Exhaust);

e) PM10 – LB/hr (Exhaust);

f) SOx – LB/hr (Exhaust);

g) Natural gas consumption, fuel High Heating Value (HHV), and total fuel sulfur content;

h) Turbine load in megawatts;

i) Stack gas flow rate (SDCFM) calculated according to procedures in U.S. EPA Method 19;

j) Exhaust gas temperature (°F);

k) Ammonia injection rate (LB/hr or moles/hr); (Basis: source test requirements & monitoring)

l) l. Water injection rate for each turbine at S-1, S-2, S-3, & S-4.

Verification: The owner/operator shall submit to the District and the CPM for approval a RATA within 60 days after first fire and annually thereafter. The owner/operator submit to the District and the CPM for approval a source test protocol at least 30 days prior to the date of the source test. The owner/operator shall notify the District and the CPM of the date of the source test no later than 10 days prior the testing date. The owner/operator shall submit to the District and the CPM for approval the results of the source test no later than 30 days following the date of the source test.

AQ-27 Within 60 days of start-up of the LECEF and on a semi-annual basis thereafter, the owner/operator shall conduct a District approved source test on exhaust points for S-1 through S-4 while each Gas Turbine is operating at maximum load to demonstrate compliance with the SAM levels in AQ-23. The owner/operator shall test for (as a minimum) SO_2, SO3 and SAM. After acquiring one year of source test data on these units, the owner/operator may petition the District to switch to annual source testing if test variability is low. (Basis: PSD Avoidance, SAM Periodic Monitoring)

Verification: The project owner/operator shall verify all emission limits in this Condition of Certification as part of the quarterly report required in Condition of Certification AQ-34.

AQ-28 A written quality assurance program must be established in accordance with 40 CFR Part 75, Appendix B and 40 CFR Part 60 Appendix F. (Basis: continuous emission monitoring)

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-29 The owner/operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart GG. (Basis: NSPS)

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-30 The owner/operator shall notify the District and the CPM of any breakdown condition consistent with the District's breakdown regulations. (Basis: Regulation 1-208)

Verification: The project owner/operator shall notify the CPM and the District of all breakdowns as required and include all break down reports as part of the quarterly report required in Condition of Certification AQ-34.

AQ-31 The District and the CPM shall be notified in writing in a timeframe consistent with the District's breakdown regulations following the correction of any breakdown condition. The breakdown condition shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the actions taken to restore normal operations. (Basis: Regulation 1-208)

Verification: The project owner/operator shall notify the CPM and the District of all breakdowns as required and include all break down reports as part of the quarterly report required in Condition of Certification AQ-34.

AQ-32 Record Keeping: The owner/operator shall maintain the following records:

a) hourly, daily, quarterly and annual quantity of fuel used and corresponding heat input rates;

b) the date and time of each occurrence, duration, and type of any startup, shutdown, or malfunction along with the resulting mass emissions during such time period;

c) emissions measurements from all source testing, RATAs and fuel analyses;

d) daily, quarterly and annual hours of operation;

e) hourly records of NOx and CO, emission concentrations and hourly ammonia injection rates and ammonia/NOx ratio; and

f) for the continuous emissions monitoring system; performance testing, evaluations, calibrations, checks, maintenance, adjustments, and any period of non-operation of any continuous emissions monitor. (Basis: record keeping).

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-33 All records required to be maintained by this permit shall be retained by the permittee for a period of five years and shall be made readily available for District inspection upon request. (Basis: record keeping)

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-34 Reporting: The owner/operator shall submit to the District and the CPM for approval, a written report for each calendar quarter, within 30 days of the end of the quarter, which shall include:

a) Daily and quarterly fuel use and corresponding heat input rates;

b) Daily and quarterly mass emission rates for all criteria pollutants during normal operations and during other periods (startup/shutdown, breakdowns);

c) Time intervals, date, and magnitude of excess emissions;

d) Nature and cause of the excess emission, and corrective actions taken;

e) Time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments;

f) f. A negative declaration when no excess emissions occurred;

g) g. Results of quarterly fuel analyses for HHV and total sulfur content. (Basis: record keeping & reporting).

Verification: The owner/operator shall submit to the District and the CPM for approval, written reports for each calendar quarter, within thirty (30) days of the end of the quarter.

AQ-35 Emission Offsets: The owner/operator shall offset the project emissions in the amount and at the ratios outlined in Table 2 below.

Table 2 – Emission Offsets

Pollutant	Emissions Requiring Offsets (tons/yr.)	Offset Ratio	Total ERCs Required (tons/yr.)
NOx (as NO_2)	75.4	1.15	86.7
POC	21.0	1.00	21.0

The ERC certificates must be delivered to the District and copies to the CPM ten days prior to the issuance of the ATC. (Basis: Emission Offsets)

Verification: The project owner/operator shall submit all necessary ERC certificates to the District and copies to the CPM ten days prior to the issuance of the ATC.

AQ-36 District Operating Permit: The owner/operator shall apply for and obtain all required operating permits from the District according to the requirements of the District's rules and regulations. (Basis: Regulations 2-2 & 2-6)

Verification: The owner/operator shall submit all operating permits required to the CPM in the quarter that they were acquired as part of the quarterly report for Condition of Certification AQ-34.

AQ-37 Title IV and Title V Permits: The applications for the Title IV and Title V permits must be delivered to the District prior to first-fire of the turbines. Also the acid rain monitors (Title IV) must be certified within 90 days of first-fire. (Basis: Regulation 2-6)

Verification: The owner/operator shall submit all operating permits required to the CPM in the quarter that they were acquired as part of the quarterly report for Condition of Certification AQ-34.

AQ-38 (Deleted)~~Sunset Provision: Within three years of CEC Approval, The owner/operator must convert to either a combined cycle or cogeneration plant using BACT in effect at the time of conversion. If conversion does not occur, the plant must cease operation. (Basis: California State Resources Code, Section 25552)~~

~~**Verification:** Within one year of the date of this Energy Commission decision, the project owner shall submit to the CPM, for review and approval, a schedule for submitting an Application for Certification for conversion of the project to a combined cycle facility employing best available air emissions control technology. Alternatively, within one year of the date of this Energy Commission decision, the project owner shall submit to the CPM, for review and approval, a schedule for submitting a Facility Closure Plan. Either the AFC or the Closure Plan shall be pursued on a schedule that ensures~~

~~that the project will be either converted to a combined cycle facility or permanently closed within three years of this Energy Commission decision.~~

AQ-39 The S-5 Fire Pump Engine shall be fired exclusively on diesel fuel having a sulfur content no greater than 0.05 percent by weight. (Toxics, Cumulative Increase)

Verification: The project owner/operator shall include the diesel fuel use of the S-5 fire pump engine as part of the quarterly report required in Condition of Certification AQ-34.

AQ-40 a. The owner/operator shall operate the S-5 Fire Pump Engine for no more than 100 hours per year for the purpose of reliability testing and non-emergency operation. (Cumulative Increase, Regulation 9-8-231 & 330)

b. The testing of S-5 Fire Pump Engine shall not occur on the same day as the testing of S-6 Emergency Generator. (CEC Requirement)

Verification: The project owner/operator shall include the operational hours of the S-5 fire pump engine as part of the quarterly report required in Condition of Certification AQ-34.

AQ-41 The S-5 Fire Pump Engine shall be equipped with a non-resettable totalizing counter that records hours of operation. (BACT)

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-42 The following monthly records shall be maintained in a District-approved log for at least 5 years and shall be made available to the District upon request: (BACT)

a) Total number of hours of operation for S-5;

b) Fuel usage at S-5.

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-43 The S-6 Emergency Generator shall be fired exclusively on natural gas. (Toxics, Cumulative Increase).

Verification: The project owner/operator shall include the natural gas fuel use of the S-6 emergency generator as part of the quarterly report required in Condition of Certification AQ-34.

AQ-44 The S-6 Emergency Generator shall be operated for no more than two hours per day and 100 hours per year for the purpose of reliability testing or in anticipation of imminent emergency conditions. Emergency conditions are any of the following: (1) loss of regular natural gas supply, (2) failure of regular electric power supply, (32) flood mitigation, (4) sewage overflow mitigation, (5) fire, (6) failure of a primary motor, but only for such time as needed to repair or replace the primary motor. The testing of S-6 Emergency

Generator shall not occur on the same day as the testing of S-5 Fire Pump Engine. (BACT, Cumulative Increase)

Verification: The project owner/operator shall include the operational hours of the S-6 emergency generator as part of the quarterly report required in Condition of Certification AQ-34.

AQ-45 The S-6 Emergency Generator shall be equipped with a non-resettable totalizing counter that records hours of operation. (BACT)

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-46 The following monthly records shall be maintained in a District-approved log for at least five years and shall be made available to the District upon request: (BACT)

a) Total number of hours of operation for S-6;

b) Fuel usage at S-6.

Verification: The owner/operators shall make access available to the facility and records upon request as set forth in Condition of Certification AQ-15.

AQ-47 The project owner shall submit drift eliminator design details -52 to the CPM for approval. (Basis: CEC Condition)

Verification: Thirty days prior to commencement of construction of the cooling towers, the project owner shall submit the information required above to the CPM for approval.

AQ-48 The project owner shall submit cooling tower design details including the cooling tower type and materials of construction to the CPM for approval at least 30 days prior to commencement of construction, and at least 90 days before the tower is operated. (Basis: CEC Condition)

Verification: Thirty days prior to commencement of construction of the cooling towers, the project owner shall submit the information required above to the CPM for approval.

AQ-49 No hexavalent chromium containing compounds shall be added to cooling tower circulating water. (Basis: CEC Condition)

Verification: The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission per Condition of Certification AQ-15. (Basis: CEC Condition)

AQ-50 Drift eliminator drift rate shall not exceed 0.0005 percent.

Verification: The project owner shall submit documentation from the selected cooling tower vendor that verifies the drift efficiency to the CPM for approval 30 days prior to commencement of construction of the cooling towers.

AQ-51 PM10 emission rates from the cooling towers shall not exceed 2.16 lb/day. (Basis: CEC Condition)

Verification: Please refer to Condition AQ-52.

AQ-52 Compliance with the PM10 daily emission limit shall demonstrated as follows: PM10 lb/day = circulating water recirculation rate * total dissolved solids concentration in the blowdown water * design drift rate *. (Basis: CEC Condition)

Verification: The project owner shall compile the required daily PM10 emissions data and maintain the data for a period of five years. The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission per Condition of Certification AQ-15.

AQ-53 Compliance with PM10 emission limit shall be determined by conductivity analysis of the circulating water performed at least once daily . (Basis: CEC Condition)

Verification: The project owner shall compile the required daily PM10 emissions data and maintain the data for a period of five years. The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission per Condition of Certification AQ-15.

AQ-54 The owner/operator shall operate the facility such that maximum projected annual toxic air contaminant emissions (per AQ-55) from the gas turbines combined (S-1, S-2, S-3 and S-4) shall not exceed the following limits:

6000 pounds of formaldehyde per year;
3000 pounds of acetaldehyde per year;
1.7 pounds of specified polycyclic aromatic hydrocarbons (PAHs) per year;
60 pounds of acrolein per year

Unless the following requirement is satisfied:

The owner/operator shall perform a health risk assessment using the emission rates determined by source test and the most current Bay Area Air Quality Management District approved procedures and unit risk factors in effect at the time of the analysis. This analysis shall be submitted to the District and the CPM within 60 days of the source test date. The owner/operator may request that the District and CPM revise the carcinogenic compound emission limits specified above. If the owner/operator demonstrates to the satisfaction of the APCO that these revised emission limits will result in a cancer risk of not more than 1.0 in one million, the District and CPM may, at their discretion, adjust the carcinogenic compound emission limits listed above. (TRMP)

Verification: See Condition of Certification AQ-55. The owner/operator shall submit any health risk assessment performed to the District and the CPM within 60 days of the source test date.

AQ-55 To demonstrate compliance with AQ-54, the owner/operator shall calculate and record on an annual basis the maximum projected annual emissions. These calculations shall be based on the maximum Heat Input of 16,560,000 MM Btu/year and the highest emission factor (pound of pollutant per MM Btu of Heat Input) determined by any source test of the S-1, S-2, S-3 & S-4 Gas Turbines. If this calculation method results in an unrealistic mass emission rate (the highest emission factor occurs at a low firing rate) the applicant may use an alternate calculation, subject to District and CPM approval. (TRMP)

Verification: The owner/operator shall submit these calculations and a summary of the results as part of each 4th quarter report to the CPM.

AQ-56 Within 60 days of start-up of the Los Esteros Critical Energy Facility, and on a biennial basis (once every two years) thereafter, the owner/operator shall conduct a District-approved source test at exhaust point P-1, P-2, P-3, or P-4 while the Gas Turbines are at maximum allowable operating rates to demonstrate compliance with AQ-54. If three consecutive biennial source tests demonstrate that the annual emission rates calculated pursuant to AQ-54, for any of the compounds listed above, are less than the BAAQMD Toxic Risk Management Policy trigger levels shown here, then the owner/operator may discontinue future testing for that pollutant:

Formaldehyde	132 lbs./yr.
Acetaldehyde	288 lbs./yr.
Specified PAHs	0.18 lbs./yr.
Acrolein (TRMP)	15.6 lbs./yr.

Verification: The owner/operator shall submit a source testing methodology to the District and CPM for approval not more than 20 working days prior to the intended source test date. The owner/operator shall notify the District and the CEC CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CEC CPM within 30 days of the source testing date.

REFERENCES

BAAQMD (Bay Area Air Quality Management District). 2004a. Letter to Mr. Dana Petrin, Compliance Specialist (Los Esteros), from Dennis Jang, AQ Engineer (BAAQMD); Re: Application Number 8859. June 22, 2004.

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CEC (California Energy Commission). 1998. 1997 Global Climate Change, Greenhouse Gas Emissions Reduction Strategies for California, Volume 2, Staff Report. 1998.

CEC (California Energy Commission). 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

CEC (California Energy Commission). 2002a. Supplement to the Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). February 5, 2002.

CEC (California Energy Commission). 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. Publication No.: P800-02-005. July 2, 2002.

CEC (California Energy Commission). 2003a. East Altamont Energy Center Final Commission Decision. Publication No.: P800-03-012. August 20, 2003.

CEC (California Energy Commission). 2003b. 2003 Integrated Energy Policy Report (Publication Number: 100-03-019F). November 12, 2003.

LECEF, LLC (Los Esteros Critical Energy Facility, LLC). 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

LECEF, LLC (Los Esteros Critical Energy Facility, LLC). 2004a. Data Adequacy Supplement to Application for Certification 03-AFC-2. March, 17, 2004.

LECEF, LLC (Los Esteros Critical Energy Facility, LLC). 2004b. Response to California Energy Commission Staff Data Requests 1-57. April 30, 2004.

Sierra (Sierra Research). 2002. PM10 Mitigation Plan Los Esteros Critical Energy Facility (01-AFC-12). June 24, 2002.

Sierra (Sierra Research). 2004. Letter to CEC, from Gary Rubenstein, Re: Withdrawal of proposed PM10 and SO_2 permit changes. June 1, 2004.

BIOLOGICAL RESOURCES

Testimony of Natasha Nelson

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

Based upon review of the Commission Decision of July 2, 2002, for LECEF, related documents, and new information presented in the current LECEF AFC, staff concludes that there will be no unmitigated Biological Resources impacts resulting from the recertification of the LECEF simple-cycle 180 MW power plant (03-AFC-2, Phase 1), and the project will comply with all LORS provided the following conditions of certification are adopted as part of the final Energy Commission decision.

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

Staff has identified the following changes to the existing environment, to the originally permitted project based upon actual construction and operation data, and staff has identified new permitting requirements for the project.

Changes in the Environment

The operation of the proposed facility will emit several air pollutants, including nitrogen dioxide and ammonia, into the atmosphere. These chemical components often react with the atmosphere to form fertilizing agents (e.g., HNO_3). Nitrogen deposition is the amount of nitrogen that converts to particulates and accumulates on soil or other surfaces. The nitrogen deposition rate considered sufficient to affect ecosystem structure and diversity is 3 to 10 kilograms nitrogen per hectare per year (kg-N/ha-yr) depending on vegetation type (Fox et al. 1989). At the time of the original analysis, the best estimate of nitrogen deposition in the vicinity of San Jose was 8.4 kg/ha-yr (Sierra Research 2000) and air dispersion models indicated that most of the project's emissions would deposit south of the power plant site. Recent research completed for the Metcalf Energy Facility (99-AFC-3), also in San Jose, indicates that nitrogen deposition is higher than estimated. Nitrogen deposition at sites north of the power plant had depositional values of 5 to 15 kg-N/ha-yr, while areas south of the power plant, such as Tulare Hill, had depositional values between 10 and 20 kg-N/ha-yr (extrapolated from Attachment BIO-2, Figure 4-11; LECEF LLC. 2004b). The depositional values varied based on the site's location relative to heavily traveled roads (e.g., upwind or downwind) and distances from major nitrogen emission sources.

To offset nitrogen based emissions and to determine the amount of the mitigation lands needed, the applicant followed the U.S. Fish and Wildlife Service (USFWS) approved calculation methods which compares the annual power plants depositional values to the best known ambient nitrogen deposition levels (e.g., 8.4 kg-N/ha-yr). As a result, the applicant has protected more land than if the new ambient figure was used. Staff is not proposing a change in calculation or

amount of mitigation land since the calculation was known to be conservative and the purchase of this excess land mitigates the emission impact of the power plant without also needing to purchase nitrogen-based Emission Reduction Credits (see discussion below).

There are currently at least 20 other industrial sites emitting ammonia into the air basin within a 75 mile radius, and four of these have higher emission limits than the simple-cycle facility (Date Response 23, LECEF, LLC, 2004b). Based on the operational data for last quarter 2003 and first quarter 2004 (Data Response 15, LECEF, LLC, 2004b) the applicant has lower ammonia emissions than all 20 facilities. Regional trends are that NOx emissions will be reduced in the next decade, but ammonia emissions may increase as vehicles equipped with three-way catalyst exhaust systems (catalytic converters) enter the fleet (Fenn et al. 2003, Durbin et al. 2002). Staff expects the applicant to remain within the ammonia emission limits of 10 parts per million (ppm) as regulated in their Bay Area Air Quality Management District (BAAQMD) permit over the lifetime of the project, but notes that the ammonia slip limit in some air districts has been limited to 5 ppm. Because the power plant is already built and engineered with the 10 ppm standard and the BAAQMD is currently not regulating ammonia, staff does not propose a change to Conditions of Certification. However, future projects in nitrogen-sensitive areas may be required to achieve a stricter standard to reduce the ammonia levels.

Changes in Laws, Ordinances, Regulations, and Standards

The U.S. Fish and Wildlife Service continues its efforts to recover several species that are found solely on serpentine soils in the San Jose area. Staff requested a letter from USFWS for this proceeding (O'Brien 2004), and they replied in July 2004 (Martin 2004). The USFWS indicates an application for "take" authorization is necessary, and should include a thorough analysis of the effects of the power plant's operation on listed serpentine species and any conservation measures necessary to offset these effects (Martin 2004). The applicant has taken initial steps to enter into a consultation for the operation of the simple-cycle plant, and for eventual operation of a combined cycle plant (Tetzloff 2004, Steve De Young, personal communication). The USFWS has also requested the Commission decision on the adequacy of mitigation be delayed until the USFWS staff has had an opportunity to review the modeling data and LECEF has obtained their permit for "take" under the Act (Martin 2004). This would cause a significant delay for the Commission Decision since the USFWS permit could take up to two years. Staff has determined the mitigation is adequate to mitigate the cumulative impact in a CEQA context.

The potential for this change results in the addition of **Condition of Certification BIO-18**. Compliance with Condition of Certification **BIO-18** will assure staff that the applicant cannot be found in violation of the Act in the future and we do not recommend delaying the Commission Decision.

Changes Resulting from Final Design and Current Operations

- Electrical lines to connect the plant's substation to PG&E's Los Esteros Substation were to be placed underground in PVC conduit encased in concrete duct banks within the boundaries of the existing power plant complex. However, the project was constructed with above-ground lines that extended outside of the existing lot. The aboveground construction increases the collision risk to migratory birds, but the impact remains less than significant and no Conditions of Certification are required.
- Primary access to LECEF will be from the 2,700 foot road, Thomas Foon Chew Way, within the WPCP buffer lands, west of the site. The construction of the road surface caused the permanent removal of potential burrowing owl foraging habitat. Conditions of Certification required this impact be mitigated by the creation of burrowing owl mitigation lands. Staff did not anticipate that the applicant would both be the leasee and manager of their own burrowing owl mitigation area at the time of the initial analysis. However, the applicant has been approved as the leasee and manager of a nearly five acre burrowing owl preserve along the southern edge of the primary access road. This change results in the addition of **Condition of Certification BIO-19** to ensure that the mitigation package accepted by staff under the previous proceeding will continue to benefit the species during the operation of the simple cycle power plant. The change does not increase the risk to burrowing owls after implementation of the proposed Condition of Certification.
- The staff analysis of the power plant assumed there would be 74.9 tons per year of NOx emissions and 110.9 tons per year of NH_3 emissions as a result of continual operation of the simple cycle facility. Calpine originally proposed to create and surrender nitrogen oxide (NOx) offsets to minimize the impacts their NOx and ammonia (NH_3) emissions from the simple cycle facility would have on the air basin. However, Calpine ultimately decided to not to create credits by retrofitting Gilroy Energy Center (Data Response 26, LECEF, LLC, 2004b) and instead purchased existing Emission Reduction Credits (ERCs) as offsets for pollutant emissions. To offset their NOx emissions, Calpine elected to purchase precursor organic compound (POC, sometimes called VOC) credits, which are primarily hydrocarbons. Air District Regulation 2-2-302 allows for the use of these credits because they are also precursors to ozone. CEQA defines mitigation as actions that avoid, minimize, rectify, reduce or compensate the impact (see Title 14, California Code of Regulations, Article 20, section 15370). While avoidance and minimization of emissions impacts would have been preferred, the applicant has committed to a mitigation package (the purchase and management of 40 acres of serpentine habitat) that rectifies the indirect and cumulative NOx and NH_3 emission impacts to sensitive species to less than significant levels. Staff does not propose changes to the Conditions of Certification for the simple cycle facility as a result of the change in emission offsets.

- To evaluate the applicant's claim that the previous analysis "substantially overstated emissions" and no new modeling is required (Data Response 16, LECEF, LLC, 2004b), staff reviewed current operations data. Under Condition of Certification AQ-34, the power plant makes quarterly reports to the Energy Commission on their operational emissions and data for the last quarter of 2003 and first quarter 2004 are summarized in Table BIO-1. The power plant is not operating under the conditions modeled for the evaluation of nitrogen emission impacts. The power plant operated more days in the last quarter of 2003 (31 of 92 days) than the first quarter of 2004 (17 of 91 days), but never ran for a full 24 hours of any given day. In the first quarter of 2004, the power plant operated on average only 7 hours in a 24-hour period, with the maximum of 15 hours. The power plant is operating much less than the 24-hour, 7- days-a-week scenario that staff analyzed in the previous proceeding and it is disingenuous to compare this scenario to the permit limits which are for continuous operations. In fact, if the power plant were to run continuously, they may exceed their annual limits (see Table BIO-1). However, the power plant does seem to be operating within their annual limits, and if it continues to do so, then the model done to date is adequate to estimate the nitrogen deposition impact. In conclusion, in evaluation of actual operations data, staff determined the nitrogen deposition modeling was conservative for the impact of the power plant. Thus, staff does not propose any additional Conditions of Certification nor request a new modeling analysis.

Table BIO-1 Summary of Last Quarter 2003 and First Quarter 2004 Nitrogen Emissions in Comparison to Permitted Emission Levels (Data Response 15, LECEF LLC. 2004b)

Month	Daily Totals [a], Single Turbine, lbs				Monthly Totals, All Four Turbines, lbs	
	NO_x Max	NO_x Min	NH_3 Max[b]	NH_3 Min	NO_x	NH_3
Oct. 2003	183.8	3.5	15.3	3.8	4267.00	556.43
Nov. 2003	310.8	24.9	7.8	0.6	1661.60	109.32
Dec. 2003	165.4	19.8	14.6	1.9	2434.10	227.84
Jan. 2004	112.0	34.4	13.5	6.4	1084.70	150.74
Feb. 2004	453.4	36.4	22.1	0.1	1846.60	230.57
March 2004	105.1	29.2	17.8	0.1	1072.80	185.47
6-Month Total when operating less than 25% of capacity (tons)					**6.18**	**0.73**
Est. Yearly Total if the plant continues to operate at less than 25% capacity (tons)					**12.36**	**1.46**
Est. Yearly Total if the plant operates at 100% Capacity (tons)					**161[c]**	**24[b,d]**
Annual Permit Limit for the Simple Cycle Facility operating at 100% Capacity (tons)					**74.9**	**110.9**

[a] Excludes days with no operation when emissions are equal to zero

[b] Ammonia emissions will increase over time as the catalyst becomes less effective, but this will be several years into the future.

[c] Staff calculated a median value of 220 lbs of NO_x from one turbine if it ran 24 hours, based on data provided for 1st quarter 2004 which only had partial days of operation. This is higher than the 205.2 lbs of NOx per day that are allowed per turbine in Condition of Certification AQ-22 (Mass Emission Limits).

[d] Staff calculated a median value of 33.1 lbs of NH_3 from one turbine if it ran 24 hours, based on data provided for 1st quarter 2004 which only had partial days of operation. This is lower than the 151.7 lbs of NH_3 per day that are allowed per turbine in Condition of Certification AQ-22 (Mass Emission Limits).

Changes and Modifications to Conditions of Certification

Modification or additions to the conditions of certification are required to insure continued compliance with LORS, and/or to assure that impacts of LECEF Phase 1 will not have any significant impact on the environment. Staff suggests the following

- The modification of Conditions of Certification BIO-1, BIO-4, BIO-8 to BIO-13, BIO-16, and BIO-17;
- The addition of Conditions of Certification BIO-18 and BIO-19.

CONDITIONS OF CERTIFICATION

DESIGNATED BIOLOGIST

BIO-1 Site and related facilities (including any access roads, transmission lines, water and gas lines, storage areas, staging areas, pulling sites, substations, wells, etc) mobilization activities for the simple-cycle facility shall not begin until an Energy Commission CPM approved Designated Biologist is available to be on-site.

Protocol: The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. 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;
3. At least one year of field experience with biological resources found in or near the project area; and
4. 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 the CPM determines the proposed Designated Biologist to be unacceptable, the project owner shall submit another individual's name and qualifications for consideration. If the approved Designated Biologist needs to be replaced, the project owner shall obtain approval of a new Designated Biologist by submitting to the CPM the name, qualifications, address, and telephone number of the proposed replacement. No habitat disturbance will be allowed in any designated sensitive areas until the CPM approves a new Designated Biologist and the new Designated Biologist is on-site.

Verification: At least 35 days prior to the start of any site and related facilities mobilization activities for the simple-cycle facility, the project owner shall submit to the CPM for approval the name, qualifications, address, and telephone number of the individual selected by the project owner as the Designated Biologist. If a Designated Biologist is replaced, the information on the proposed replacement as specified in the Condition must be submitted in writing at least 10 working days prior to the termination or release of the preceding Designated Biologist.

DESIGNATED BIOLOGIST DUTIES

BIO-2 The CPM approved Designated Biologist shall perform the following during any site and related facilities mobilization, construction, and operation activities for the simple-cycle facility:

1. Advise the project owner's Construction/Operation Manager, supervising construction and operations engineer on the implementation of the biological resources Conditions of Certification;
2. Supervise or conduct mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as wetlands and special status species; and
3. Notify the project owner and the CPM of any non-compliance with any biological resources Condition of Certification.

Verification: During site and related facilities mobilization and construction for the simple-cycle facility, the Designated Biologist shall maintain written records of the tasks described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the CPM. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report.

DESIGNATED BIOLOGIST AUTHORITY

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

Protocol: The project owner's Construction/Operation Manager for the simple-cycle facility shall halt, if necessary, all construction or operation activities in areas specifically identified by the Designated Biologist as sensitive to assure that potential significant biological resource impacts are avoided.

The Designated Biologist shall:

1. Inform the project owner and the Construction/Operation Manager when to resume construction or operation, and

2. Advise the Energy Commission CPM if any corrective actions are needed or have to be instituted.

Verification: Within 2 working days of a Designated Biologist notification of non-compliance with a Biological Resources Condition of Certification or a halt of construction or operation, the project owner shall notify the CPM by telephone of the circumstances and actions being taken to resolve the problem or the non-compliance with a condition. For any necessary corrective action 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 in which each of its employees for the simple-cycle facility, as well as employees of contractors and subcontractors who work on the project or related facilities during site mobilization, construction and operation of the simple-cycle facility, are informed about sensitive biological resources associated with the project.

Protocol: The Worker Environmental Awareness Program must:

1. 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;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas;
3. Present the reasons for protecting these resources;
4. Present the meaning of various temporary and permanent habitat protection measures; and
5. Identify whom to contact if there are further comments and questions about the material discussed in the program.

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

Each participant in the on-site Worker Environmental Awareness Program shall sign a statement declaring that the individual understands and shall abide by the guidelines set forth in the program materials. The person administering the program shall also sign each statement.

Verification: At least 30 days prior to the start of any site and related facilities mobilization for the simple-cycle facility, the project owner shall provide two

copies of the Worker Environmental Awareness Program and all supporting written materials reviewed or prepared by the Designated Biologist and the name and qualifications of the person(s) administering the program to the CPM for approval. The project owner shall state in the Monthly Compliance Report for the simple-cycle facility 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 statements for the mobilization and construction phase shall be kept on file by the project owner and made available for examination by the CPM for a period of at least six months after the start of commercial operation of the simple-cycle facility. 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.

STREAMBED ALTERATION AGREEMENT

BIO-5 Prior to start of any site or related facilities mobilization activities of the interior side of the levee, the project owner shall acquire a Streambed Alteration Agreement from the CDFG if required, or show CDFG correspondence that indicates no permit is required. The project owner will implement the agreement terms and conditions.

Protocol: Provisions in the CDFG Streambed Alteration Agreement include (typical measures are):

1. Completion of all work in the streams when the work sites are dry;
2. Not removing or damaging woody perennial stream bank vegetationoutside of the work area;
3. Not removing soil, vegetation, and vegetative debris from the streambed or stream banks;
4. Not exceeding the amount of fill placed within stream channels above that which naturally occurred in the stream channel prior to the start of work;
5. Not creating silty or turbid water when water returns to the stream, andnot discharging silty water into the stream, nor creating turbid water within the stream;
6. Stabilizing slopes toward the stream to reduce erosion potential;
7. Locating equipment, material, fuel, lubricant and solvent staging and storage areas outside the stream, and using drip pans with motors, pumps, generators, compressors, and welders that are located within or adjacent to a stream;
8. Moving all vehicles away from the stream prior to refueling and lubricating;

9. Preventing any substance that could be hazardous to aquatic life from contaminating the soil and/or entering the waters of the area;
10. Cleaning up all spills immediately; and
11. Returning stream low flow channel, bed, or banks to as nearly as possible to their original configuration and width.

Verification: At least 30 days prior to the start of any site or related facilities mobilization activities on the interior side of the levee the project owner shall submit to the CPM a copy of the final CDFG Streambed Alteration Agreement or applicable CDFG correspondence. Agreement terms and conditions will be incorporated into the BRMIMP.

REGIONAL WATER QUALITY CONTROL BOARD CERTIFICATION

BIO-6 The project owner will acquire and implement the terms and conditions of the Regional Water Quality Control Board Section 401 State Clean Water Act certification, if required.

Verification: No less than 30 days prior to the start of any site or related facilities mobilization activities on the interior side of the levee, the project owner will provide the CPM with a copy of the final Regional Water Quality Control Board (RWQCB) certification. The terms and conditions of the certification will be incorporated into the project's BRMIMP.

U. S. ARMY CORPS OF ENGINEERS SECTION 404 PERMIT

BIO-7 The project owner shall provide a final copy of the Section 404 permit, if required. The project owner will implement the terms and conditions contained in the permit.

Verification: No less than 30 days prior to the start of any site and related facilities mobilization of the interior side of the levee, the project owner shall submit to the CPM a copy of the permit required to fill on-site wetlands. Permit terms and conditions will be incorporated into the BRMIMP.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-8 The project owner shall submit to the CPM for review and approval a copy of the final BRMIMP and shall implement the measures identified in the plan. Any changes to the adopted BRMIMP must be made by the Energy Commission staff, in consultation with the USFWS and CDFG.

Protocol: The final BRMIMP shall identify:

1. All biological resources mitigation, monitoring, and compliance measures recommended by the Applicant, as well as those

contained in the BIO-Condition of Certification (and other mitigation requirements);

2. All provisions specified in a CDFG Streambed Alteration Agreement;
3. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;
4. All required mitigation measures for each sensitive biological resource;
5. Required habitat compensation strategy, including provisions for acquisition, enhancement, and management for any temporary and permanent loss of sensitive biological resources;
6. A detailed description of measures that will be taken to avoid or mitigate temporary disturbances from construction activities;
7. All locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction;
8. Aerial photographs of all areas to be disturbed during project construction activities - one set prior to any site mobilization disturbance and one set after completion of mitigation measures. Include planned timing of aerial photography and a description of why times were chosen;
9. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
10. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
11. All performance standards and remedial measures to be implemented if performance standards are not met;
12. A discussion of biological resources related facility closure measures;
13. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval; and
14. A detailed plan of the management of top soil (from onsite, laydown, and linear areas) during the construction phase.
15. <u>All provisions from the USFWS Permit.</u>

<u>Verification:</u> At least 30 days prior to start of any site or related facility mobilization activities <u>for the simple-cycle</u>, the project owner shall provide the CPM with 2 copies of the draft final version of the BRMIMP for this project, and provide copies to the USFWS and CDFG. The CPM, in consultation with the

USFWS and CDFG, will determine the plan's acceptability within 15 days of receipt. If some construction has been authorized by the CPM to start, and if there are any permits that had not yet been received when the BRMIMP was first submitted, then these permits shall be submitted to the CPM, the CDFG and USFWS within five (5) days of their receipt and the BRMIMP shall be revised or supplemented to reflect the permit condition within 10 days of their receipt by the project owner. The project owner shall notify the CPM no less than 5 working days before implementing any modifications to the BRMIMP to obtain CPM approval. Two copies of the CPM approved BRMIMP must be provided to the CPM and copies provided to the USFWS and CDFG.

Within 30 days after completion of project construction of the simple-cycle facility, 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 plan items are still outstanding.

CLOSURE PLAN MEASURES

BIO-9 The project owner will incorporate into the planned permanent or unexpected permanent closure plan measures that address the local biological resources.

Protocol: The planned permanent or unexpected permanent closure plan will address the following biological resources related mitigation measures (typical measures are):

1. Removal of transmission conductors when they are no longer used or useful;
2. Removal of all power plant site facilities and related facilities;
3. Measures to restore wildlife habitat to promote the re-establishment of native plant and wildlife species; and,
4. Revegetation of the plant site and other disturbed areas utilizing appropriate seed mixture.

Verification: At least 12 months (or a mutually agreed upon time) prior to the commencement of closure activities for the simple-cycle facility, the project owner shall address all biological resources related issues associated with facility closure in a Biological Resources Element. The Biological Resources Element will be incorporated into the Facility Closure Plan and include a complete discussion of the local biological resources and proposed facility closure mitigation measures. The biological resources facility closure measures will also be incorporated into the BRMIMP.

MITIGATION MEASURES

BIO-10 The project owner will implement the mitigation measures identified below.

Protocol: The project owner will:

1. Site transmission line poles, access roads, pulling sites, and storage and parking areas to avoid sensitive resources whenever possible;
2. Avoid all wetlands;
3. Design and construct transmission lines and poles to reduce the likelihood of electrocutions of large birds;
4. Implement the terms and conditions of a current CDFG Streambed Alteration Agreement (if required);
5. Implement a Worker Environmental Awareness Program during construction of the simple-cycle facility;
6. Clearly mark construction area boundaries with stakes, flagging, and/or rope or cord to minimize inadvertent degradation or loss of adjacent habitat during facility construction/modernization. All equipment storage will be restricted to designated construction zones or areas that are currently not considered sensitive species habitat. Parking will not be allowed below the canopy of trees;
7. Provide a Designated Biologist to monitor all activities that may result in incidental take of listed species or their habitat during construction of the simple-cycle facility;
8. Fence and provide wildlife escape ramps for construction areas that contain steep-walled holes or trenches. Fence will be hardware cloth or similar materials that are approved for use by the USFWS and CDFG;
9. Inspect trenches every 12 hours for entrapped animals and prior to the beginning of construction in an area that has been unattended for over 3 hours during the night. Inspections will be made by someone specially trained by the Designated Biologist in the proper handling of wildlife. Construction will be allowed to begin only after trapped animals are able to escape voluntarily or in a safe and humane manner.
10. Inspect all construction pipes, culverts, or similar structures with diameter of 4-inches or for sensitive species (such as foxes) prior to pipe burial. Pipes to be left in trenches for more than eight 8 hours will be capped.

11. Provide a post-construction compliance report, within 45 calendar days of completion of the project, to the Energy Commission CPM;
12. Make certain that all food-related trash will be disposed of in closed containers and removed at least once a week. Feeding of wildlife shall be prohibited;
13. Report all inadvertent deaths of sensitive species to the appropriate project representative. Injured animals will be reported to the CDFG, and the project owner will follow instructions that are provided by the CDFG;
14. Limit the use of biocides in project areas (see BIO-17 for more detail); and
15. Implement erosion control in the temporary impact areas, especially near wetlands and waterways;
16. Any fixed lighting used during construction activities must be designed to be directed downward and away from riparian areas;
17. No construction activity shall be allowed within 500 feet of the levee wall from one (1) hour before sunset until one (1) hour after sunrise (as defined by a California solar timetable); and
18. Contact the San Francisco Bird Observatory (Sherry Hudson at 408-946-6548 or shudson@sfbbo.org) two weeks prior to beginning construction of the stormwater outfall at the levee wall to arrange alternative access to the Observatory's long-term bird banding site.
19. Follow the management plan for the burrowing owl mitigation site (see BIO-19 for more detail).

Verification: All mitigation measures and their implementation methods will be included in the BRMIMP. Two copies of the CPM approved BRMIMP must be provided to the CPM five days prior to site mobilization and copies provided to the USFWS and CDFG.

SURVEY AND PROVIDE HABITAT COMPENSATION FOR BURROWING OWLS

BIO-11 The applicant shall survey for burrowing owl activities on the 55-acre parcel and along all ancillary linear facilities prior to site mobilization to assess owl presence and need for further mitigation. All survey results shall be submitted to the CDFG. If owls are present, and nesting is not occurring, owls are to be removed per CDFG-approved passive relocation. Passive relocation is recommended from September 1 to January 31, to avoid disruption of breeding activities. If owls are nesting, nest(s) should be avoided by a minimum of a 250-foot buffer

until fledging has occurred (February 1 through August 31). Following fledging, owls may be passively relocated.

If burrowing owls are found on the site or along all ancillary linear~~s~~ facility corridors on-site or off-site compensation for losses will be required, whichever is feasible. CDFG recommends 6.5 acres of protected lands for each pair of owls or unpaired resident bird. Foraging habitat should be replaced at 0.5:1 (mitigation:impacts). Mitigation lands bought outside of Santa Clara County shall be purchased at a 0.75:1 (mitigation: impacts) for contiguous counties and 1.5:1 for all other California counties. In addition, existing unsuitable burrows on the protected lands should be enhanced (e.g., cleared of debris or enlarged) or new burrows installed at a ratio of 2:1. If off-site compensation is the only option, the mitigation ratios will increase depending on the distance from the site and burrowing presence on or near the mitigation parcel.

Verification: Burrowing owl surveys shall be conducted 20 days prior to any project-related ground disturbance activities. At least 15 days prior to project related ground disturbance the project owner shall provide the CPM and CDFG with the burrowing owl survey results and identify any lands proposed for mitigation (if applicable). The land purchase shall be approved by the CPM and reviewed by CDFG. The project owner shall notify the CPM five working days before implementing any modifications to the BRMIMP.

REPLACEMENT OF ORDINANCE AND NATIVE MATURE TREES

BIO-12 Prior to the start of any site mobilization for the simple-cycle facility, the project owner shall develop the Ordinance and Native Mature Tree Replacement Plan for inclusion into the BRMIMP. The protocol shall include a thorough discussion of methods, species, and location for plantings, criteria for success, a monitoring program for 5 years, and a reporting requirement. If the CPM determines that the plan requires modification, the project owner shall modify the report based on the CPM's comments.

Verification: At least 30 day prior to the start of any site and related facilities mobilization, the project owner shall provide to the CPM for review and approval, and to CDFG for review, a Ordinance and Native Mature Tree Replacement Plan as part of the BRMIMP.

CITY OF SAN JOSE ORDINANCE TREE

BIO-13 The project owner will acquire a City of San Jose permit to remove any remaining ordinance trees from the simple-cycle facility site. The number of trees removed will be minimized and construction equipment and linear~~s~~ corridors in the dripline of these trees will be avoided. The applicant will be required to replace any trees removed at a ratio of 4:1 (mitigation: impact) per the U.S. DataPort EIR.

Verification: The terms and conditions of the City of San Jose permit(s) will be incorporated into the project's BRMIMP and submitted at least 90 days prior to removal of any remaining ordnance trees (or those not covered by the City of San Jose Planned Development Permit). A copy of the permit(s) should be included as an appendix to the BRMIMP.

REVEGETATION OF TEMPORARY DISTURBANCE

BIO-14 After construction, the laydown area will be stripped of any armoring material, the surface scarified, and topsoil restored. Barley seed will be sowed as a temporary cover crop, but native seeds from the topsoil will be allowed to sprout and grow.

Verification: The applicant shall provide the revegetation plan in the BRMIMP and submit it within 60 days after the start of any site and related facilities mobilization.

AVOID IMPACTS TO RIPARIAN COMMUNITIES

BIO-15 Construction of the permanent outfall to Coyote Creek shall be scheduled to avoid critical seasons. Surveys by a qualified biologist will be conducted prior to any construction activities on the interior side of the levee to locate nests and other resources in/or adjacent to the stormwater right-of-way. Designated existing roads will be used, and if such roads are not present, flagged routes that have been surveyed by a biologist will be used. If nests are observed, an avoidance period and buffer area shall be followed by all construction personnel. Construction plans will be submitted with a photo alignment sheet to the Energy Commission CPM for approval and to CDFG for review.

Verification: The applicant shall provide this measure as an amendment to the BRMIMP and as part of the roles for the Designated Biologist. Submittals of construction plans must occur 30 days prior to site mobilization on the interior side of the levee wall, but does not preclude the start of construction on the facility site. In lieu of CDFG review, the applicant may submit a copy of their final Streambed Alteration Agreement permit.

HABITAT COMPENSATION FOR SERPENTINE ENDEMICS

BIO-16 To compensate for impacts to serpentine soils and associated endemic species, the project owner shall provide a minimum of 40-acres of land within a high priority (as defined by USFWS) or occupied USFWS Critical Habitat Unit, the name of the entity that will be managing the land in perpetuity, and the endowment funds in the amount determined suitable from the Center for Natural Lands PAR analysis to administer and manage in perpetuity. Each of these must have been pre-approved by Energy Commission staff.

Verification: Within one month of project certification, the project owner must provide to the CPM for approval, the name of the management entity, written

verification that the compensation lands have been purchased and written verification that the appropriate endowment fund (determined by the PAR analysis) has been received by the approved management entity.

LANDSCAPING PLAN

BIO-17 The applicant will complete a Landscaping Plan for review by the CPM. The project owner shall follow the approved Landscaping Plan during the lifetime of the power plant.

Protocol: The Landscaping Plan must include measures which:

1. Direct landscaping lights away form the riparian area;
2. Limit the amounts of biocides used on the project site;
3. Remove invasive, non-native plants (e.g., yellow star thistle) whenever possible to avoid the spread of weeds to the riparian corridor buffer zone. Employ the most effective aspects of the following control methods: 1) manual removal and, 2) mechanical control through soil disturbance. If the previous two methods are unsuccessful in controlling the problem, the following method could be used: 3) herbicides with low environmental persistence, applied from ground-based equipment. These products should only be used within the parameters presented on the label;
4. Avoid plant species that are not already found within the Coyote Creek watershed to avoid potentially new hybrids from cross-pollination;
5. Select a drought-tolerant mix of native species for ground cover;
6. Select a drought-tolerant mix of native tree species to the extent possible, particularly along the eastern edges of the landscaped areas (facing Coyote Creek);
7. .Avoid long-term irrigation and limit short-term irrigation;
8. Avoid landscaping species/design(s) which would require initial and/or future maintenance equipment that contribute to noise and/or air pollution; and
9. Avoid the use of non-native ground cover (e.g., bark, rocks, soils).

Verification: At least 45 days prior to LECEF landscape installation, a Landscaping Plan will be sent to the CPM. All mitigation measures and their implementation methods will be included in the BRMIMP. Two copies of the BRMIMP must be provided to the CPM and one copy each provided to both the USFWS and CDFG five days prior to landscape installation.

U. S. FISH AND WILDLIFE SERVICE PERMIT

BIO-18 The project owner shall provide a final copy of the Section 10 permit from the U.S. Fish and Wildlife Service (if required) to the CPM. The project owner will implement the terms and conditions contained in the permit and incorporate these into the BRMIMP.

Verification: The applicant shall provide the CPM with a status report of the Section 10 permit every six months beginning January 2005 until the permit is obtained. The status report shall include a table of milestones and the dates milestones were completed or are expected to be completed. No less than 30 days after receiving the permit (if required), the project owner shall provide two unbound copies of the Section 10 permit to the CPM.

BURROWING OWL MANAGEMENT PLAN

BIO-19 The project owner shall create a Burrowing Owl Management Plan and incorporate the protocols into the BRMIMP for review by the CPM. The project owner shall be responsible for ensuring the power plant employees and contractors (most notably the landscape maintenance crew) are aware of the special provisions within the Burrowing Owl Management Plan, and shall make reasonable efforts to ensure these provisions are being followed during the operational lifetime of the power plant. Limit the use of biocides in the burrowing owl management area (see **BIO-17** for more detail).

Verification: All mitigation measures and their implementation methods will be included in the BRMIMP. The annual compliance report shall provide the CPM with the name and phone number of the landscape maintenance crew supervisor. The CPM reserves the right to inspect the burrowing owl management area and to contact the landscape maintenance crew supervisor to correct problems.

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CULTURAL RESOURCES

Testimony of Dorothy Torres

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

The project is situated in an area that is highly sensitive for cultural resources due to its location near coyote creek. During previous surveys, both prehistoric and historic cultural resources were identified. However, the cultural analysis of impacts from the proposed Los Esteros Critical Energy Facility (LECEF) and the proposed U.S. Dataport (USDP) Facility did not identify any significant cultural resources. Subsurface presence/absence testing was recommended in the City of San Jose's USDP EIR, required by **Cul-7** and was conducted by LECEF prior to ground disturbance (CEC 2002b, p.p. 218 and 222).

The subsurface testing included the project footprint, linear facilities and access road. No significant cultural resources were identified. Despite the absence of discoveries during presence/absence testing, a potential still existed for discovering subsurface cultural resources. A variety of historic debris was identified during construction. Although a formal evaluation was not conducted, the Cultural Resource Specialist determined that the discoveries were not significant. Conditions of Certification **Cul-1** through **Cul-11** were applied to the project to ensure that any potential adverse impacts would be mitigated to below a level of significance (LECEF, LLC 2004, p. 8.3-9).

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

The project is now built. A comparison of information provided in the "Cultural Resources" section of the Final Decision and the Application for Certification, Phase I Relicense did not identify any changes that would affect cultural resources (LECEF, LLC, 2003).

CHANGES RESULTING FROM FINAL DESIGN AND CURRENT OPERATIONS

There do not appear to be any changes to the cultural resources analysis resulting from final design and current operations.

CHANGES AND MODIFICATIONS TO CONDITIONS OF CERTIFICATION

Staff has made some minor changes to the conditions of certification. Changes to the conditions were added to clarify meaning and to address problems that might arise in a project during the operations, or should additional ground disturbance activity be initiated.

Although the project has successfully fulfilled most of the conditions, staff suggests that the conditions be retained as part of this relicense effort. With the conditions retained, cultural resource protection would remain in place during physical project changes in the future. The conditions will continue to mitigate potential adverse impacts; staff has made only changes that appear to be essential to ensure that any adverse impacts will

be mitigated to below a significant level. **CUL-3** has been revised to allow for amendments to the approved CRMMP. Changed language in **CUL-6** clarifies CMP responsibility.

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) with the name and resume of its Cultural Resources Specialist (CRS), and ~~one~~ an alternate CRS, if an alternate is proposed, who will be responsible for implementation of all cultural resources conditions of certification.

Protocol: 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, 36 CFR Part 61.

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.

The background of the CRS shall include at least three years of archaeological or historic, as appropriate, resource mitigation and field experience in California;

The resume shall include the names and phone numbers of contacts familiar with the CRS's work on referenced projects.

1. 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.
2. The CRS may obtain qualified cultural resource monitors to monitor as necessary on the project. Cultural resource monitors shall meet the following qualifications.
   - A BS or BA degree in anthropology, archaeology, historic archaeology or a related field and one year experience monitoring in California; or
   - An AS or AA in anthropology, archaeology, historic archaeology or a related field and four years experience monitoring in California; or
   - 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.
3. 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: 1. At least 45 days prior to the start of ground disturbance, the project owner shall submit the name and statement of qualifications of its CRS and alternate CRS, if an alternate is proposed, to the CPM for review and approval.

2. If the CPM determines the proposed CRS to be unacceptable, the project owner shall submit another individual's name and resume for consideration. If the CPM determines the proposed alternate to be unacceptable, the project owner may submit another individual's name and resume for consideration. 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.

3. 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 beginning tasks, the resume(s) of any additional technical specialists shall be provided to the CPM for review and approval.

4. 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 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 will 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 requests 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.

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.

Prior to implementation of additional phases of the project, current maps and drawings shall be submitted to the CPM.

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 provide to the CRS on a weekly basis during ground disturbance and provided to the CPM in each Monthly Compliance Report (MCR).

Verification: 1. At least forty days prior to the start of ground disturbance, the project owner shall provide the designated cultural resources specialist and the CPM with the maps and drawings.

2. If this is to be a phased project, a letter identifying the proposed schedule of the ground disturbance or construction phases of the project shall also be submitted.

3. 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.

5. A copy of the current schedule of anticipated project activity.

CUL- 3 Prior to the start of project construction-related vegetation clearance or earth disturbing activities or project site preparation; the designated cultural resources specialist shall prepare, and the project owner shall submit to the CPM for review and written approval a A Cultural Resources Monitoring and Mitigation Plan (CRMMP) identifying general and specific measures to minimize potential impacts to sensitive cultural resources has been approved by the CPM. If changes to the project, make it necessary to amend the CRMMP, the amendment shall be submitted to the CPM for review and approval. Copies of the CRMMP shall reside with the CRS, alternate CRS, each monitor, and the project owner's on-site manager.

The CRMMP shall be submitted to the CPM for review, and must approve the plan in writing, prior to any construction-related vegetation clearance or earth disturbing activities or project site preparation. After CPM approval of the plan, the project owner shall make the designated cultural resource specialist and designated cultural resource team available to implement the CRMMP as needed throughout project construction.

Protocol: The Cultural Resources Monitoring and Mitigation Plan shall include, but not be limited to, the following elements and measures:

1. A proposed research design that includes a discussion of questions that may be answered by the mapping, data and artifact recovery conducted during monitoring and mitigation activities, and by the post-construction analysis of recovered data and materials.

2. Discussion of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the pre-construction, construction, and post-construction analysis phases of the project.
3. Identification of the person(s) expected to perform each of the tasks; a description of each team member's qualifications and their responsibilities; and the reporting relationships between project construction management and the mitigation and monitoring team.
4. A discussion of the inclusion of Native American observers or monitors, the procedures to be used to select them, and their role and responsibilities.
5. Incorporation of the Applicant's mitigation measures, as mandated by the USDP Draft EIR (2000).
6. A discussion of any measures such as flagging or fencing, to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during construction and operation, and identification of areas where these measures are to be implemented. The discussion shall address how these measures will be implemented prior to the start of construction and how long they will be needed to protect the resources from project-related effects.
7. A discussion of the requirement that all cultural resources encountered will be recorded and mapped (may include photos) and that all significant or diagnostic resources will be collected for analysis and eventual curation into a retrievable storage collection in a public repository or museum that meets the U.S. Secretary of Interior standards requirements for the curation of cultural resources.
8. A description of the set of reporting procedures prepared in concert with the project owner, to be used by all project personnel to notify the designated cultural resource specialist of any unexpected cultural resource discoveries during project construction.
9. A description of the work curtailment procedures prepared in concert with the project owner, to be used by all project personnel in the event of unexpected cultural resource discoveries during project construction.
10. A discussion of the availability and the designated specialist's access to equipment and supplies necessary for site mapping, photographing, and recovering any cultural resource materials encountered during construction.

Verification: At least ~~30~~ 10 days prior to the start of project construction changes related vegetation clearance or earth disturbing activities or project site preparation, the project owner shall provide ~~the~~ an amendment to the Cultural Resources Monitoring and Mitigation Plan, prepared by the designated cultural resource specialist, to the CPM for review and ~~written~~ approval.

CUL-4 Worker Environmental Awareness Training for all new employees shall be conducted prior to and during periods of ground disturbance. New employees shall receive training prior to starting work at the project site or linear facilities. The training may be presented in the form of a video. The training shall include a discussion of applicable laws and penalties under the law. Training shall also include samples or visuals of artifacts that might be found in the project vicinity. The training should inform workers that the CRS, alternate CRS or monitor has the authority to halt construction in the event of a discovery or unanticipated impact to a cultural resource. The training shall also instruct employees to halt or redirect work in the vicinity of a find and to contact their supervisor and the CRS or monitor. An informational brochure shall be provided that identifies reporting procedures in the event of a discovery. Workers shall sign an acknowledgement form that they have received training and a sticker 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 provide a letter to the CPM stating that employees will not begin work until they have completed environmental training and that a sticker on hard hats will identify workers who have received training. Copies of acknowledgement forms signed by trainees shall be provided in the MCR.

CUL-5 1. The project owner shall ensure that t~~T~~he CRS, alternate CRS, or monitors shall monitor ground disturbance full time in the vicinity of the project site, linears and ground disturbance at laydown areas to ensure there are no impacts to undiscovered resources. In the event that the CRS determines that full-time monitoring is not necessary in certain locations, a letter providing a detailed justification for that decision to reduce the level of monitoring shall be provided to the CPM for review and approval prior to any reduction in monitoring.

2. Those individuals conducting cultural resources monitoring shall keep a daily log describing the construction activities, areas monitored, soils observed, and any cultural materials observed. 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 CPM, by telephone or e-mail, of any incidents of non-compliance with any cultural resources conditions of certification within 24hrs. 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.

4. A Native American monitor shall be obtained to monitor activities if a Native American archeological site is discovered. 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.

Verification: 1. During the ground disturbance phases of the project, if the CRS wishes to reduce the level of monitoring occurring at the project, a letter or e-mail 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.

2. During the ground disturbance phases of the project, the project owner shall include in the MCR to the CPM copies of the daily cultural resource monitoring reports. Copies of daily logs shall be retained.

3. Within 24 hours of recognition of a non-compliance issue, the CRS shall notify the CPM by telephone of the problem and of steps being taken to resolve the problem. The telephone call shall be followed by an e-mail or fax detailing the non-compliance issue and the measures necessary to achieve resolution of the issue. 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 that describes the issue, resolution of the issue and the effectiveness or the resolution measures, shall be provided in the next MCR.

4. When a Native American archeological site is discovered, 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.

CUL-6 The designated cultural resource specialist or the specialist's delegated monitor(s) shall have the authority to halt or redirect construction if previously unknown cultural resource sites or materials are encountered during project construction related vegetation clearance or earth disturbing activities or project site preparation or if known cultural resources will be affected in an unanticipated manner.

1. If any cultural resources are encountered, the project owner shall notify the CPM within 24 hours. Construction will not resume at the discovery site until all of the following have occurred:
2. The specialist has notified the CPM of the find and the work stoppage;
3. The specialist CRS, and the project owner, and the have consulted with the CPM have conferred and determined what, and the CPM has concurred with the recommended eligibility of the discovery and proposed if any, data recovery or other mitigation is needed; and;
4. Any needed data recovery and mitigation has been completed.

The specialist, the project owner, and the CPM shall confer within five working days of the notification of the CPM to determine what, if any, data recovery or other mitigation is needed.

If data recovery or other mitigation measures are required, the specialist and team members shall monitor construction activities and implement data recovery and mitigation measures as needed.

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 project construction-related vegetation clearance or earth disturbing activities and site preparation; the project owner shall provide the CPM with a letter confirming that the designated cultural resources specialist and delegated monitor(s) have the authority to halt construction activities in the vicinity of a cultural resource find. The project owner shall also provide to the CPM, for review and written approval, a set of work curtailment procedures to be followed in the event that previously unknown cultural resources are discovered during construction.

CUL-7 Prior to the start of project construction related vegetation clearance or earth disturbing activities or project site preparation, the project owner shall implement the archeological testing program. If resources are found, the applicant will notify the CPM in accordance with **CUL-6**. A complete DPR 523 form will be prepared. All testing and data recovery will be completed prior to the start of construction related ground disturbance.

Verification: Seven days prior to implementing the testing program, the project owner shall provide the CPM with letter indicating the schedule of the proposed testing, including maps showing were test trenches will be placed.

CUL-8 The project owner shall ensure that the designated cultural resource specialist performs the testing, recovery, preparation for analysis, analysis, preparation for curation, and delivery for curation of all cultural resource materials encountered and collected during pre-construction surveys, testing and during the monitoring, data recovery, mapping, and mitigation activities related to the project.

Verification: If archeological materials are found, the project owner shall maintain in its compliance files, copies of signed contracts or agreements with the museum(s), university(ies), or other appropriate research specialists. The project owner shall maintain these files for the life of the project and the files shall be kept available for periodic audit by the CPM. Information as to the specific location of sensitive cultural resource site shall be kept confidential and accessible only to qualified cultural resource specialists.

CUL-9 After completion of the project, the project owner shall ensure that the CRS prepares a Cultural Resources Report (CRR) according to the Archaeological Resource Management Reports (ARMR) Guidelines as recommended by the California Office of Historic Preservation. The project owner shall submit the report to the CPM for review and approval. The report shall be considered final upon approval by the CPM.

Protocol: The CRR shall include (but not be limited to) the following:

A. For all projects:

1. Description of pre-project literature search, surveys, and any testing activities;

2. Maps showing areas surveyed or tested;
3. Description of any monitoring activities;
4. Maps of any areas monitored; and
5. Conclusions and recommendations.

B. For projects in which cultural resources were encountered, include the items specified under “a” and also provide:

1. Site and isolated artifact records and maps;
2. Description of testing for, and determinations of, significance and potential eligibility; and
3. Research questions answered or raised by the data from the project.

C. For projects regarding which cultural resources were recovered, include the items specified under “a” and “b” and also provide:

1. Descriptions (including drawings and/or photos) of recovered cultural materials;
2. Results and findings of any special analyses conducted on recovered cultural resource materials;
3. An inventory list of recovered cultural resource materials; and
4. The name and location of the public repository receiving the recovered cultural resources for curation.

Verification: After completion of the project, the project owner shall ensure that the CRS completes the CRR within ninety days following completion of the analysis of the recovered cultural materials. Within seven days after completion of the report, the project owner shall submit the CRR to the CPM for review and approval. Within 30 days after receiving approval of the CRR, the project owner shall provide to the CPM documentation that the report has been sent to the SHPO and the appropriate archaeological information center(s).

CUL-10 If significant cultural resource deposits are encountered through testing or project monitoring, the project owner shall ensure that all cultural resource materials, maps, and data collected during data recovery and mitigation for the project are delivered to a public repository that meets the US Secretary of Interior requirements for the curation of cultural resources following the filing of the CPM-approved CRR with the appropriate entities. The project owner shall pay any fees for curation required by the repository.

Verification: The project owner shall ensure that all significant recovered cultural resource materials and a copy of the CRR are delivered for curation. Significance will be determined after consultation with the CPM. The project owner shall provide a copy of the transmittal letter received from the curation facility and provide a copy to the CPM within thirty days after receipt.

For the life of the project, the project owner shall maintain in its compliance files copies of signed contracts or agreements with the public repository to which the project owner

has delivered for curation all cultural resource materials collected during testing, data recovery and mitigation for the project.

CUL-11 Prior to any additional project related activities which may result in ground disturbance, the project owner must ensure that the area(s) to be impacted have been subject to a cultural resource surveys for this project, if current (within 5 years) surveys for those areas do not already exist.

The responsibility for the evaluation must be taken by persons meeting the Secretary of the Interior's Professional Qualification Standards in a discipline appropriate to the historic context within which the resource is being considered (OHP 1995).

If significant cultural resources will be affected, then mitigation measures will be determined in consultation with the CPM.

Verification: The project owner shall provide the results of any additional cultural resource surveys and evaluations in the form of a technical report (with request for confidentiality if needed), along with any associated maps, to the CPM at least thirty (30) before any project related construction is to take place. All required mitigation will be completed prior to construction of the project related activities.

REFERENCES

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC2). December 30,2003.

HAZARDOUS MATERIALS MANAGEMENT

Testimony of Geoff Lesh, P.E. and Rick Tyler

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

On December 30, 2003 Calpine Corporation submitted an Application for Certification (O3-AFC-2) for the Los Esteros Critical Energy Facility (LECEF), a 180 MW simple-cycle power plant currently operating in San Jose, California. In Phase 1 of this AFC, Calpine requests that the Energy Commission recertify the license originally granted July 2, 2002 for the LECEF. Public health and safety concerns relating to the transportation, handling and storage of hazardous materials during the construction and operation of power plants are a part of the Energy Commission's analysis. Concern for safety requires that the staff analysis examine planned transportation, facility design for storage, lists of materials, and plans for handling hazardous materials in a manner to ensure public and worker safety. The analysis conducted during the initial LECEF AFC was thorough, and the implementation of the conditions of certification contained in the Energy Commission Decision of July 2, 2002 are adequate to assure staff that the LECEF operates in a safe and efficient manner regarding hazardous materials used during operations and maintenance activities. Continued compliance with the existing conditions of certification will insure that recertification of the LECEF license for the simple-cycle facility will not have any adverse impacts from hazardous materials, and the project will continue to comply with all LORS.

Changes and Modifications to Conditions of Certification

The Hazardous Materials Management section of the Decision includes Conditions of Certification Haz-1 through Haz-10. Conditions of Certification Haz-2 through Haz-7, and Haz-10 focus on the construction of the LECEF, or on activities that must be carried out before operation of the LECEF can begin. Though construction of LECEF Phase 1 is complete and the plant is operational, these conditions of certification have been retained should additional activities be initiated in the future for the LECEF. Conditions of Certification Haz-1, Haz-8, and Haz-9 focus on ongoing operational requirements of inspections or reporting.

CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous material in any quantity or strength not listed in AFC Table 8.12-2 of 01-AFC-12 unless approved in advance by the CPM.

Verification: The project owner shall provide to the (CPM), in the Annual Compliance Report, a list of all hazardous materials contained at the facility.

HAZ-2 The project owner shall provide a Risk Management Plan RMP (if required by regulation) to the CUPA and the CPM for review at the time the RMP is first submitted to the U.S. Environmental Protection Agency (EPA). A Hazardous Materials Business Plan HMBP (which shall include the proposed building chemical inventory as per the UFC) shall also be submitted to the CUPA for review and to the CPM for review and approval prior to construction of

hazardous materials storage and containment structures. The project owner shall include all recommendations of the CUPA and the CPM in the final HMBP. A copy of the final RMP, including all comments, shall be provided to the CUPA and the CPM once it gets EPA approval.

Verification: At least 30 days prior to the commencement of construction of hazardous materials storage and containment structures, the project owner shall provide the final plans (RMP and HMBP) listed above to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan (SMP) for delivery of ammonia. The plan shall include procedures, protective equipment requirements, training and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of aqueous ammonia with incompatible hazardous materials.

Verification: At least 60 days prior to the delivery of aqueous ammonia to the ammonia storage tanks, the project owner shall provide a safety management plan as described above to the CPM for review and approval.

HAZ-4 The aqueous ammonia storage facility shall be designed to either the ASME Pressure Vessel Code and ANSI K61.6 or to API 620. In either case, the storage tank shall be protected by a secondary containment basin capable of holding 150 percent of the storage volume plus the 24-hour rainfall from the 25-year storm event.

Verification: At least sixty 60 days prior to delivery of aqueous ammonia to the storage tanks, the project owner shall submit final design drawings and specifications for the ammonia storage tank, the secondary containment basin, and the secondary containment building to the CPM for review and approval.

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

Verification: At least 30 days prior to receipt of sulfuric acid onsite, the Project Owner shall provide to the CPM for review and approval copies of the facility design drawings showing the location of the sulfuric acid storage tank and the location of any tanks, drums, or piping containing any combustible or flammable material and the route by which such materials will be transported through the facility.

HAZ-6 The project owner shall direct all vendors delivering aqueous ammonia to the site to use only tanker truck transport vehicles, which meet or exceed the specifications of DOT Code MC-307.

Verification: At least 30 days prior to receipt of aqueous ammonia onsite, the project owner shall submit copies of the notification letter to supply vendors indicating the transport vehicle specifications to the CPM for review and approval.

HAZ-7 The project owner shall direct all vendors delivering any hazardous material to the site to use only the route approved by the CPM (SR237 to Zanker Road to the facility).

Verification: At least 60 days prior to receipt of any hazardous materials onsite, the project owner shall submit to the CPM for review and approval, a copy of the letter to be mailed to the vendors. The letter shall state the required transportation route limitation.

HAZ-8 The project owner shall require that the gas pipeline undergo a complete design review and detailed inspection 30 years after initial startup and each 5 years thereafter.

Verification: At least 30 days prior to the initial flow of gas in the pipeline, the project owner shall provide an outline of the plan to accomplish a full and comprehensive pipeline design review to the CPM for review and approval. The full and complete plan shall be amended, as appropriate, and submitted to the CPM for review and approval, not later than one year before the plan is implemented by the project owner. For subsequent inspections, the project owner shall provide to the CPM for review and approval any plan amendments, or a letter indicating there are none, at least one year before implementing the subsequent inspections.

HAZ-9 After any significant seismic event in the area where surface rupture occurs within one mile of the pipeline, the gas pipeline shall be inspected by the project owner.

Verification: At least 30 days prior to the initial flow of gas in the pipeline, the project owner shall provide to the CPM a detailed plan to accomplish a full and comprehensive pipeline inspection in the event of an earthquake for review and approval. This plan shall be amended, as appropriate, and submitted to the CPM for review and approval, at least every five years.

HAZ-10 The natural gas pipeline shall be designed to meet CPUC General Order 112-D&E and 58 A standards, or any successor standards, and will be designed to meet Class III service. The pipeline will be designed to withstand seismic stresses and will be leak surveyed annually for leakage. The project owner shall incorporate the following safety features into the design and operation of the natural gas pipeline: (1) butt welds will be x-rayed and the pipeline will be pressure tested prior to the introduction of natural gas into the line; (2) the pipeline will be surveyed for leakage annually; (3) the pipeline route will be marked to prevent rupture by heavy equipment excavating in the area; and (4) valves will be installed to isolate the line if a leak occurs.

Verification: Prior to the introduction of natural gas into the pipeline, the project owner shall submit design and operation specifications of the pipelines to the CPM for review and approval.

REFERENCES

CEC (California Energy Commission) 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

CEC (California Energy Commission) 2002a. Supplement to the Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). February 5, 2002.

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

CEC (California Energy Commission) 2004. Commission Order Approving Project Modification: Approving a Shorter Temporary Transmission Tap Line (Order No 04-0121-06). January 21, 2004.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004a. Data Adequacy Supplement to Application for Certification 03-AFC-2. March, 17, 2004.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004b. Response to California Energy Commission Staff Data Requests 1-57. April 30, 2004.

LAND USE

Testimony of James Adams

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

On December 30, 2003, Calpine Corporation submitted an Application for Certification (03-AFC-2) for the Los Esteros Critical Energy Facility (LECEF), a 180 MW simple-cycle power plant currently operating in San Jose, California. In Phase 1 of this AFC, Calpine requests that the Energy Commission recertify the license originally granted July 2, 2002 for the LECEF. Staff has reviewed the information presented for Phase 1 contained in the current AFC (03-AFC-2). In addition to the current AFC, staff has reviewed the Commission Decision for the original LECEF (01-AFC-12) dated July 2002, the Staff Assessment for that AFC dated December 31, 2001 and the Staff Assessment Supplement dated February 5, 2002. Staff concludes that there are no changes in laws, ordinances, regulations and standards (LORS) affecting the project, and no changes to the environment inconsistent with the Energy Commission Decision of July 2002. Additionally, there are no changes proposed by the current AFC for the Phase 1 simple-cycle LECEF. The City of San Jose does not require any further zoning action or changes regarding land use permits relating to continuing the license for the simple-cycle LECEF facility as requested in Phase 1 of this AFC.

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

Based upon review of the Commission Decision of July 2, 2002 for LECEF, related documents, and new information presented in the current LECEF AFC (03-AFC-2), staff concludes that there will be no unmitigated environmental impacts resulting from the recertification of the LECEF simple-cycle 180 MW power plant (03-AFC-2, Phase 1), and the project will comply with all LORS. Staff has identified the following changes to Phase 1 as originally permitted based upon the project as constructed.

Changes in the Setting and Environment

Changes to the project site, as reviewed in 2002, are a result of the construction and operation of the LECEF. Additions to the original site include:

- the 180 MW power plant including turbines, HRSG and cooling tower;
- natural gas and recycled water pipelines;
- construction of the storm-water outfall line, scheduled for completion in 2005;
- landscaping features including berms, sound walls and trees;
- permanent access road with gated access; and
- PG&E Los Esteros substation and power lines.

Each of these changes are consistent with the Energy Commission license, the San Jose General Plan, and the Planned Development zoning changes made by the City of San Jose for the project site.

Changes and Modifications to Conditions of Certification

There were no Conditions of Certification for land use in the Phase 1 decision, and none are proposed for the recertification of the original license.

REFERENCES

CEC (California Energy Commission) 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

CEC (California Energy Commission) 2002a. Supplement to the Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). February 5, 2002.

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

CEC (California Energy Commission) 2004. Commission Order Approving Project Modification: Approving a Shorter Temporary Transmission Tap Line (Order No 04-0121-06). January 21, 2004.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004a. Data Adequacy Supplement to Application for Certification 03-AFC-2. March, 17, 2004.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004b. Response to California Energy Commission Staff Data Requests 1-57. April 30, 2004.

NOISE AND VIBRATION

Testimony of Steve Baker

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

The construction and operation of any power plant creates noise, or unwanted sound. The character and loudness of this noise, the times of day or night that it is produced, and the proximity of the facility to sensitive receptors combine to determine whether the facility would meet applicable noise control laws and ordinances, and whether it would cause significant adverse environmental impacts. In some cases, vibration may be produced as a result of power plant construction practices, such as blasting or pile driving. The ground-borne energy of vibration has the potential to cause structural damage and annoyance.

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the continued operation of the Los Esteros Critical Energy Facility (LECEF) simple-cycle power plant and to insure that the resulting noise and vibration impacts continue to be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS).

Based upon review of the Commission Decision of July 2, 2002 for LECEF, related documents, and new information presented in the current LECEF AFC (03-AFC-2), staff concludes that there will be no unmitigated Noise and Vibration impacts resulting from the recertification of the LECEF simple-cycle 180 MW power plant (03-AFC-2, Phase 1), and the project will comply with all applicable LORS provided the following conditions of certification are adopted as part of the final Energy Commission decision.

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

Changes in the Environment

The only significant change in the environment of the project site is the current existence and operation of the LECEF, a simple cycle power plant. The LECEF creates noise when operating; the character and magnitude of this noise are described in the AFC (LECEF, LLC 2003, Chapter 8.7, Appendix 8.7).

Changes Resulting from Current Operations

As required by Condition of Certification **NOISE-4** of the Commission Decision (CEC 2002b), Calpine measured the ambient noise regime at the nearest sensitive receptor, the Cilker residence, before project construction and with LECEF operating at full capacity. These measurements (LECEF, LLC 2003, § 8.7.3.1, Appendix 8.7-B) showed that noise from the LECEF did not contribute measurably to the ambient noise at the Cilker residence.

Changes to Conditions of Certification

The Commission Decision (CEC 2002b) included six Conditions of Certification bearing on Noise and Vibration. Conditions **NOISE-1** and **NOISE-3** through **-6** provide protection from adverse noise impacts to nearby residents, to project construction workers, and to

project operating staff during construction. Construction is complete, and project operating staff are properly protected. Condition of Certification **NOISE-2** establishes and maintains a Noise Complaint Resolution Process, whereby anyone suffering from noise produced by LECEF may pursue a solution to the problem. These conditions will provide protection from noise impacts should additional work be initiated as part of the simple cycle Phase 1 project at a later date.

CONDITIONS OF CERTIFICATION

PRE-CONSTRUCTION NOTICE & CONSTRUCTION NOISE COMPLAINT HOTLINE

NOISE-1: At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within one-half mile of the site, including the City of San Jose and the Santa Clara Valley Water District, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: The project owner shall transmit to the Energy Commission Compliance Project Manager (CPM) in the first Monthly Construction Report following the start of ground disturbance, a statement, signed by the project manager, attesting that the above notification has been performed, and describing the method of that notification. This statement shall also attest that the telephone number has been established and posted at the site.

OPERATION NOISE COMPLAINT PROCESS

NOISE-2: Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- use the Noise Complaint Resolution Form (below), or functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- attempt to contact the person(s) making the noise complaint within 24 hours;
- conduct an investigation to determine the source of noise related to the complaint;
- if the noise is project related, take all feasible measures to reduce the noise at its source; and

- submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form, or similar instrument approved by the CPM, with the local jurisdiction, and with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a three day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is finally implemented.

NOISE CONTROL PROGRAM

NOISE-3: Prior to the start of ground disturbance, the project owner shall submit to the CPM for review a noise control program. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal-OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM the above referenced program. The project owner shall make the program available to OSHA upon request.

NOISE RESTRICTIONS

NOISE-4: The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project will not cause resultant noise levels to exceed 50 dBA L_{90} at the main Cilker home, and that the noise due to plant operations will comply with the noise standards of the City of San Jose riparian corridor policies (LORS) at Location 2 (60 Ldn). The closest permanent residential receptor is the landscaped yard of the main Cilker home if this property is not under the control of the project owner or U.S. Dataport. If this property is under the control of the project owner or U.S. Dataport, compliance is not required at the Cilker home. 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. Steam relief valves shall be adequately muffled to preclude noise that draws legitimate complaints.

Protocol:

A. Prior to initiating construction, the project owner shall conduct short-term ambient noise measurements during day, evening, and nighttime hours at one location in the vicinity of the Coyote Creek riparian corridor (Location 2) and a 25-hour community noise survey at the main Cilker home, if appropriate, if appropriate based on the above discussion.

B. Within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct short-term survey noise measurements at the Coyote Creek riparian

corridor. 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. In addition, the project owner shall conduct a 25-hour community noise survey at the main Cilker home, if appropriate. The survey during power plant operations shall also include 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.

C. If the results from the pre-construction and operational noise surveys indicate that the background noise level (L_{90}) at the main Cilker home has increased due to power plant noise by more than 5 dBA for any given hour during the 25-hour period, or that the noise standards of the LORS have been exceeded at the Coyote Creek riparian corridor, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.

D. If the results from the pre-construction and operational noise surveys indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: Within 15 days after completing the post-construction survey, the project owner shall submit a summary report of the survey to the local jurisdiction, and to the CPM. Included in the post-construction 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 implementation of the mitigation 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.

OCCUPATIONAL NOISE HAZARDS

NOISE-5: Within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility. The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure. The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal-OSHA upon request.

CONSTRUCTION TIME RESTRICTIONS

NOISE-6: Heavy equipment operation and noisy construction work shall be restricted to the times of day delineated below:

Any Day 6 a.m. to 8 p.m.

Noise due to pile driving shall be restricted to the times of day delineated below:

Any Day 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.

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

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Los Esteros Critical Energy Facility Project
(03-AFC-2)

NOISE COMPLAINT LOG NUMBER _____

Complainant's name and address:

Phone number: _____

Date complaint received: _____
Time complaint received: _____

Nature of noise complaint:

Definition of problem after investigation by plant personnel:

Date complainant first contacted: _____

Initial noise levels at 3 feet from noise source _____ dBA Date: _____

Initial noise levels at complainant's property: _____ dBA Date: _____

Final noise levels at 3 feet from noise source: _____ dBA Date: _____

Final noise levels at complainant's property: _____ dBA Date: _____

Description of corrective measures taken:

Complainant's signature: _____ Date: _____

Approximate installed cost of corrective measures: $ _____
Date installation completed: _____
Date first letter sent to complainant: _____ (copy attached)
Date final letter sent to complainant: _____ (copy attached)

This information is certified to be correct:

Plant Manager's Signature: _____

(Attach additional pages and supporting documentation, as required).

REFERENCES

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

PUBLIC HEALTH

Testimony of Ramesh Sundareswaran

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

The purpose of the Public Health analysis is to determine if toxic emissions from the Los Esteros Critical Energy Facility (LECEF) would have the potential to cause significant adverse public health impacts or violate standards for public health protection in the project's impact area. If potentially significant health impacts are identified, staff evaluates mitigation measures to reduce such impacts to insignificant levels.

Based upon review of the Commission Decision of July 2, 2002 for LECEF, related documents, and new information presented in the current LECEF AFC (03-AFC-2), staff concludes that there will be no unmitigated environmental impacts resulting from the recertification of the LECEF simple-cycle 180 MW power plant (03-AFC-2, Phase 1), and the project will comply with all LORS. Staff proposes the following condition of certification be adopted as part of the final Energy Commission decision.

INCLUSION OF NEW CONDITION OF CERTIFICATION

There has been a great deal of interest and, in some cases, concern regarding bacterial growth in cooling systems, including but not limited to industrial cooling towers. Much of the concern centers on Legionella, a bacterium that causes legionnaires' disease, which is similar to pneumonia. Legionella is ubiquitous in natural aquatic environments and is also widely distributed in man-made systems. The most common pathway through which an individual can acquire the disease is through inhalation or aspiration of aerosolized Legionella contaminated water. Recent research has identified outbreaks of legionnaires' disease with untreated or inadequately treated cooling systems. In order to ensure public health protection, it is important to control Legionnaires disease by effective treatment and disinfection, combined with appropriate equipment maintenance.

The Commission has recognized that cooling towers at power plants can potentially pose undue risks to the public from Legionnaires' disease. Adopting a conservative approach, the Commission has started to mandate that power plant licensees design and implement programs to abate such risks. The proposed Condition of Certification, **PH-1**, will therefore ensure that any Legionella based health risks from the cooling tower at LECEF will not constitute an actual or potential endangerment of public health.

No conditions of certification were proposed in the July 2002 Commission's Decision.

CONDITION OF CERTIFICATION

PH-1: The project owner shall develop and implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in cooling water is kept to a minimum. The Plan shall be consistent with either Staff's "Cooling Water Management Program Guidelines" or with the Cooling Technology Institute's "Best Practices for Control of Legionella" guidelines.

Verification: Within 30 days of the final Commission Decision, the project owner shall provide the Cooling Water Management Plan to the CPM for review and approval.

REFERENCES

CEC (California Energy Commission) 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

CEC (California Energy Commission) 2002a. Supplement to the Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). February 5, 2002.

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004a. Data Adequacy Supplement to Application for Certification 03-AFC-2. March 17, 2004.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004b. Response to California Energy Commission Staff Data Requests 1-57. April 30, 2004.

SOCIOECONOMICS

Testimony of Dr. Joseph Diamond

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

This California Energy Commission (Energy Commission) staff socioeconomic impact analysis evaluates the project induced changes on community services and/or infrastructure and related community issues such as environmental justice and facility closure. Direct, indirect, induced, and cumulative impacts are also included. Staff reviewed the estimated impacts of the construction and operation of the original Los Esteros Critical Energy Facility project (LECEF, 01-AFC-12) on local communities, community resources, and public services, pursuant to Title 14, California Code of Regulations, Section 15131 and presented that information in the Staff Assessment for the original LECEF project published December 31, 2001 (see also **Socioeconomics Figure 1**).

On December 30, 2003 Calpine Corporation submitted an Application for Certification (03-AFC-2) requesting two separate actions. In Phase 1 of the new AFC, Calpine requests that the Energy Commission recertify the license originally granted July 2, 2002 for the LECEF simple-cycle power plant. Staff has reviewed the information presented for Phase 1 contained in the current AFC. In addition to the current AFC, staff has reviewed the Commission Decision for the original LECEF (01-AFC-12) dated July 2, 2002, the Staff Assessment for that AFC dated December 31, 2001 and the Staff Assessment Supplement dated February 5, 2002. Additionally, staff has contacted appropriate city and county agencies to verify the current information.

Based upon review of the Commission Decision of July 2, 2002 for LECEF1, related documents, and new information presented in the current LECEF- AFC (03-AFC-2) for Phase 1 recertification of the existing license, staff concludes that there will be no unmitigated impacts resulting from the recertification of the simple-cycle 180 MW power plant (03-AFC-2, Phase 1), and the project will comply with all LORS. The following conditions of certification were adopted as part of the original Energy Commission Decision and have been satisfied.

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

No changes requiring modification or addition to Conditions of Certification for the relicensing of LECEF2 Phase 1 have occurred.

CONDITIONS OF CERTIFICATION

SOCIO-1 The project owner and its contractors and subcontractors shall recruit employees and procure materials and supplies within the Bay Area unless:

- To do so will violate federal and/or state statutes;
- The materials and/or supplies are not available;
- Qualified employees for specific jobs or positions are not available; or

- 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, the project owner shall submit to the Energy Commission 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 in each Monthly Compliance Report of the reasons for any planned procurement of materials or hiring outside the Bay Area that will occur during the next two months.

SOCIO-2 The project owner shall pay the one-time statutory school facility development fee as required prior to the issuance of the in-lieu building permit with the City of San Jose.

Verification: The project owner shall provide proof of payment of the statutory development fee in the next Monthly Compliance Report following the payment.

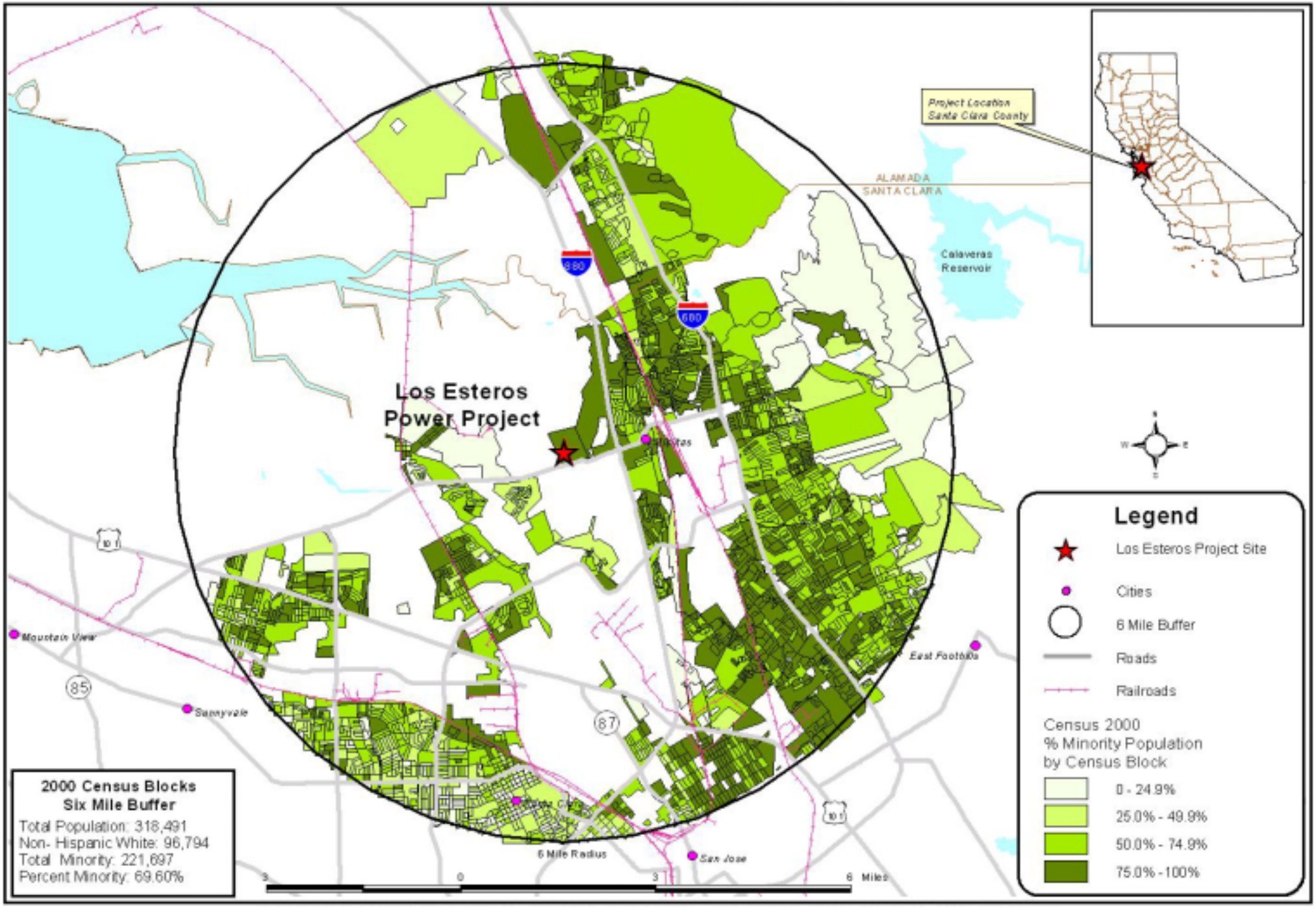
REFERENCES

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2002.

SOCIOECONOMICS - FIGURE 1

Los Esteros Phase 1 & 2 Power Project - Census 2000 Minority Population by Census Block - Six Mile Buffer



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, NOVENBER 2004

SOURCE: California Energy Commission Statewide Transmission & Power Plant Maps 2004, Census 2000 PL 94-171 Data - Matrix PL2

SOIL AND WATER RESOURCES

Testimony of Richard Anderson and John Kessler

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

The Los Esteros Critical Energy Facility (LECEF), a simple-cycle power plant licensed by the Energy Commission on July 2, 2002, uses recycled water supplied by the South Bay Water Recycling (SBWR) Program for the project's various water processes (emissions control, power augmentation, equipment and inlet air cooling and other miscellaneous plant processes). Potable water for drinking is trucked to the site and no municipal potable supply is used. LECEF's effluent collection system combines process wastewater streams and discharges this waste to the City of San Jose (City) sewer system. A system of drains, swales and other drainage features collect surface runoff, which is then pumped to nearby Coyote Creek.

Staff has reviewed the information presented for LECEF recertification, Phase 1 in the current AFC (03-AFC-2), as well as other documents provided by the project owner. Staff requested additional information regarding current plant operation, and this information was provided by the project owner (LECEF, LLC 2004b, 2004c). Staff's assessment is limited to changes in laws, ordinances, regulations and standards (LORS), the environment, and the project since the original Energy Commission assessment and decision regarding LECEF. Staff provides the following assessment for purposes of re-licensing the simple-cycle LECEF.

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

Changes in Laws, Ordinances, Regulations, and Standards

Staff found no changes in applicable laws, ordinances, regulations or standards. Subsequent to the decision, however, the Energy Commission adopted the 2003 Integrated Energy Policy Report (IEPR) containing a policy for power plants to use Zero Liquid Discharge (ZLD) technologies unless such technologies are shown to be environmentally undesirable or economically unsound. The intent of this policy is to reduce adverse impacts associated with wastewater discharges from power plants and increase the efficiency of water use by power plants by maximizing the recycling of wastewater streams within power plants.

Changes in the Environment

Staff found no significant physical changes to soil or water resources since the original decision regarding this project.

Changes Resulting from Final Design and Current Operations

Tertiary treated recycled water from the South Bay Water Recycling (SBWR) program is used for the vast majority of LECEF's water requirements and is delivered via an 18-inch, 1,500 foot pipeline from the San Jose/Santa Clara Water Pollution Control Plant (WPCP). **SOIL AND WATER Table 1** below summarizes the originally permitted water use and wastewater discharge rates associated with the LECEF as contained in the Recycled Water Use and Wastewater Discharge Permit applications filed by the project

owner with the City. Table 1 also summarizes updated water use and wastewater discharge rates as recently provided by the project owner to the City to support a revised permit application. The updated data supporting a revised permit application is based on actual LECEF performance data and reflects additional improvements for water efficiency in-progress and planned by the project owner.

SOIL AND WATER Table 1
LECEF Phase I – City Permitted & Revised Permit Water Usage and Discharge

Gallons per Day (gpd)

	Average Day (gpd)		Peak Day (gpd)	
Component Stream	**Original Permit**	**Revised Permit**	**Original Permit**	**Revised Permit**
Water Losses to Air and Land:				
Cooling Tower Evaporation	51,892	23,000	64,761	137,152
Combustion Turbine Evaporation*	144,319	89,401	180,110	178,115
Landscape Irrigation	Not Included	3,600	Not Included	3,600
Total Evap. Loss & Irrigation**	**196,211**	**116,001**	**244,871**	**318,867**
Wastewater Streams:				
Micro Filter Backwash	9,626	0	12,014	0
Blowdown Cooling Tower	12,665	5,720	15,806	34,491
Oil/Water Separator Effluent	1,512	2,817	1,887	2,817
Reverse Osmosis Reject Water	48,132	29,902	60,069	60,033
Sanitary Wastewater	841	1,560	1,050	1,560
Total Wastewater Discharge	**72,776**	**39,999**	**90,826**	**98,901**
Subtotal – Water Use	**268,987**	**156,000**	**335,697**	**419,341**
Water Supply:				
Recycled Makeup Water	268,490	154,427	335,075	417,768
Potable Water	841	1,573	1,050	1,573
Total Water Supply	**269,331**	**156,000**	**336,125**	**419,341**

Sources: Tetzloff, Rick. 2004 and San Jose/Santa Clara Water Pollution Control Plant Wastewater Discharge Permit Application, dated 9/13/02 and San Jose/Santa Clara Water Pollution Control Plant Industrial Wastewater Discharge Permit No. SJ-488A, as amended 10/3/03.
*Combustion Turbine evaporation includes inlet cooling, emission control and power augmentation.
**Evaporative Loss & Irrigation is water consumed by the project.
Under the Revised Permit, microfilter backwash is being recycled to the Cooling Tower, rather than being discharged as wastewater.
While for the Original Permit condition the Water Use does not quite equal the Total Water Supply, this inconsistency is moot, as it is being superseded by a New Permit, which does balance.
All conditions assume 5 cycles of concentration in the cooling tower.

The revisions to the recycled water supply permit would result in a 42% decrease for the average day condition and a 25% increase for the peak day condition. The revisions to

the wastewater discharge permit would result in a 45% decrease for the average day condition and a 9% increase for the peak day condition.

SOIL AND WATER Table 2 shows the projected worst-case scenario for recycled water use and wastewater discharge as provided in this AFC during 2003 (03-AFC-2), and later updated in 2004. In comparing these values to **SOIL AND WATER Table 1**, it is important to recognize the differences in assumptions between the permitted condition and worst-case (AFC) scenario are as follows:

1. Average Day – The permitted condition assumes 8 hours operation at 59°F compared to the worst-case condition of 24 hours operation at 59°F.
2. Peak Day – The permitted condition assumes 8 hours operation at 109°F and 8 hours operation at 59°F compared to the worst-case scenario of 24 hours at 109°F (Tetzloff, Rick. 2004).

SOIL AND WATER Table 2
AFC Defined & Revised Worst Case LECEF Water Usage and Discharge

Gallons per Day (gpd)

Component Stream	Average Day (gpd)		Peak Day (gpd)	
	2003 AFC	2004 AFC Revision	2003 AFC	2004 AFC Revision
Total Evap. Loss & Irrigation*	324,000	339,236	523,000	646,127
Total Wastewater Discharge	176,000	111,178	297,000	189,964
Total Water Demand	500,000	450,414	820,000	836,091

Sources: Tetzloff, Rick. 2004 and LECEF, LLC 2003. Please note that several values are provided for both peak and average water demand and wastewater discharge in the AFC. Staff used numbers found on page 8.15-11.
*Evaporative Loss & Irrigation is water consumed by the project.

Staff also compared the actual LECEF water use with the peak and average water balance diagrams contained in the AFC. The diagrams show five cycles of concentration (LECEF, LLC 2003, Figure 2.3-5a and 2.3-5b) in the cooling towers. Staff observed a difference between the expected and actual water use and discharge quantities, which may, in part, be related to the difference between expected and actual cycles of concentration or other plant operating conditions and equipment performance. Staff informed the city and the applicant of its concern for the higher recycled water use and apparent non-compliance with the city permit (San Jose/Santa Clara Water Pollution Control Plant Industrial Wastewater Discharge Permit No. SJ-488A, as amended October 3, 2003). As described in information that staff received from the project owner on October 1, 2004, it is clear that the project owner has been working with the city to resolve these issues. (Tetzloff, Rick. 2004).

The product of these discussions between City, project owner and staff has resulted in the project owner reviewing its plant performance with respect to recycled water use and wastewater discharge, and proposing measures that will more efficiently utilize water supply and minimize wastewater discharge as follows:

1. Rerouting the microfilter backwash to the cooling tower for reuse rather than discharging as wastewater;
2. Working with the equipment vendor to achieve the design ratings for the LECEF wastewater treatment equipment;
3. Installing additional instrumentation and valving to better monitor the LECEF wastewater system;

During the October 22, 2004 Staff Assessment Workshop in San Jose, the project owner advised staff that rerouting of the microfilter backwash had been accomplished, and that the two other tasks were in-progress and scheduled to be completed during 2005 (LECEF, LLC. 2004d)

Cooling System

Originally, the Phase 1 design included two cooling towers and recirculation of cooling water as many as five times. After the Energy Commission approved LECEF, the project owner determined that only one tower would be necessary for the cooling system. However, the project has not achieved the number of cycles of concentration (recirculation of cooling water) originally expected because of the concentration of silica and phosphate in the recycled water (Hoock 2004). Information provided to staff regarding actual operating performance indicates that actual cycles of concentration are fewer than three (Hoock 2004; LECEF, LLC 2004c). Staff notes that the updated water balance and water use/wastewater discharge projections continue to assume 5 cycles of concentration, and staff will continue to monitor actual cooling system performance through reports submitted annually metering recycled water use and wastewater discharge.

Water Use and Wastewater Discharge

The WPCP treats wastewater to California Code of Regulations Title 22 standards for unrestricted use for customers of the SBWR program administered by the City of San Jose. At most ten percent (10 mgd) of the water treated by WPCP is used to supply the SBWR program and the rest (90 mgd) is discharged to the Bay. Although the WPCP has a rated treatment capacity of 167 million gallons per day (mgd), its existing NPDES permit requires the WPCP to maintain discharges to the San Francisco Bay below 120 mgd. Currently, flows treated by the WPCP are approximately 100 mgd. Referring to **SOIL & WATER Table 1** and the revised permit conditions, of the 10 mgd treated by WPCP for recycled water use, LECEF Phase I will utilize from about 0.2 to 0.4 mgd. The City has adequate supply to meet these demands, and providing the recycled water to LECEF for this industrial purpose is consistent with its objectives for increasing its customer base and utilization of recycled water to further reduce its discharge to the Bay.

Discharge of waste is not defined by water agencies as a beneficial use of water, but rather a permitted activity. The project owner submitted an original application to the City that specified the LECEF would discharge an average of 72,776 gpd and a peak of 90,826 gpd to the City sewer system (see **SOIL AND WATER Table 1** above). The permit issued by the City, and required by the Energy Commission's Decision (Soil & Water-8), also included these volumes (Permit No. SJ-488A, issued October 3, 2003).

In addition to the discharge volumes, the Industrial Wastewater Discharge Permit also imposes limits for various constituents and, as part of the self-monitoring program, directs the project owner to perform periodic sampling for a subset of the regulated constituents in the discharge. The self-monitoring analysis shows that LECEF discharges regulated constituents below the specified concentration limits, but discharges more wastewater than specified in the permit for peak conditions (LECEF, LLC 2004b; LECEF, LLC 2004c). This information shows that the project is not complying with their current Industrial Wastewater Discharge Permit. As a result of this Phase I Recertification process, the project owner has revised its estimates of wastewater discharge to an average of 39,999 gpd and a peak of 98,901 gpd. The City has indicated that it will revise the Wastewater Discharge Permit accordingly (Shipes, R. 2004c)

The estimated quality of the wastewater discharge from LECEF has also changed since the project was originally approved. Specifically and according to the 2003 AFC data, the concentrations for silicon and total dissolved solids (TDS, analogous to salinity) in the wastewater appeared about three and two times higher than originally estimated in 2001, although the estimates of the source water quality have not changed (see **SOIL AND WATER Table 3**). The project owner then provided an updated projection in 2004 as a revision to the 2003 AFC data, and now projects an increase in silicon and TDS on the order of 3 and 1.5 times higher respectively than originally projected in 2001. While neither of these projections violates specific wastewater quality discharge criteria according to the City's permit, the concern is for LECEF's contribution to an incremental increase in TDS to the quality of the City's recycled water product overall. Staff's original analysis found that LECEF's wastewater had the potential to adversely impact the quality of the recycled water produced for the SBWR program by increasing concentration of certain constituents at the WPCP, specifically TDS.

SOIL AND WATER Table 3
LECEF Effluent Discharge Concentrations

Constituent	Source Water	2001	2003	2004
Max Makeup Flow (gpm)		**207**	**207**	**290**
Silicon (mg/L)	**11.7**	**31.5**	**107**	**93.5**
TDS (mg/L)	**869**	**2,232**	**4,328**	**3,394**

Source: LECEF, LLC 2001 Tables 8.14-1 and 8.14-2; LECEF, LLC 2003 Tables 8.15-2 and 8.15-3, and Tetzloff, Rick. 2004;
All silicon assumed to be in SiO_2 form.

Based upon information available at the time of the original proceeding, staff recommended with the City's concurrence that mitigation of these impacts be addressed through a Salinity Control Program being developed by the City of San Jose. This position was similar to that taken by staff in other projects proposed in the San Jose area (Metcalf Energy Center and Pico Power Combined Cycle). However, over the last two years, efforts to develop the Salinity Control Program have progressed slowly. As a result, water quality degradation caused by LECEF to the SBWR recycled water product has not been mitigated. Mr. Randolph Shipes with the City of San Jose informed Energy Commission staff that it may be ten years before a centralized salinity control system is in place (Shipes 2004a). Staff then became concerned that it could no longer rely on the Salinity Control Program to mitigate any adverse impacts caused by the LECEF wastewater to the SBWR recycled water product.

Staff requested information from the City regarding the severity of the increased impacts on the recycled water product (Shipes 2004b). Mr. Shipes responded to the Energy Commission with a letter dated October 15, 2004 which finds that the effect of the LECEF wastewater discharge to the City's recycled water product results in an increase in TDS of about 1.5%, from about 719 mg/l to 730 mg/l under peak conditions (revised permit conditions). The City concludes that this incremental effect is not a significant impact to its recycled water quality or marketability at this time.

Had the City and staff concluded that LECEF's wastewater discharge would have caused a significant degradation of the SBWR recycled water, staff would have recommended that the project be required to pre-treat their effluent before discharge to the City's WPCP to the level of quality equal to that of the incoming recycled water (no net impact) or eliminate all discharges to the city sewer system. To discharge wastewater pre-treated to the same quality of water being delivered to the power plant is illogical, and would more reasonably be directed to the plant head works. Another alternative would be to employ a "zero liquid discharge" system that would recycle various wastewater streams within the plant and produce a solid waste that could be disposed of in a landfill. During the ZLD process, water is distilled from the waste and recycled for re-use in the power plant thereby increasing the efficiency of the water used by the project.

Discharge Alternative Analysis

Consistent with the Energy Commission's current policies, staff considered the recommendation for all new power plants to use an on-site ZLD system. ZLD systems are identified as the best technology available to increase the efficiency of water use and reduce adverse impacts associated with wastewater discharges. This policy stems from an understanding of available technologies and existing state policies.[1] The 2003 Integrated Energy Policy Report makes it the responsibility of the project developers to either use ZLD technologies or demonstrate that such technologies are environmentally undesirable or economically unsound for their project. ZLD systems can maximize the recycling of waste streams within power plants, eliminate wastewater discharged off-site and produce a residual salt cake that can be disposed of as a solid waste.

[1] State Water Resources Control Board Resolution 75-58, The Use and Disposal of Inland Waters Used for Powerplant Cooling and Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California.

Over the last five years, the Energy Commission has approved several projects that are or will use ZLD systems and avoid wastewater discharges to surface or groundwater resources entirely. **SOIL AND WATER Table 4** provides a list of these projects, their generating capacity and primary source water. As can be seen, five of these projects will use recycled water supplies as their primary source (Gilroy Energy Center, Magnolia Power Project, San Joaquin Valley Energy Center, Tesla Combined Cycle and Walnut Energy Center). Gilroy Energy Center was retrofitted after the start of operation to include a ZLD system because of impacts to the local water treatment facility from the power plant effluent. East Altamont Energy Center and Walnut Energy Center will use a blend of recycled water and untreated fresh water because of the limited supplies of recycled water at start-up.

SOIL AND WATER Table 4
Projects Approved Since 1999
To Use Zero Liquid Discharge Systems

Project	Capacity (MW)	Primary Water Source
Border	49.5	Potable
East Altamont Energy Center	1100	Recycled / Raw Canal
Gilroy Energy Center	135	Recycled
High Desert Power	830	State Water Project (SWP)
La Paloma	1,124	SWP
Magnolia Power Project	328	Recycled
Pastoria	750	SWP
San Joaquin Valley Energy Center	1,087	Recycled
SMUD Phase 1	500	Raw Canal
Sutter Power	540	Groundwater
Tesla Combined Cycle	1120	Recycled
Three Mountain	500	Groundwater
Tracy Peaker	169	Raw Canal
Walnut Energy Center	250	Recycled/Groundwater

Source: California Energy Commission

Even though the project owner did not propose ZLD for either the Phase I recertification or the Phase 2 expansion, staff requested that the project owner evaluate the alternative of ZLD wastewater treatment consistent with the Energy Commission's policy (CEC 2004b). In their data response, Calpine points to the benefits of recycled water use and the costs of using a ZLD system at LECEF (LECEF 2004b), arguing that the increased cost makes ZLD economically unsound for the LECEF Phase 1 recertification and for the Phase 2 proposed conversion to combined-cycle operation. Staff agrees that by consuming a portion of the recycled water used by the project, discharges to the Bay are reduced, and that use of recycled water is consistent with state requirements, policies and the City's objectives. However, discharging LECEF concentrated effluent back to the WPCP could have significantly degraded the water quality discharged to the Bay and used in the recycled water program. ZLD systems do not preclude the use of recycled water, nor does using a ZLD system change

appreciably the amount of water evaporated (consumed) by LECEF Phase 1 (LECEF, LLC, p. 8.15-11).

In comparison to the City's analysis, the applicant's analysis estimated that LECEF wastewater discharge would increase the SBWR's recycled water TDS levels by approximately 1 percent (LECEF 2004a). However, in reviewing the project owner's analysis (LECEF, LLC, 2003 Appendix 8.15-S5; LECEF, LLC 2004b), staff found the level of degradation to the recycled water was underestimated by the applicant because:

1. An incorrect influent inflow volume to WPCP was used (100 mgd should be used, not 130 mgd);
2. The analysis inappropriately incorporated the Metcalf Energy Center discharge impacts into the baseline for the recycled water quality (MEC is not yet complete, has not discharged wastewater to the sewer system and impacts were originally estimated using higher volumes of inflow to the WPCP) – the 2003 reported average TDS concentration in the recycled water as provided by the WPCP is 719 mg/L, not 777 mg/l as stated in Table 8.15-3 of the AFC, or 808 mg/l as used in the applicant's analysis; and
3. A lower TDS concentration, 4,209 mg/l, was used for the LECEF effluent (according to the AFC, adding Phase 2 will not change relative discharge quality) discharged to the City sewer system rather than 4,328 mg/l as stated in Table 8.15-2.

In the 2003 Integrated Energy Policy Report, the Energy Commission defines "economically unsound" as economically or otherwise infeasible (CEC 2003). Simply because an alternative is more expensive does not make it economically infeasible. Disposal of power plant process wastewater into local sewer systems is usually a less expensive method than implementing an on-site ZLD system. In previous cases, however, staff has found that the incremental effects on power costs due to use of ZLD systems are a reasonable and feasible method for wastewater disposal or reclamation even when the source water is recycled water. As evidenced by other power plants that will use recycled water and ZLD systems, implementation of a ZLD system at LECEF would not have prevented the owner from competing in California's electricity market.

In light of the City's analysis, which estimates that the incremental effect of continuing LECEF wastewater discharge results in a TDS increase of 1.5% during peak conditions, and the City's conclusion that this will not be a significant impact on recycled water quality or marketability, staff supports LECEF's continued discharge of wastewater to the City's WPCP. The continued wastewater discharge operation also supports the City's objectives for industrial customers to more fully utilize its recycled water supply.

Stormwater Discharges

LECEF originally incorporated a temporary storm water outfall to the high flow channel of Coyote Creek. The Energy Commission's July 2, 2002, Decision included conditions that addressed the compliance of LECEF's temporary and permanent outfall with federal and state requirements. As required under Soil & Water-3, the project developer

was required to submit specific information regarding the storm water outfall to Coyote Creek approximately 220 feet from the project site.

The project developer obtained a permit from the Santa Clara Valley Water District for the temporary stormwater outfall in the high flow channel of Coyote Creek (issued July 30, 2002, Permit No. 02464). Other permits obtained for this high flow channel outfall included a conditional waiver of Waste Discharge Requirements from the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB - July 26, 2002); a Section 1601 Lake and Streambed Alteration Agreement (R3-2002-0037) issued by the Department of Fish and Game; and a permit from the Santa Clara Valley Water District for the outfall construction (July 30, 2002 Permit No. 02464). However, since the original decision, the City decided that the outfall should be relocated and the permanent outfall is to be constructed to the edge of the low flow channel of Coyote Creek. As a result, these permits and agreements will either need to be modified or re-issued. The project owner has already obtained most of the permits for the permanent outfall as follows: 1) Water Quality Certification from the SFBRWQCB (3-1-04); 2) Section 1601 Lake and Streambed Alteration Permit from the California Department of Fish and Game (CDFG – 10-29-03); and 3) Authorization from the Army Corps of Engineers for use of Nationwide Permits Nos. 7 – Outfall Structures and Maintenance, and 33 – Temporary construction Access and Dewatering pursuant to Section 404 of the Clean Water Act. The only outstanding permit is the Stormwater Discharge Permit from SCVWD in compliance with **Soil & Water-4,** for which the project owner has made application and expects the permit by first quarter of 2005. In addition, the project owner will need to request an extension of time from CDFG for the Section 1601 Permit, which expires December 31, 2004. The 1601 Permit extension is a common request of applicants and will very likely be approved. Once all permits are finalized, but prior to the start of construction for the permanent low flow channel outfall, the project owner will need to submit the outstanding SCVWD Stormwater Discharge Permit to the Energy Commission Compliance Project Manager (CPM) (see **SOIL & WATER-4**).

Conveyance or discharge of any contaminant such as debris, oil or other petroleum products to the Creek or the areas near the creek is prohibited by these permits. Staff conducted a site visit on March 24, 2004. During inspection of drainage facilities, staff noted that flows from the vast majority of the site are directed to perimeter ditches and catch basins. These areas include “contact” areas where pollutants can usually be found such as parking areas, roads and uncovered equipment storage areas. Only flows from a small portion of the site, areas where the turbines are housed, are directed to the oil-water separator. After inspecting one of the catch basins that directs water from these ditches to the storm water sump, staff noted the presence of an oily scum on the surface of the water in the catch basin. Staff then inspected the temporary outfall in the high channel area of Coyote Creek. Staff noted that the concrete pad at the temporary outfall appeared clean although some staining could be seen at the high water mark on the concrete. As of March 2004, the swales were lined with filter fabric and contained heavy deposits of silt and sediments, but little vegetation. Since then, the perimeter ditches have established grass and will serve to better skim the limited oils that collect and drain from the paved and gravel-surfaced non-contact areas of the facility (LECEF, LLC. 2004d)

Staff has recommended the catch basins be cleaned, and periodic inspections and sampling be done to ensure contaminants from the drainage areas are removed prior to the discharge of the drainage to the sump that lifts the drainage to Coyote Creek. If the grass-lined ditches are not successful in removing traces of oils during stormwater runoff events, staff also recommends that modifications to the site drainage occur so that flows from contact areas are also directed to an oil-water separator. The Storm Water Pollution Prevention Plan (SWPPP) for Industrial Activity must be updated to address additional BMP's or structural changes (e.g. rerouting the surface flows to an oil-water separator if needed) that eliminate the contamination of drainage discharged to the Creek (see **SOIL & WATER-3**).

Changes and Modifications to Conditions of Certification

Based on currently available information, staff recommends the following changes to the original conditions for continued operation of LECEF. Some of the original conditions address the construction of LECEF and have been satisfied. Others need to be modified if the project is recertified to reflect changes since the original decision. Explanations for major changes are provided in italics following the particular condition. As mentioned earlier in this assessment, staff has received additional information from both the applicant and the City of San Jose that addresses both the apparent non-compliance of the project with City permit requirements for recycled water supply and wastewater discharge. The project owner has revised its permit applications for both, and the City has indicated that it intends to issue revised permits accordingly (Shipes, R. 2004c).

Please note that in reviewing submittals provided by the project owner, staff found no record or evidence that the project owner complied with the requirements of SOIL & WATER-5. As stated during the October 22, 2004 Staff Assessment Workshop, the project owner will transmit another copy to the CPM of the previously submitted documentation required under Soil & Water-5 – Well Destruction Permit (LECEF, LLC. 2004d).

CONDITIONS OF CERTIFICATION

SOIL & WATER 1: Prior to beginning any site mobilization activities, the project owner shall obtain staff approval of a final Construction Erosion Control Plan. The Construction Erosion Control Plan shall include and be consistent with the standards normally required in the City of San Jose's Grading and Excavation Permit, for all project elements. The final plan shall be submitted for Compliance Project Manager's (CPM's) approval, and for review and comment by the City of San Jose, and shall include provisions for containing and treating any contaminated soil or groundwater. The final plan will also include changes as appropriate, incorporating the final design of the project.

Verification: The Erosion Control Plan shall be submitted to the CPM for review and approval and to the City of San Jose for review and comments at least sixty days prior to start of any site mobilization activities. The CPM must approve the final Erosion Control Plan prior to the initiation of any site mobilization activities.

SOIL & WATER-2: The project owner shall submit a Notice of Intent for construction under the General NPDES Permit for Discharges of Storm Water Associated

with Construction Activity to the State Water Resources Control Board (SWRCB), and obtain CPM approval of the related Storm Water Pollution Prevention Plan (SWPPP) for Construction Activity. The SWPPP will include final construction drainage design and specify Best Management Practices (BMP's) for all on and off-site LECEF project facilities. This includes final site drainage plans and locations of BMP's.

Verification: At least 60 days prior to the start of any site mobilization activities, the SWPPP for Construction Activity and a copy of the Notice of Intent for construction under the General NPDES Permit for Discharges of Storm Water Associated with Construction Activity filed with the SWRCB, shall be submitted to the CPM. Approval of the final SWPPP plan by the CPM must be received prior to initiation of any site mobilization activities.

SOIL & WATER-3: The project owner shall submit the following to the CPM as appropriate in association with obtaining approval for construction and operation of a storm water outfall into Coyote Creek:

1. If through the permitting process, Nationwide Permits 3 and 7 are not required under Soil and Water-10 for construction of the storm water outfall in Coyote Creek, then the project owner shall submit an Application for 401 Water Quality Certification and/or Waiver of Waste Discharge Requirements to the San Francisco Bay Regional Water Quality Control Board (SFBayRWQCB) to obtain a Conditional Waiver of Waste Discharge Requirements;
2. Based on a design that will only discharge storm water from non-process areas for operation of the storm water outfall into Coyote Creek, the project owner shall submit a Notice of Intent and acceptance from the State Water Resources Control Board (SWRCB) for operating under General NPDES Permit for Discharge of Storm Water Associated with Industrial Activity.
3. For operation of the storm water outfall into Coyote Creek, the project owner shall obtain CPM approval of the related Storm Water Pollution Prevention Plan (SWPPP) for Industrial Activity. The SWPPP will include final operating drainage design and specify BMP's and monitoring requirements for the LECEF project facilities. This includes final site drainage plans and locations of BMP's.

Verification: The project owner shall submit the following to the CPM, as appropriate, in association with obtaining approval for construction and operation of a stormwater outfall into Coyote Creek:

1. At least 30 days prior to construction of the storm water outfall in Coyote Creek, and if through the permitting process a Conditional Waiver of Waste Discharge Requirements is required, a Conditional Waiver of Waste Discharge Requirements shall be submitted to the CPM. (Please note that if the RWQCB determines a Conditional Waiver of Waste Discharge Requirements is necessary, the Application for 401 Water Quality Certification and/or Waiver of Waste Discharge Requirements must be filed at least 120 days prior to expected approval of the SFBay RWQCB.

2. At least 30 days prior to the start of project operation, evidence of acceptance by the SWRCB of the Notice of Intent for operating under General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity shall be submitted to the CPM.

3. ~~At least 60 days prior to the start of project operation,~~ Within 30 days prior to construction of the permanent outfall into Coyote Creek, the project owner shall submit to the CPM a revised SWPPP for Industrial Activity ~~shall be submitted to the CPM~~. Approval of the ~~final~~ revised plan by the CPM and installation or modifications of BMPS to ensure no contaminants are discharged to Coyote Creek, if necessary, must be completed prior to permanent outfall construction ~~received prior to initiation of project operation~~.

Only minor changes to SOIL & WATER-3 Verification are recommended. Modification to permits and plans required as part of relocating the storm water outfall should be submitted similar to those required for the temporary outfall. The project owner has submitted all permits for the permanent outfall except for the SCVWD Stormwater Discharge Permit and the CDFG approval of an extension of time for the 1601 Permit. Improvements to the on-site surface drainage system can be made through the current NPDES permit for Industrial Activities which are to be documented in the revised SWPPP for Industrial Activity.

SOIL & WATER-4: The project owner shall provide the CPM with all information/data necessary to satisfy the requirements of the Storm Water Discharge Permit for construction of a storm water outlet, and to discharge flows into Coyote Creek, consistent with the requirements of Santa Clara Valley Water District's (SCVWD's) Ordinance No. 83-2. The data shall include stormwater runoff projections based on using HEC1 modeling techniques as requested by SCVWD.

Verification: ~~At least 60 days prior to site mobilization, in the Coyote Creek levee~~ At least 30 days prior to the start of construction on the permanent outfall in Coyote Creek, the project owner shall submit all elements required for a Storm Water Discharge Permit to the CPM for review and approval and to the SCVWD for review and comments.

Only minor changes to SOIL & WATER-4 Verification are recommended. Modification to the SCVWD permit required as part of relocating the storm water outfall into Coyote Creek can be submitted as suggested.

SOIL & WATER-5: The project owner shall provide the CPM with all information/data necessary to satisfy the requirements of the Well Destruction Permit for removal and closure following construction of the one remaining water well consistent with the requirements of Santa Clara Valley Water District's (SCVWD's) Ordinance No. 90-1.

Verification: At least 60 days prior to site mobilization, the project owner shall submit all elements required for a Well Destruction Permit to the CPM for review and approval and to the SCVWD for review and comments.

Staff has found no record associated with the destruction of this sixth well. All information provided by the applicant addresses the closure of the five (2 unregistered, 06S/01W-12M001, 06S/01W-12M002, and 06S/01W-12M004) discussed during the original proceeding.

SOIL & WATER-6: The project owner will install metering devices and/or utilize meters installed by the City of San Jose in order to record on a monthly basis the amount of recycled water used by the project. The project owner shall prepare an annual summary, which will include the monthly range and monthly average of daily usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. For subsequent years, the annual summary will also include the yearly range and yearly average water use by the project. This information will be supplied to the CPM.

Verification: The project owner will submit as part of its annual compliance report a water use summary to the CPM on an annual basis for the life of the project. Any significant changes in the water supply for the project during construction or operation of the plant shall be noticed in writing to the CPM at least 60 days prior to the effective date of the proposed change.

SOIL & WATER-7: The project owner shall provide the CPM with all information/data necessary to satisfy the requirements of the User Agreement for Recycled Water under the South Bay Water Recycling (SBWR) Program.

Verification: At least 60 days prior to initial operation-, the project owner shall submit all elements required for the User Agreement for Recycled Water to the CPM for review and approval and to the City of San Jose for review and comments.

SOIL & WATER-8: The project owner shall provide the CPM with all information/data necessary to satisfy the requirements of the Industrial Wastewater Discharge Permit for its proposed disposal of industrial and sanitary waste into the San Jose/Santa Clara WPCP.

Verification: At least 60 days prior to operation, the project owner shall submit all elements required for the Industrial Wastewater Discharge Permit to the CPM for review and approval and to the City of San Jose for review and comments.

SOIL & WATER-9: The project owner shall provide the CPM with evidence of submitting an accepted Engineer's Report for Title 22 Reclamation Requirements to the CA Department of Health Services, as applicable for obtaining unrestricted use of recycled water.

Verification: At least 30 days prior to project operation, the project owner shall submit to the CPM evidence of submitting an Engineer's Report for Title 22 Reclamation Requirements to the CA Department of Health Services.

SOIL & WATER-10: The project owner shall provide the CPM with evidence of pre-construction notification and consultation with the Army Corps of Engineers regarding compliance with Nationwide Permit #'s 3 and 7, consistent with Section 404 of the Clean Water Act, if necessary, for placement of the storm water outfall and/or the placement of scour armor in

Coyote Creek. In association with obtaining authorization for use of Nationwide Permit #'s 3 and 7, the Project owner may be directed to obtain Section 401 Water Quality Certification from the SWRCB.

Verification: At least 30 days prior to construction of the storm water outfall, the project owner shall submit to the CPM evidence of consultation with the Army Corps of Engineers (ACOE) and authorization from the ACOE regarding of Nationwide Permits #'s 3 and 7 as needed to comply with Section 404 of the Clean Water Act. If Nationwide Permits #'s 3 and 7 are required, at least 30 days prior to construction of the storm water outfall, the project owner shall submit evidence to the CPM regarding Section 401 Water Quality Certification from the SWRCB.

No change to SOIL & WATER-10 is recommended. Modification to permits and plans required as part of relocating the storm water outfall into Coyote Creek can be made without altering the condition.

REFERENCES

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LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

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LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004c. Response to Soil and Water Resources Compliance Data Requests (01-AFC-12c). May 6, 2004.

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Shipes, R. 2004b. Deputy Director of Environmental Services Department, City of San Jose. Telephone conversation with Lorraine White (California Energy Commission) regarding LECEF wastewater discharge. June 16, 2004.

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TRAFFIC AND TRANSPORTATION

Testimony of Amanda Stennick

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

The Traffic and Transportation Section of this Staff Assessment is an objective analysis of the transportation systems in the vicinity of the project and addresses the Los Esteros Critical Energy Facility's (LECEF) compatibility with applicable laws, ordinances, regulations, and standards (LORS). It also identifies potential impacts related to the operation of the project on the surrounding transportation systems and roadways, and potential mitigation measures to avoid or lessen those impacts.

Based upon review of the Commission Decision of July 2, 2002 for LECEF, related documents, and new information presented in the current LECEF AFC (03-AFC-2), staff concludes that there will be no unmitigated traffic and transportation impacts resulting from the recertification of the LECEF simple-cycle 180 MW power plant (03-AFC-2, Phase 1), and the project will comply with all LORS provided the following conditions of certification are adopted as part of the final Energy Commission decision.

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

No changes regarding traffic levels of service (LOS) have been identified due to construction or operation of the project. However, staff has identified the following improvement in the local freeway system in the project area: a new freeway interchange at State Route 237 and Interstate 880 is currently under construction. This new interchange will help alleviate traffic congestion in this area. There have been no other changes in LOS to warrant additional Conditions of Certification for LECEF Phase 1 in **TRAFFIC AND TRANSPORTATION**.

Changes and Modifications to Conditions of Certification

No changes to Conditions of Certification are required to insure continued compliance with LORS, and to assure that of LECEF Phase 1 will not have any significant impact on the environment, and public health and safety.

CONDITIONS OF CERTIFICATION

TRANS-1 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 City of San Jose, County of Santa Clara, and Caltrans. Specifically, this plan shall include the following restrictions on construction traffic:

1. establish construction work hours outside of the peak traffic periods1 to ensure that construction workforce traffic occurs during off-peak hours, except in situations where construction activities necessitate 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 local City of San Jose's and County CMP LOS standard;

2. schedule heavy vehicle equipment and building material deliveries to occur during off-peak hours;
3. route all heavy vehicles and vehicles transporting hazardous materials as follows: from SR 237 exit northbound at Zanker Road and turn right to enter the Los Esteros Critical Energy Facility via the primary access road when constructed; and
4. during the construction phase (once every two months), monitor and report the turning movements and traffic volumes for the project access roads during the A.M. (7:00 to 9:00 a.m.) and P.M. (4:00 to 6:00 p.m.) peak hours to confirm construction trip generation rates.

The construction traffic control and transportation demand implementation program shall also include the following provisions for linear facilities:

1. timing of linear 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 properties; and
5. emergency access.

Verification: At least 15 days prior to start of site preparation or earth moving activities, the project owner shall provide to the City of San Jose, County of Santa Clara, 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.

TRANS-2 The project owner shall develop a temporary construction zone signage and implementation plan in accordance with the Manual of Traffic Controls for Construction and Maintenance of Work Zones (Caltrans, 1996). This plan shall alert motorists to possible construction hazards that may occur on Zanker Road in the vicinity of the primary access road. The project owner shall illuminate all posted signs since night work is anticipated. The project owner shall coordinate with the City of San Jose and CHP a temporary speed-limit reduction through the construction zone

Verification: At least 10 days prior to the start of site preparation or earth-moving activities, the project owner shall coordinate approval of the plan with the City of San Jose and CHP. Prior to the beginning of construction the owner shall demonstrate to the CPM that the temporary construction zone signage has been installed and adequately illuminated.

TRANS-3 The project owner shall ensure that all federal, state, and local regulations for the transportation of hazardous materials are observed.

Verification: The project owner shall include in its Monthly Compliance Reports copies of all permits and licenses acquired by the project owner and/or subcontractors concerning the transportation of hazardous substances.

REFERENCES

CEC (California Energy Commission). 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

CEC (California Energy Commission). 2002a. Supplement to the Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). February 5, 2002.

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TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

The energy from the operating Los Esteros Critical Energy Facility (LECEF), originally permitted in July of 2002 (01-AFC-12), is being delivered to Pacific Gas and Electric's (PG&E) power grid through a 152-ft, overhead, wood-pole 115 kV transmission line connecting the project's switchyard to PG&E's 115 kV Los Esteros Substation-Nortec transmission line immediately to the west of the switchyard. Phase 1 of the present LECEF2 application, submitted December 30, 2003 (03-AFC-2), requests the Energy Commission recertify the existing 180 megawatt (MW) project and its 115 kV line for the life of the project. Phase 2 of the current AFC also seeks a permit to certify conversion of the LECEF to a 320 MW combined-cycle project for increased power generation. (LECEF 2003, pp. 2-1, 2-13, 5-1, and 5-7).

The existing 115 kV Phase 1 line, with a lack of public access and nearby residences, means that the long-term residential field exposures and other field impacts would be insignificant during operations. These potential impacts are at the root of the present health and safety concern associated with high voltage transmission lines. Electric power is the product of applied voltage and current level, and continued transmission at 115 kV being applied to the Phase 1 line was evaluated by staff and permitted in the original Commission Decision and a pending amendment addressing the current interconnection. The current Phase 1 line has been designed, built, and currently operates in compliance with the applicable safety Laws, Ordinances, Regulations, and Standards regarding aviation safety, interference with radio-frequency communication, audible noise, fire hazards, hazardous shocks, nuisance shocks, and electric and magnetic field exposure. These categories of impacts and related mitigation measures were addressed in the Final Staff Assessment (FSA) for the LECEF1 project (CEC 2001, pp. 4.11-1 through 4.11-12) and incorporated into the Commission Decision (CEC 2002b, pp. 89-92).

In addition to the original LECEF1 FSA (for 01-AFC-12) and the current application for re-certification and conversion to combined-cycle operation (03-AFC-2), staff reviewed the Commission Decision for the LECEF1 (01-AFC-12) dated July 2, 2002, together with the Commission's Order 04-121-06 approving the existing overhead connecting line. Staff has further reviewed the applicable laws, ordinances, regulations and standards (LORS) for any changes that might necessitate specific modifications to the LECEF1-related recommendations. Based upon these reviews and the information in the current AFC (03-AFC-2), staff concludes that there would be no unmitigated environmental impacts resulting from recertifying the current permitted 115 kV (LECEF1, and LECEF2 Phase 1) transmission lines as proposed by the applicant. The specific proposal to design, build and operate these 115 kV lines according to the listed CPUC requirements and industry practices constitutes compliance with the health and safety LORS of concern to staff.

Since the LECEF is currently operating, the transmission lines have been constructed, and the current interconnection has been approved by the Energy Commission and the California Independent System Operator, **TLSN-1** has been satisfied. In addition, measurements of magnetic fields associated with the existing lines as required by **TLSN-2** have been completed and no additional testing is expected to be required in relation to Phase 1. Staff's line-related recommended conditions of certification as stated in the Commission Decision for the original LECEF remain sufficient to protect workers and the public should additional work or changes be initiated associated with the Phase 1 180 MW lines.

PROPOSED CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall build the proposed any future underground interconnection lines according to the requirements of CPUC's GO-128.

Verification: Thirty days before line-related ground disturbance, the project owner shall submit to the Commission's Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the proposed line will be constructed according to the requirements of GO-128.

TLSN-2 The project owner shall engage a qualified consultant to measure the strengths of the magnetic fields from the interconnection point with PG&E to LECEF's switchyard. Measurements shall be made at the same points (identified as Points A, B, C, and D) for which calculated field strength measurements were provided by the applicant.

Verification: The project owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

REFERENCES

CEC (California Energy Commission) 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

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VISUAL RESOURCES

Testimony of Eric Knight

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

On December 30, 2003, Calpine Corporation submitted an Application for Certification (03-AFC-2) for the Los Esteros Critical Energy Facility (LECEF), a 180 MW simple-cycle power plant currently operating in San Jose, California. In Phase 1 of this AFC, Calpine requests that the Energy Commission recertify the license originally granted July 2, 2002, for the LECEF. Staff has reviewed the information presented for Phase 1 contained in the current AFC (03-AFC-2). In addition to the current AFC, staff has reviewed the Commission Decision for the original LECEF (01-AFC-12) dated July 2002, the Staff Assessment for that AFC dated December 31, 2001, the Staff Assessment Supplement dated February 5, 2002 and the Energy Commission's Amendment Order No. 04-121-06 approving a short tap line. Staff has further reviewed any changes in laws, ordinances, regulations and standards (LORS), the environment, and the project.

Based upon review of the Commission Decision of July 2, 2002, for LECEF1, related documents, and new information presented in the current LECEF2 AFC (03-AFC-2), staff concludes that there will be no unmitigated direct and cumulative visual impacts resulting from the recertification of the LECEF simple-cycle 180 MW power plant (03-AFC-2, Phase 1), and the project will comply with all LORS provided the following conditions of certification are adopted as part of the final Energy Commission decision.

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

Changes in the Environment

Since certification of the LECEF1 there have been several changes to the environment. One is the construction and operation of the simple cycle power plant itself. Other changes to the environment are PG&E's Los Esteros Substation, which was built immediately north of the LECEF site; electrical transmission lines associated with the substation, some of which parallel the north side of State Route 237; and berms and landscaping installed as part of LECEF1. The Los Esteros Substation and associated transmission lines were addressed in staff's visual impact analyses of the LECEF1, which are found in the Staff Assessment (SA) and SA Supplement (CEC 2001 and CEC 2002a). As required by Conditions of Certification **VIS-3** and **VIS-7**, Calpine installed the berms and landscaping in late 2003 to mitigate the direct and cumulative impacts of the LECEF1, and to ensure that the project complied with applicable visual resources related LORS. Staff believes that the berms and landscaping (as it matures) will substantially screen the project within a reasonable period of time, thereby reducing the adverse visual impacts of the continued operation of LECEF1 simple-cycle facility as proposed by the current LECEF2 Phase 1 to a less than significant level.

Changes to the Project

LECEF1 as described in the Commission Decision included a two-cell cooling tower. On November 13, 2002, Energy Commission staff approved an "Insignificant Project

Change" allowing phased construction of LECEF1's cooling tower cells, whereby a single cell would be installed during the initial simple-cycle phase, and the second cell would be installed as required for additional equipment cooling, such as that associated with a data center or the combined-cycle phase of the project. In the SA, staff analyzed a two-cell unabated cooling tower and found the visual impacts of the visible plumes to be less than significant. In approving the amendment, staff took into consideration that City of San Jose LORS required Calpine to install plume abatement on any cooling system (see Condition **VIS-6**). Because plume frequency and size from an abated one-cell tower would be less than that from an unabated two-cell tower, staff concluded that impacts from the project's visible plumes would remain less than significant. Subsequent to the Commission's approval of the amendment, staff approved Calpine's design for the plume-abated cooling tower, which staff determined would result in substantially lower plume frequency than what was reported in the Commission Decision.

The Commission Decision specified a 2,000-foot long temporary transmission line interconnection to the electrical grid, to be replaced by a permanent, underground interconnection with the adjacent PG&E Los Esteros Substation once the substation was built. However, after the Los Esteros Substation was completed, Calpine did not construct the permanent interconnection, and instead replaced the 2,000-foot long temporary line with a new 152-foot long temporary line. On January 21, 2004, the Energy Commission approved Calpine's petition to allow continued use of the 152-foot long temporary interconnection line until July 2, 2005, and the Transmission System Engineering analysis prepared for this relicensing process recommends continuing this interconnection for the life of the simple-cycle power plant. The temporary tap line connects the LECEF switchyard with a PG&E 115 kV transmission line that runs north/south immediately adjacent to the west side of the LECEF site. The interconnection required three, 65-foot tall wood poles. The short tap line and associated wood poles are not conspicuous to motorists on State Route 237 and Zanker Road and are seen in the context of a power plant, substation, and other transmission lines and poles. Therefore, the visual impacts of the temporary transmission line remain less than significant.

Changes and Modifications to Conditions of Certification

The Commission Decision contains seven conditions of certification. Conditions **VIS-2, VIS-4, VIS-5,** and **VIS-6** contain slight modifications to reflect that LECEF1 has already been built and to make these conditions consistent with language used in more recent projects approved by the Energy Commission. Furthermore, if LECEF2 Phase 1 requires any additional equipment in the future, Conditions **VIS-2** and **VIS-4** provide staff with a mechanism to ensure that the surface treatment and any lighting for the new structures are completed in a manner that would minimize visual impacts.

Condition **VIS-3** required implementation of a landscaping plan, and Condition **VIS-7** required implementation of additional aesthetic measures to improve the design quality of the project. On the recommendation of representatives of the Cities of San Jose and Milpitas, berms and additional landscaping were the measures selected to meet the objectives of **VIS-7**. Calpine has installed the berms and landscaping. Condition **VIS-3** has been modified to require submittal of a landscape maintenance plan and reporting

of maintenance activities to ensure that the landscaping is continually maintained for the life of the project.

As required by Condition **VIS-6**, Calpine installed a plume abatement system on the cooling tower. Staff is proposing a change to the verification to require annual reporting to document that the abatement system has been operated in a manner to minimize visible plumes.

VIS-1 The project owner shall ensure that visual impacts of project construction are adequately mitigated. To accomplish this, the project owner shall require the following as a condition of contract with its contractors to construct the proposed project:

> Protocol: If visible from nearby residences, SR-237, Zanker Road, or Grand Boulevard, the project site as well as staging and material and equipment storage areas shall be visually screened. All evidence of construction activities, including ground disturbance due to staging and storage areas, shall be removed and remediated upon completion of construction.

The project owner shall submit a plan to the California Energy Commission Compliance Project Manager (CPM) for review and approval and to the City of San Jose for review and comment for restoring the surface conditions of any rights of way disturbed during construction of underground pipelines; and staging and storage areas. The plan shall include grading, contouring, and revegetation consistent with applicable plans.

The project owner shall not implement the plan until receiving written approval of the submittal from the CPM.

Verification: At least 45 days prior to beginning implementation of the surface restoration, the project owner shall submit the restoration plan to the CPM for review and approval and to the City of San Jose for review and comment.

If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, within 15 days of receiving that notification, the project owner shall submit to the CPM a revised plan.

The project owner shall notify the CPM within 7 days after completing the surface restoration that it is ready for inspection.

VIS-2 ~~Within 180 days after reaching the Simple Cycle Commercial Operation Date (SCCOD), the~~ The project owner shall a) treat all project structures and buildings visible to the public in appropriate colors or hues that minimize visual intrusion and contrast by blending with the surrounding landscape, and b) ensure that those structures and buildings have surfaces that do not create glare. A specific treatment plan shall be developed for CPM approval to ensure that the proposed colors do not unduly contrast with the surrounding landscape colors. The plan shall be submitted sufficiently early to ensure that any precolored buildings, structures, and linear facilities will have colors

approved and included in bid specifications for such buildings or structures~~, unless the structures have been ordered prior to the Commission Decision~~. Prior to submittal of the plan to the CPM, the project owner shall submit the plan to the City of San Jose for review and comment.

Protocol: The treatment plan shall include:

a) specification, and 11" x 17" co lor simulations, of the treatment proposed for use on project structures, including structures treated during manufacture;
b) a list of each major project structure, building, and tank, specifying the color(s) proposed for each item;
c) samples of the proposed treatment and color on any fiberglass materials that would be visible to the public one set of color brochures or color chips showing each proposed color and finish;
d) documentation that the surfaces to be used on all project elements visible to the public will minimize glare; where this is not practicable, provide documentation of the infeasibility of nonglare paint or material;
e) a detailed schedule for completion of the treatment; and;
f) a procedure to ensure proper treatment maintenance for the life of the project.

After approval of the plan by the CPM, the project owner shall implement the plan according to the schedule and shall ensure that the treatment is properly maintained for the life of the project.

The project owner shall not perform the final treatment on any structures until the project owner receives notification of approval of the treatment plan from the CPM.

Verification: At least 30 days prior to ordering the first structures that are color treated during manufacture, the project owner shall submit its proposed plan to the CPM for review and approval and to the City of San Jose for review and comment.

If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, within 30 days of receiving that notification, the project owner shall submit to the CPM a revised plan.

~~No later than 180 days after reaching the Simple Cycle Commercial Operation Date (SCCOD), the~~ Within seven days of completing the surface treatment, the project owner shall notify the CPM that all structures treated during manufacture and all structures treated in the field are ready for inspection.

The project owner shall provide a status report regarding treatment maintenance in the Annual Compliance Report. The report shall specify a): the condition of the surfaces of all buildings and structures (including the perimeter walls) at the end of the reporting year; b) major maintenance activities that occurred during the reporting year; and c) the schedule of major maintenance activities for the next year.

VIS-3 The project owner shall provide landscaping that is effective in screening the majority of structural forms (not the upper portions of the stacks) from the following key viewing areas: (a) SR-237 and the existing bicycle trail to the south, (b) Zanker Road to the west, and (c) the proposed Bay Trail alignments to the east (Reach 1). Screening vegetation must be provided around the project's eastern, southern, and western edges, and include a sufficient number of appropriately located evergreen trees to ensure effective year-round screening. Trees and other vegetation must be strategically placed and of sufficient height and density to achieve maximum effective screening of the proposed project structures as soon as possible. In screening project facilities, care must be taken in siting vegetation plantings to avoid blocking vista views of distant ridgelines (for an example, see simulation presented as **VISUAL RESOURCES Figure 7**).

Protocol: The project owner shall submit a final landscaping plan that has been approved by the Project Architectural Committee. The plan shall, to the extent feasible, incorporate the landscaping plan presented to the Commission on May 20, 2002, by Dr. Priestly. The Plan shall include:

a) 11"x17" color simulations of the proposed landscaping at 5 years as viewed from KOPs 1 and 2;
b) a detailed list of plants to be used and times to maturity given their size and age at planting; ~~and~~
c) a detailed schedule describing when plants will be installed in specific landscape areas, and a discussion which provides the justification for the planting schedule for the specific areas and species proposed~~.~~;
d) maintenance procedures, including but not limited to, any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and
e) a procedure for monitoring for and replacement of unsuccessful plantings for the life of the project as necessary to maintain a visual screen.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM. However, the planting must be completed as soon as practical without impeding construction and consistent with the Applicant's revised landscaping plan that was presented on May 20, 2002.

Verification: The final project landscaping plan shall be prepared under the direction of the Architectural Committee. At least 30 days prior to installing the landscaping, the project owner shall submit the plan to the CPM for review and approval and the City of San Jose for review and comment. If the CPM does not approve the landscape plan, that element shall return to the Committee for further discussion and resolution.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within 7 days after completing installation of the landscaping, that the landscaping is ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead or dying screening trees and any major repairs to the berms and irrigation system, for the previous year of operation in each Annual Compliance Report.

VIS-4 ~~Prior to first turbine roll, the~~ The project owner shall design and install all lighting such that light bulbs and reflectors are not visible from public viewing areas and illumination of the vicinity and the night sky is minimized during both project construction and operation. The project owner shall develop and submit lighting plans for construction and operation of the project to the CPM for review and approval and the City of San Jose for review and comment.

Protocol: The lighting plan shall require that:

a) All exterior night lighting shall be of minimum necessary brightness consistent with operational safety and security.
b) Lighting shall be designed so that during both construction and operation (consistent with worker safety), highly directional, exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the night sky is minimized. The design of this outdoor lighting shall be such that the luminescence or light source is shielded to prevent light trespass outside the project boundary, except where necessary for security.
c) High illumination areas not occupied on a continuous basis such as maintenance platforms shall be provided with switches or motion detectors to light the area only when occupied.
d) A lighting complaint resolution form (following the general format of that in **Visual Resources Appendix VR-2**) shall be used by plant operations, to record all lighting complaints received and to document the resolution of those complaints. All records of lighting complaints shall be kept in the on-site compliance file. The project owner shall provide a copy of each completed complaint form to the CPM.

Lighting shall not be installed before the plans are approved.

Verification: At least 15 days prior to installing the construction lighting, the project owner shall provide the construction lighting plans to the CPM for review and approval and the City of San Jose for review and comment. If the CPM notifies the project owner that revisions to the construction lighting plan are needed before the CPM will approve the plans, the project owner shall submit a revised plan within seven days of receiving that notification from the CPM

At least 30 days before ordering the facility exterior lighting, the project owner shall provide the lighting plan to the CPM for review and approval and the City of San Jose for review and comment. If the CPM notifies the project owner that any revisions to the facility lighting plans are needed before the CPM will approve the plans, the project owner shall submit to the CPM a revised plan within 30 days of receiving the CPM's notice that revisions to the plan are required.

The project owner shall notify the CPM within seven days of completing exterior lighting installation that the lighting is ready for inspection. If after inspection the CPM notifies the project owner that modifications to the lighting are needed, within 30 days of receiving that notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.

Within 48 hours of receiving a lighting complaint, the project owner shall provide to the CPM a) a report of the complaint, b) a proposal to resolve the complaint, and c) a schedule for implementation of the proposal. The project owner shall provide a copy of the completed complaint resolution form to the CPM within 10 days of complaint resolution, and retain a copy in the project owner's compliance file.

VIS-5 The project owner shall comply with the City of San Jose's requirements regarding signs. In addition, the project owner shall install minimal signage, which shall be constructed of non-glare materials and unobtrusive colors. The design of any signs required by safety regulations shall conform to the criteria established by those regulations. The project owner shall submit a signage plan for the project to the CPM for review and approval and to the City of San Jose for review and comment. The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

Verification: Prior to first turbine roll and at least 30 days prior to installing signage, the project owner shall submit the plan to the CPM for review and approval and to the City of San Jose for review and comment.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within 7 days after completing installation of the signage that they are ready for inspection.

VIS-6 The project owner shall implement the "best commercially-feasible available technology" for cooling-related plume abatement. The project owner shall not construct the cooling system until the project owner receives notification of approval from the CPM that the proposed system incorporates the "best commercially-feasible available technology" for plume abatement.

Verification: At least 60 days prior to construction of the cooling system, the project owner shall submit to the CPM for review and approval and to the City of San Jose for review and comment an analysis that reviews commercially-feasible and available plume abatement technologies for the cooling system (including dry-chilling) and presents their effectiveness and costs compared to the proposed system, which consists of a two-cell wet counter flow cooling tower.

The project owner shall provide a written certification in each annual compliance report to demonstrate that the cooling towers have consistently been operated within the design parameters, except as necessary to prevent damage to the cooling tower. If determined by the CPM to be necessary to ensure operational compliance, based on legitimate complaints received or physical evidence of potential non-compliant operation, the project owner shall monitor the cooling tower operating parameters in a manner and for a period as specified by the CPM. For each period that the cooling

tower operation monitoring is required, the project owner shall provide to the CPM the cooling tower operating data within 30 days of the end of the monitoring period. The project owner shall include with this operating data an analysis of compliance and shall provide proposed remedial actions if compliance cannot be demonstrated.

VIS-7 The project owner shall continue to confer with the cities of San Jose and Milpitas to consider additional aesthetic changes that incorporate interesting and attractive design qualities and promote a high standard of architectural excellence, and that can be implemented during the post-licensing period.

Verification: The project owner will meet with representatives of the Cities of San Jose and Milpitas and provide a report to the CPM on additional measures, including screening, painting, design, or architectural treatment that may improve the aesthetic appearance of the project. Prior to commercial operation, the project owner shall submit the report, including 11"X17' high quality color photo simulations of the proposed aesthetic treatment as seen from at least KOPs 1 and 2, to the CPM for review and approval. If approved by the CPM, the project owner shall implement these additional aesthetic measures within 180 days of the simple cycle commercial operation date.

REFERENCES

Calpine CPower. 2002. Petition for Post-Certification Amendment (01-AFC-12). Submitted to Energy Commission staff on September 27, 2002.

CEC (California Energy Commission) 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

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CEC (California Energy Commission). 2003. Staff Analysis of Modifications to Temporary Transmission Line Interconnection. December 18, 2003.

CEC (California Energy Commission) 2004. Commission Order Approving Project Modification: Approving a Shorter Temporary Transmission Tap Line (Order No 04-0121-06). January 21, 2004.

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WASTE MANAGEMENT

Testimony of Ramesh Sundareswaran

SUMMARY REVIEW AND ANALYSIS OF PHASE 1

In conducting its review of the proposed recertification of the simple-cycle license for the Los Esteros Critical Energy Facility (LECEF, Phase 1) staff has reviewed the analyses provided by other technical staff members in addition to the documents provided by the project owner. Additionally, comments from the California Department of Toxic Substances Control and responses to requests for information from the project owner were reviewed, resulting in the addition of two new conditions of certification, **WASTE-6** and **WASTE-7**. Changes to the project that have the potential to affect the environment and public health and safety based upon the handling and disposal of waste materials and the management of contaminated soils that remain at the project site have resulted in staff recommending modifications to some of the existing conditions of certification and the addition of the two new conditions.

Staff concludes that there will be no unmitigated environmental impacts resulting from the recertification of the LECEF simple-cycle 180 MW power plant (03-AFC-2, Phase 1), and the project will comply with all LORS provided the following conditions of certification are adopted as part of the final Energy Commission decision.

Changes in the Project

Previous environmental investigations at LECEF have identified elevated levels of residual pesticides and metals in its soils. Prior to the July 2, 2002 licensing of LECEF, the site underwent both Phase I and Phase II Environmental Site Assessments (ESA) in succession. Historically, chemicals detected at the site included total DDT, arsenic, lead, toxaphene, dieldrin and endrin, consistent with the site's past agricultural use. The ESAs were then followed by a limited site remediation, which occurred prior to the completion of the licensing. The remediation consisted of the (1) removal and disposal of at least three fuel underground storage tanks, (2) disposal of lead contaminated debris, (3) disposal of asbestos wastes, (4) disposal of a limited amount of toxaphene and DDT contaminated soil excavated from two pesticide mixing/storage areas, and (5) abandonment of several onsite water supply and groundwater monitoring wells (CEC 2001, LECEF, LLC, 2003, LECEF, LLC, 2004b). Excluding those soils removed from the pesticide mixing/storage areas, the remaining soils at the site were left in place, though they were contaminated with elevated levels of pesticides and metals. This was on the grounds that the concentrations of the pesticides and metals were below then-U.S. EPA Region IX Preliminary Remediation Goals (PRGs) permitted for industrial use (LECEF, LLC, 2003, LECEF, LLC, 2004b). PRGs are chemical concentrations that correspond to fixed levels of health risk in soil, water, and air and serve as tools that can be used for evaluating and cleaning up contaminated sites.

The AFC notes that the underlying soils at the site still contain residual contamination and that elevated levels of total DDT, dieldrin, endrin, lead and arsenic can persist at the site (LECEF, LLC, 2003, LECEF, LLC, 2004b). Among these contaminants, total DDT and arsenic are likely in the soils, at concentrations that are above current industrial PRGs (DTSC 2004).

The current industrial PRG is 7.0 milligram/kilogram (mg/kg) for total DDT and 1.6 mg/kg for arsenic. Total DDT was detected in the site's surface and subsurface soils up to 11.03 mg/kg and arsenic up to 67 mg/kg according to the ESAs (LECEF, LLC, 2003, LECEF, LLC, 2004b). The potential for exposure to these contaminated soils at LECEF is currently mitigated through the use of buildings and coverings such as paving and gravel. However, there are uncovered areas at LECEF, which can serve as potential sources of adverse health effects through potential exposure to those contaminants in the surface soils to onsite workers and site visitors (DTSC 2004). Further, any activity that will invariably disturb the contaminated soils at LECEF (e.g., excavation, trenching, removal, grading, filling or earth movement) could exacerbate potential exposure through incidental ingestion, dermal contact, and inhalation of resuspended particulates from soils in both covered and exposed areas to onsite workers, including construction workers, site visitors and neighbors (DTSC 2004).

Continuation of Conditions of Certification and inclusion of new Conditions of Certification

The use, storage, transport, treatment, disposal, or generation of wastes at LECEF mandates compliance with federal, state, and local requirements by the project owner during the project's life cycle. Any non-compliance or violation of such requirements can potentially affect public health and/or the environment. In such instances, the Commission may need to modify, change, suspend, or rescind the license that has been issued to the Project Owner, depending on the circumstances.

The July 2, 2002 Commission Decision's conditions of certification, **WASTE-1**, **WASTE-2** and **WASTE-5** are retained to ensure appropriate compliance, notification and reporting.

During any soil disturbance for construction purposes at LECEF, onsite workers, site visitors, and the public could be exposed to the residual pesticides, elevated levels of metals, or other contamination. This could slow down or stop a project. Anticipating potential problems and using written procedures to establish how these problems will be addressed can minimize undue delays and stoppages. Staff therefore proposes a new condition of certification, **WASTE-6**, requiring preparation of a Soils Management Plan (SMP) so that contractors and others, through site-specific information, can better manage environmental and health and safety contingencies at LECEF. The July 2002 Commission Decision conditions of certification, **WASTE- 3** and **WASTE-4** are replaced by the new condition, **WASTE-6**, for the recertification and therefore need not be retained.

The existing residual pesticides and metals at LECEF will continue to remain at the site given their persistent nature. Further, these contaminants will remain at levels that are not suitable for unrestricted use of the land. Though LECEF would be on land currently zoned for industrial use, there is no surety that the land or parts of it will not be redeveloped in the future for some use other than for a power plant. Staff therefore proposes condition of certification, **WASTE-7**, that imposes appropriate limitations on land use. It requires the Project Owner to undertake clean-up of the residual contamination, as needed, and appropriate to the intended use, should the land or parts of it ever undergo a change in ownership (e.g., sale, gift or barter), be leased or rented.

This will ensure that the public is protected from unsafe exposures to the residual contamination that has been left in place.

CONDITIONS OF CERTIFICATION

WASTE-1 Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

Verification: The project owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the manner in which project-related wastes are managed.

WASTE-2 Prior to the start of construction and operation, the project owner shall prepare and submit to the CEC CPM, for review and comment, a waste management plan for all wastes generated during construction and operation of the facility, respectively. The plans shall contain, at a minimum the following:

- A description of all waste streams, including projections of frequency, amounts generated and hazard classifications; and
- Methods of managing each waste, including treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, employee protection, and recycling and waste minimization/reduction plans.

Verification: No less than 30 days prior to the start of construction, the project owner shall submit the construction waste management plan to the CPM for review. The operation waste management plan shall be submitted no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions within 20 days of notification by the CPM (or mutually agreed upon date). In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year compared to planned management methods.

WASTE-3 ~~The project owner shall have a Registered Professional Engineer or Geologist, with experience in remedial investigation and feasibility studies, available for consultation during soil excavation and grading activities. The Registered Professional Engineer or Geologist shall be given full authority to oversee any earth moving activities that have the potential to disturb contaminated soil~~.

~~**Verification:** At least 30 days prior to the start of site mobilization, the project owner shall submit the qualifications and experience of the Registered Professional Engineer or Geologist contracted for consultation to the CPM for approval.~~

WASTE-4 ~~If potentially contaminated soil is unearthed during excavation at either the proposed site or linear facilities as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Registered Professional Engineer or Geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and file a written report to the project owner and the CPM stating the recommended course of action. Depending on the nature and extent of contamination, the Registered Professional Engineer or Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the Registered Professional Engineer or Geologist, significant remediation may be required, the project owner shall contact representatives of the San Francisco Regional Water Quality Control Board, the Santa Clara County Certified Unified Permitting Agency (CUPA), and the Berkeley Regional Office of the California Department of Toxic Substances Control for guidance and possible oversight.~~

~~**Verification:** The project owner shall submit any final reports filed by the Registered Professional Engineer or Geologist to the CPM within five days of their receipt.~~

WASTE-5 Both the project owner and its construction contractor shall obtain unique hazardous waste generator identification numbers from the Department of Toxic Substances Control prior to generating any hazardous waste.

Verification: The project owner and its construction contractor shall keep copies of the identification numbers on file at the project site and notify the CPM via the monthly compliance report of their receipt.

WASTE-6 The project owner shall prepare and submit to the CEC CPM a Soils Management Plan (SMP) prior to any earthwork. The SMP must be prepared by a California Registered Geologist, a California Certified Engineering Geologist, or a California Registered Civil Engineer with sufficient experience in hazardous waste management. The SMP shall be updated as needed to reflect changes in laws, regulations or site conditions. A SMP summary report, which includes all analytical data and other findings, must be submitted once the earthwork has been completed. Topics covered by the SMP shall include, but not be limited to:

- Land use history, including description and locations of known contamination.
- The nature and extent of previous investigations and remediation at the site.
- The nature and extent of unremediated areas at LECEF.
- A listing and description of institutional controls, such as the City's excavation ordinance and other local, state, and federal regulations and laws that will apply to LECEF.
- Names and positions of individuals involved with soils management and their specific role.
- An earthwork schedule.
- A description of protocols for the investigation and evaluation of historically related chemicals such as DDT and previously unidentified

contamination that may be potentially encountered, including any temporary and permanent controls that may be required to reduce exposure to onsite workers, visitors and the public.

- Requirements for site-specific Health and Safety Plans (HSPs) to be prepared by all contractors at LECEF. The HSP should be prepared by a Certified Industrial Hygienist and would protect onsite workers by including engineering controls, monitoring, and security to prevent unauthorized entry and to reduce construction related hazards. The HSP should address the possibility of encountering subsurface hazards including hazardous waste contamination and include procedures to protect workers and the public.
- Hazardous waste determination and disposal procedures for known and previously unidentified contamination.
- Requirements for site specific techniques at the site to minimize dust, manage stockpiles, run-on and run-off controls, waste disposal procedures, etc.
- Copies of relevant permits or closures from regulatory agencies

Verification: Within 45 days of the final Energy Commission decision, the project owner shall submit a draft SMP to the CPM for review and approval. The SMP shall also be submitted to the Berkeley office of the California Department of Toxic Substances Control (DTSC or its successor) for review and comment. All earthworks at the site shall be based on the SMP. A SMP summary shall be submitted to CPM and DTSC within 25 days of completion of any earthwork.

WASTE-7 The project owner shall not change ownership of, rent or lease the entire project site or a portion for non-power plant use, without first notifying the CPM and DTSC (or its successor) and performing any remediation necessary to bring that particular portion of the site or the entire site itself (as applicable) into conformance with then current site cleanup standards appropriate to the intended use of that portion or the entire site.

Verification: At least 90 days prior to the change of ownership, rental or lease of the project site or a portion for non-power plant use, the project owner shall submit such notification to the CPM and DTSC and a statement that documents that the particular portion or the entire site will meet then current cleanup standards appropriate to its intended use or a remediation plan, if required to bring that portion or the entire site into conformance with the intended use.

REFERENCES

CEC (California Energy Commission) 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

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WORKER SAFETY AND FIRE PROTECTION

Testimony of Geoff Lesh, P.E., and Rick Tyler

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

Worker safety and fire protection is enforced by laws, ordinances, regulations, and standards (LORS), and implemented at the federal, state, and local levels. Worker safety is of utmost priority at the project location and is documented through worker safety practices and training. Industrial workers at the facility operate process equipment and handle hazardous materials daily and may face hazards that can result in accidents and serious injury. Protection measures are employed to either eliminate these hazards or minimize the risk through special training, protective equipment, or procedural controls. Los Esteros Critical Energy Facility (LECEF) was permitted, constructed, and began commercial operation on March 7, 2003.

Based upon review of the Commission Decision of July 2, 2002 for LECEF, related documents, and new information presented in the current LECEF AFC (03-AFC-2), staff concludes that there will be no unmitigated environmental impacts resulting from the recertification of the LECEF simple-cycle 180 MW power plant (03-AFC-2, Phase 1), and the project will comply with all LORS provided the following conditions of certification are adopted as part of the final Energy Commission decision.

Changes and Modifications to Conditions of Certification

The Worker Safety and Fire Protection section of the Decision includes Conditions of Certification Worker Safety-1 through Worker Safety-3. Condition of Certification Worker Safety-1 focuses on the construction of the LECEF. Now that construction of LECEF Phase 1 is complete and the plant is operational, this condition of certification no longer applies. Conditions of Certification Worker Safety-2 and Worker Safety-3 focus on activities that must be carried out before operation of the LECEF can begin. These conditions have been satisfied, and the plant is in operation. Because additional work may be initiated at a later time, these conditions are left in tact.

CONDITIONS OF CERTIFICATION

WORKER SAFETY–1 The project owner shall submit to the CPM a copy of the Project Construction Safety and Health Program containing the following:

- Injury and Illness Prevention Program
- a Construction Safety Program;
- a Construction Personal Protective Equipment Program;
- a Construction Exposure Monitoring Program;
- a Construction Emergency Action Plan; and
- a Construction Fire Protection and Prevention Plan.

Protocol: The Safety Program, the Personal Protective Equipment Program, and the Exposure Monitoring Program shall be submitted to the CPM for review and approval concerning compliance of the program will all applicable Safety Orders. The Construction Fire Protection and Prevention Plan and Emergency Action Plan shall be submitted to the City of San Jose Fire Department for review and comment prior to submittal to the CPM.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval copy of the Project Injury and Illness Prevention Program. The project owner shall provide a letter from the City of San Jose Fire Department stating that the department has reviewed and accepted the Construction Fire Protection and Prevention Plan and the Emergency Action Plan.

WORKER SAFETY–2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- an Operation Injury and Illness Prevention Plan;
- an Emergency Action Plan;
- a Hazardous Materials Management Program;
- a Operations and Maintenance Safety Program;
- a Fire Protection and Prevention Program (8 CFR § 3221); and
- a Personal Protective Equipment Program (8 CFR § 3401-3411).
  Protocol: The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the Cal/OSHA Consultation Service for review and comment concerning compliance of the program with all applicable Safety Orders.

The Operation Fire Protection Plan and the Emergency Action Plan shall also be submitted to the City of San Jose Fire Department for review and acceptance.

Verification: At least 30 days prior to the start of operation, the project owner shall submit to the CPM a copy of the final version of the Project Operations and Maintenance Safety & Health Program. It shall incorporate Cal/OSHA Consultation Service's comments, stating that the service has reviewed and accepted the specified elements of the proposed Operations and Maintenance Safety and Health Plan.

WORKER SAFETY–3 The project owner shall prepare and submit to the CPM an Operations Fire Prevention Plan describing the onsite fire protection system that will be provided in this project. Specifically, information must be included on employee alarm/communication system, portable fire extinguisher placement and operation, fixed fire fighting equipment placement and operation, fire control methods and techniques, flammable and combustible liquid storage methods, methods for servicing and refueling vehicles and fire prevention training programs and requirements. Additionally, information should be provided regarding the source of the onsite firewater, including storage if applicable and fire department hook-ups.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the City of San Jose Fire Department a copy of the final version of the Operations Fire Prevention Plan for review and comment and to the CPM for review and approval.

REFERENCES

CEC (California Energy Commission) 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

CEC (California Energy Commission) 2002a. Supplement to the Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). February 5, 2002.

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

CEC (California Energy Commission) 2004. Commission Order Approving Project Modification: Approving a Shorter Temporary Transmission Tap Line (Order No 04-0121-06). January 21, 2004.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004a. Data Adequacy Supplement to Application for Certification 03-AFC-2. March, 17, 2004.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004b. Response to California Energy Commission Staff Data Requests 1-57. April 30, 2004.

ENGINEERING ASSESSMENT

FACILITY DESIGN

Testimony of Kevin Robinson, Al McCuen and Steve Baker

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

On December 30, 2003 Calpine Corporation submitted an Application for Certification (03-AFC-2) for the Los Esteros Critical Energy Facility (LECEF), a 180 MW simple-cycle power plant currently operating in San Jose, California. In Phase 1 of this AFC, Calpine requests that the Energy Commission recertify the license originally granted July 2, 2002 for the LECEF. Staff has reviewed the information presented for Phase 1 contained in the current AFC (03-AFC-2). In addition to the current AFC, staff has reviewed the Commission Decision for the original LECEF (01-AFC-12) dated July 2002, the Staff Assessment for that AFC dated December 31, 2001, and the Staff Assessment Supplement dated February 5, 2002. Staff has further reviewed changes in laws, ordinances, regulations and standards (LORS), the environment, and the project.

Based upon review of the Commission Decision of July 2, 2002 for LECEF, related documents, and new information presented in the current LECEF AFC (03-AFC-2), staff concludes that the Condition of Certification proposed herein be adopted to ensure that the project is properly maintained to assure public health and safety, and to ensure compliance with all applicable engineering LORS.

Changes and Modifications to Conditions of Certification

The Facility Design section of the Decision includes Conditions of Certification **GEN-1** through **GEN-8**, **CIVIL-1** through **CIVIL-4**, **STRUC-1** through **STRUC-4**, **MECH-1** through **MECH-3**, and **ELEC-1**. All of the previously stated conditions focus on the construction of the LECEF. Though construction of LECEF Phase 1 is finished and the plant is operational, the above stated Conditions of Certification may be useful should additional work be required for any reason.

GEN-1 The project owner shall design, construct and inspect the project in accordance with the 1998 California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations), which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering LORS in effect at the time initial design plans are submitted to the CBO for review and approval. (The CBSC in effect is that edition that has been adopted by the California Building Standards Commission and published at least 180 days previously.) The project owner shall insure that all the provisions of the above applicable codes be enforced during any construction, alteration, moving, demolition, repair, or maintenance of the completed facility [1998 CBC, Section 101.3, Scope] All transmission facilities (lines, switchyards, switching stations and substations) are handled in Conditions of Certification in the **Transmission System Engineering** section of this document.

In the event that the initial engineering designs are submitted to the CBO when a successor to the 1998 CBSC is in effect, the 1998 CBSC provisions identified herein shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

The project owner shall insure that all contracts with contractors, subcontractors and suppliers shall clearly specify that all work performed and materials supplied on this project comply with the codes listed above.

Verification: Within 30 days after receipt of the Certificate of Occupancy, the project owner shall submit to the Compliance Project Manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation and inspection requirements of the applicable LORS and the Energy Commission's Decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the Certificate of Occupancy within 30 days of receipt from the CBO [1998 CBC, Sect ion 109 - Certificate of Occupancy]

Once the Certificate of Occupancy has been issued, the CPM shall be informed at least 30 days prior to any construction, alteration, moving, demolition, repair, or maintenance to be performed which may require CBO approval as a result of the above stated codes. The CPM will then determine the necessity of CBO approval on the work to be performed.

~~**GEN-1** The project owner shall design, construct and inspect the project in accordance with the 1998 California Building Code (CBC) and all other applicable LORS in effect at the time initial design plans are submitted to the CBO for review and approval. The CBC in effect is that edition that has been adopted by the California Building Standards Commission and published at least 180 days previously. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification **TSE-1, TSE-2** and **TSE-3** in the **Transmission System Engineering** Section of this document.~~

~~Protocol: In the event that the initial engineering designs are submitted to the CBO when a successor to the 1998 CBC is in effect, the 1998 CBC provisions identified herein shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction, or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.~~

~~**Verification:** Within 30 days after receipt of the Certificate of Occupancy, the project owner shall submit to the California Energy Commission Compliance Project Manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation and inspection requirements of the~~

~~applicable LORS and the Energy Commission's Decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the Certificate of Occupancy within 30 days of receipt from the CBO [1998 CBC, Section 109 – Certificate of Occupancy.]~~

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.

Verification: At least 60 days 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 Generator Foundation and Connections	4
SCR Unit Structure, Foundation and Connections	4
Transformer Foundation and Connections	4
CT Inlet Air Filter/Duct Structure, Foundation and Connections	4
Inlet Air Chillers Skid Foundation and Connections	4
Exhaust Stack Structure, Foundation and Connections	4
Fuel Gas Filter Foundation and Connections	4
Fuel Gas Compressor Foundation and Connections	1
Gas Turbine Enclosures Structure, Foundation and Connections	4
Potable Water Tank Foundation and Connections	1
Ammonia Storage Tank & Pump Foundation and Connections	1
Cooling Tower Foundation and Connections	1
Lube Oil Storage Room Structure, Foundation and Connections	1
Starting Hydraulic Skid Foundation and Connections	4
Performance Skid Foundation and Connections	4
Demineralized Water Filter Skid Foundation and Connections	4
Auxiliary Water Injection Pumps Foundation and Connections	4

Equipment/System	Quantity (Plant)
Air Compressor/Air Dryer Foundation and Connections	1
Oil/Water Separator Foundation and Connections	2
Wash Water Drain Tank Foundation and Connections	2
Ammonia Vaporizer Skid Foundation and Connections	4
Switchgear Building Structure, Foundation and Connections	1
Black Start Generator Foundation and Connections	1
Fire Water Tank Foundation and Connections	1
Fuel Gas Metering Station Structure, Foundation and Connections	1
Fire Water Primary and Emergency Pump Foundation and Connections	1
Auxiliary Cooling Water Pump Foundation and Connections	1
Service/Administration Building Structure, Foundation and Connections	1
Switchyard Control Room Structure, Foundation and Connections	1
115-kV Switchyard Building Structure, Foundation and Connections	1
Potable Water Systems	1 Lot
Drainage Systems (including sanitary drain and waste)	1 Lot
High Pressure and Large Diameter Piping	1 Lot
HVAC and Refrigeration Systems	1 Lot
Temperature Control and Ventilation Systems (including water and sewer connections)	1 Lot
Building Energy Conservation Systems	1 Lot
Switchyard, Buses and Towers	1 Lot
Electrical Duct Banks	1 Lot
Zero Liquid Discharge Facility Structure, Foundation, and Connections	1

GEN-3 The project owner shall make payments to the CBO for design review, plan check and construction inspection based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. These fees may be consistent with the fees listed in the 1998 CBC [Chapter 1, Section 107 and Table 1-A, Building Permit Fees; Appendix Chapter 33, Section 3310 and Table A-33-A, Grading Plan Review Fees; and Table A-33-B, Grading Permit Fees] adjusted for inflation and other appropriate adjustments; may be based on the value of the facilities reviewed; may be based on hourly rates; or may be as otherwise agreed by the project owner and the CBO.

Verification: The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. The project

owner shall send a copy of the CBO's receipt of payment to the CPM in the next Monthly Compliance Report indicating that the applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California registered architect, structural engineer or civil engineer, as a Resident Engineer (RE), to be in general responsible charge of the project [Building Standards Administrative Code (Cal. Code Regs., tit. 24, § 4-209, Designation of Responsibilities).] All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification **TSE-1, TSE-2 and TSE-3** in the **Transmission System Engineering** Section of this document.

Protocol: The RE may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project respectively. A project may be divided into parts, provided each part is clearly defined as a distinct unit. Separate assignment of general responsible charge may be made for each designated part.

The RE shall:

1. Monitor construction progress to ensure compliance with LORS;
2. Ensure that construction of all the facilities conforms in every material respect to the applicable LORS, these Conditions of Certification, approved plans, and specifications;
3. Prepare documents to initiate changes in the approved drawings and specifications when directed by the project owner or as required by conditions on the project;
4. Be responsible for providing the project inspectors and testing agency(ies) with complete and up-to-date set(s) of stamped drawings, plans, specifications and any other required documents;
5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests as not conforming to the approved plans and specifications.

The RE shall have the authority to halt construction and to require changes or remedial work, if the work does not conform to applicable requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least 30 days prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the name, qualifications and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the RE and other delegated engineer(s) within five days of the approval.

If the RE or the delegated engineer(s) are subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: A) a civil engineer; B) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; C) a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; D) a mechanical engineer; and E) an electrical engineer. [California Business and Professions Code section 6704 et seq., and sections 6730 and 6736 requires state registration to practice as a civil engineer or structural engineer in California.] All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification **TSE-1, TSE-2 and TSE-3** in the **Transmission System Engineering** Section of this document.

The tasks performed by the civil, mechanical, electrical or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all engineers assigned to the project. [1998 CBC, Section 104. 2, Powers and Duties of Building Official.]

If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Protocol: A: The civil engineer shall:

Design, or be responsible for design, stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities. At a minimum, these include: grading, site preparation,

excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems; and

Provide consultation to the RE during the construction phase of the project, and recommend changes in the design of the civil works facilities and changes in the construction procedures.

Protocol: B: The geotechnical engineer or civil engineer, experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports, and prepare final soils grading report;
2. Prepare the soils engineering reports required by the 1998 CBC, Appendix Chapter 33, Section 3309.5 – Soils Engineering Report, and Section 3309.6 – Engineering Geology Report;
3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 1998 CBC, Appendix Chapter 33, section 3317, Grading Inspections;
4. Recommend field changes to the civil engineer and RE;
5. Review the geotechnical report, field exploration report, laboratory tests, and engineering analyses detailing the nature and extent of the site soils that may be susceptible to liquefaction, rapid settlement or collapse when saturated under load; and
6. Prepare reports on foundation investigation to comply with the 1998 CBC, Chapter 18, section 1804, Foundation Investigations.

This engineer shall be authorized to halt earthwork and to require changes; if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations. [1998 CBC, section 104.2.4, Stop orders.]

Protocol: C: The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;
2. Provide consultation to the RE during design and construction of the project;
3. Monitor construction progress to ensure compliance with LORS;
4. Evaluate and recommend necessary changes in design; and
5. Prepare and sign all major building plans, specifications and calculations.

Protocol: D: The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design plans, specifications, and calculations conform with all of the mechanical engineering design requirements set forth in the Energy Commission's Decision.

Protocol: E: The electrical engineer shall:

1. Be responsible for the electrical design of the project; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, the project owner shall assign to the project, qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 1998 CBC, Chapter 17, Section 1701, Special Inspections, Section, 1701.5 Type of Work (requiring special inspection), and Section 106.3.5, Inspection and observation program. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification **TSE-1, TSE-2 and TSE-**3 in the **Transmission System Engineering** Section of this document.

Protocol: The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Observe the work assigned for conformance with the approved design drawings and specifications;
3. Furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the CBO and the CPM for corrective action; and
4. Submit a final signed report to the RE, CBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and

specifications and the applicable provisions of the applicable edition of the CBC.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

Verification: At least 15 days prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next Monthly Compliance Report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered, the project owner shall document the discrepancy and recommend the corrective action required. The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, the applicable sections of the CBC and/or other LORS.

Verification: The project owner shall submit monthly construction progress reports to the CBO and CPM. The project owner shall transmit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. When the work and the "as-built" and "as graded" plans conform to the approved final plans, the project owner shall notify the CPM regarding the CBO's final approval. The marked up "as-built" drawings for the construction of structural and architectural work shall be submitted to the CBO. Changes approved by the CBO shall be identified on the "as-built" drawings [1998 CBC, Se ction 108, Inspections.] The project owner shall retain one set of approved engineering plans, specifications and calculations at the project site or at another accessible location during the operating life of the project [1998 CBC, Section 106.4.2, Retention plans.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans. After storing final approved engineering plans, specifications and calculations as described above, the project owner shall submit to the CPM a letter

stating that the above documents have been stored and indicate the storage location of such documents.

CIVIL-1 Prior to the start of site grading, the project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
4. Soils report as required by the 1998 CBC, Appendix Chapter 33, Section 3309.5, Soils Engineering Report and Section 3309.6, Engineering Geology Report.

Verification: At least 15 days prior to the start of site grading, the project owner shall submit the documents described above to the CBO for review and approval. In the next Monthly Compliance Report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible geotechnical engineer or civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area. [1998 CBC, Section 104.2.4, Stop orders.]

Verification: The project owner shall notify the CPM, within five days, when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within five days of the CBO's approval, the project owner shall provide to the CPM a copy of the CBO's approval to resume earthwork and construction in the affected areas.

CIVIL-3 The project owner shall perform inspections in accordance with the 1998 CBC, Chapter 1, Section 108, Inspections; Chapter 17, Section 1701.6, Continuous and Periodic Special Inspection; and Appendix Chapter 33, Section 3317, Grading Inspection. All plant site-grading operations shall be subject to inspection by the CBO and the CPM.

Protocol: If, in the course of inspection, it is discovered that the work is not being done in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report detailing all discrepancies and non-compliance items, and the proposed corrective action, and send copies to the CBO and the CPM.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a Non-Conformance Report (NCR), and the proposed corrective action. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following Monthly Compliance Report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage facilities, the project owner shall obtain the CBO's approval of the final "as-graded" grading plans, and final "as-built" plans for the erosion and sedimentation control facilities [1998 CBC, Section 109, Certificate of Occupancy.]

Verification: Within 30 days of the completion of the erosion and sediment control mitigation and drainage facilities, the project owner shall submit to the CBO the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes. The project owner shall submit a copy of this report to the CPM in the next Monthly Compliance Report.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit to the CBO for review and approval the proposed lateral force procedures for project structures and the applicable designs, plans and drawings for project structures. Proposed lateral force procedures, designs, plans and drawings shall be those for:

1. Major project structures;
2. Major foundations, equipment supports and anchorage;
3. Large field fabricated tanks;
4. Turbine/generator pedestal; and
5. Switchyard structures.

Construction of any structure or component shall not commence until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

Protocol: The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;
2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (i.e., highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with

the structure plans, calculations, and specifications [1998 CBC, Section 108.4, Approval Required]

3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures at least 90 days (or a lesser number of days mutually agreed to by the project owner and the CBO), prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation [1998 CBC, Section 106.4.2, Retention of plans and Section 106.3.2, Submittal documents.] and

4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations and specifications shall be signed and stamped by the responsible design engineer [1998 CBC, Section 106.3.4, Architect or Engineer of Record.]

Verification: At least 30 days prior to the start of any increment of construction, the project owner shall submit to the CBO, with a copy to the CPM, the responsible design engineer's signed statement that the final design plans, specifications and calculations conform with all of the requirements set forth in the Energy Commission's Decision.

If the CBO discovers non-conformance with the stated requirements, the project owner shall resubmit the corrected plans to the CBO within 20 days of receipt of the nonconforming submittal with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and are in conformance with the requirements set forth in the applicable LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;
3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and
5. Reports covering other structural activities requiring special inspections shall be in accordance with the 1998 CBC, Chapter 17, Section 1701, Special Inspections, Section 1701.5, Type of Work (requiring special

inspection), Section 1702, Structural Observation and Section 1703, Nondestructive Testing.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies to the CBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 1998 CBC, Chapter 1, Section 106.3.2, Submittal documents, and Section 106.3.3, Information on plans and specifications, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give the CBO prior notice of the intended filing.

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the Monthly Compliance Report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in Chapter 3, Table 3-E of the 1998 CBC shall, at a minimum, be designed to comply with Occupancy Category 2 of the 1998 CBC.

Verification: At least 30 days prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection

MECH-1 Prior to the start of any increment of major piping or plumbing construction, the project owner shall submit, for CBO design review and approval, the proposed final design, specifications and calculations for each plant major piping and plumbing system listed in **Table 1**, condition of certification **GEN 2**, above. Physical layout drawings and drawings not related to code compliance and life safety need not be submitted. The submittal shall also

include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of said construction [1998 CBC, Section 106.3.2, Submittal Documents, Section 108.3, Inspection Requests, Section 108.4, Approval Required; 1998 California Plumbing Code, Section 103.5.4, Inspection Request, Section 301.1.1, Approval]

Protocol: The responsible mechanical engineer shall submit a signed and stamped statement to the CBO when:

1. The proposed final design plans, specifications and calculations conform with all of the piping requirements set forth in the Energy Commission's Decision; and
2. All of the other piping systems, except domestic water, refrigeration systems and small bore piping have been designed, fabricated and installed in accordance with all applicable ordinances, regulations, laws and industry standards, including, as applicable:

   - American National Standards Institute (ANSI) B31.1 (Power Piping Code);
   - ANSI B31.2 (Fuel Gas Piping Code);
   - ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
   - ANSI B31.8 (Gas Transmission and Distribution Piping Code);
   - Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
   - Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems);
   - Title 24, California Code of Regulations, Part 2 (California Building Code); and
   - Specific City/County code.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency [1998 CBC, Se ction 104.2.2, Deputies]

Verification: At least 30 days prior to the start of any increment of piping construction, the project owner shall submit to the CBO for approval, with a copy of the transmittal letter to the CPM, the above listed documents for that increment of construction of piping systems, including a copy of the signed and stamped engineer's certification of conformance with the Energy Commission's Decision. The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal-OSHA), prior to operation, the code certification papers and other

documents required by the applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of said installation [1998 CBC, Section 108.3 – Inspection Requests.]

Protocol: The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and
2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for review and approval, final design plans, specifications and calculations, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall transmit to the CPM, in the Monthly Compliance Report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal-OSHA inspection approvals.

MECH-3 Prior to the start of construction of any heating, ventilating, air conditioning (HVAC) or refrigeration system, the project owner shall submit to the CBO for review and approval the design plans, specifications, calculations and quality control procedures for that system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

Protocol: The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the applicable edition of the CBC. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of said construction. The final plans specifications and calculations shall include approved criteria, assumptions and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with the applicable LORS [1998 CBC, Section 108.7, Other Ins pections; Section 106.3.4, Architect or Engineer of Record.]

Verification: At least 30 days prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans and specifications, including a copy of the signed and

stamped statement from the responsible mechanical engineer certifying compliance with the applicable edition of the CBC, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for electrical equipment and systems 480 volts and higher, listed below, with the exception of underground duct work and any physical layout drawings and drawings not related to code compliance and life safety, the project owner shall submit, for CBO design review and approval, the proposed final design, specifications and calculations [CBC 1998, Section 106. 3.2, Submittal documents] Upon approval, the above listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS [1998 CBC, Section 108.4, Approval Required, and Section 108.3, Inspection Requests] All transmi ssion facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification in the **Transmission System Engineering** section of this document.

Protocol: The following activities shall be submitted for CBO approval:

A. Final plant design plans to include:
   1. One-line diagrams for the 13.8 kV, 4.16 kV and 480 V systems; and
   2. System grounding drawings.

B. Final plant calculations to establish:
   1. short-circuit ratings of plant equipment;
   2. 2. ampacity of feeder cables;
   3. 3. voltage drop in feeder cables;
   4. 4. system grounding requirements;
   5. 5. coordination study calculations for fuses, circuit breakers and protective relay settings for the 13.8 kV, 4.16 kV and 480 V systems; and
   6. 6. lighting energy calculations.

C. The following activities shall be reported to the CPM in the Monthly Compliance Report:
   1. receipt or delay of major electrical equipment;
   2. testing or energization of major electrical equipment; and
   3. a signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission Decision.

Verification: At least 30 days prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for electrical equipment and systems 480 volts and greater, including a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

REFERENCES

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

GEOLOGY AND PALEONTOLOGY

Testimony of Patrick Pilling, Ph.D., P.E., G.E.

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

CHANGES IN LAWS, THE ENVIRONMENT, OR THE PROJECT

Staff has determined that there have not been any appreciable changes in the environment, final design, and current operations of Phase 1 as originally permitted that require any significant adjustment to the existing Conditions of Certification. The following changes in LORS are applicable to the Phase I facility.

Changes in Laws, Ordinances, Regulations, and Standards

The 2001 California Building Code (CBC) has been adopted and supersedes the 1998 CBC. The project was originally permitted under the 1998 CBC, whereas the 2001 CBC is now in effect; however, there are no significant changes to the 1998 CBC, which have been incorporated into the 2001 CBC, with respect to geologic hazards that will affect the Phase I facility.

The site has recently been identified by the California Geological Survey (CGS, 2004) as being located in an area of possible liquefaction as defined by the Seismic Hazards Mapping Act (1998). This delineation requires that a site-specific investigation be performed to determine whether a significant hazard exists and, if so, recommendations to mitigate its effect on a structure before a permit can be issued. Since a site-specific geotechnical investigation that includes a liquefaction analysis of the site was and is required by the 1998 and 2001 CBC, respectively, the CBC standards satisfy the requirements of the Seismic Hazards Mapping Act.

Conditions of Certification found in the Facility Design section, specifically, **GEN-1, GEN-5, and CIVIL-1** address CBC requirements concerning engineering geology and site specific geological hazards. These Conditions of Certification, adopted in the July 2, 2002 Commission Decision, are expected to mitigate potential project impacts outlined above to a less than significant level. As a result, no additional Conditions of Certification with respect to geologic hazards are considered necessary.

CONDITIONS OF CERTIFICATION

PAL-1 Prior to ground disturbance, the project owner shall ensure that the designated paleontological resource specialist approved by the CPM is available for field activities and prepared to implement the conditions of certification.

The designated paleontological resources specialist shall be responsible for implementing all the paleontological conditions of certification and for using qualified personnel to assist in this work.

Protocol: The project owner shall provide the CPM with the name and statement of qualifications for the designated paleontological resource specialist.

The statement of qualifications for the designated paleontological resources specialist shall demonstrate that the specialist meets the following minimum qualifications: a degree in paleontology or geology or paleontological resource management and at least three years of paleontological resource mitigation and field experience in California, including at least one year's experience leading paleontological resource mitigation and field activities.

The statement of qualifications shall include a list of specific projects the specialist has previously worked on; the role and responsibilities of the specialist for each project listed; and the names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

If the CPM determines that the qualifications of the proposed paleontological resource specialist do not satisfy the above requirements, the project owner shall submit another individual's name and qualifications for consideration.

If the approved, designated paleontological resource specialist is replaced prior to completion of project mitigation, the project owner shall obtain CPM approval of the new designated paleontological resource specialist by submitting the name and qualifications of the proposed replacement to the CPM, at least 10 days prior to the termination or release of the preceding designated paleontological resource specialist.

Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

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:

1) BS or BA degree in geology or paleontology and one year experience monitoring in California; or
2) AS or AA in geology, paleontology or biology and four years experience monitoring in California; or
3) Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification: 1) At least sixty (60) days prior to the start of construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall submit the name, statement of qualifications, and the availability for its

designated paleontological resource specialist, to the CPM for review and approval. The CPM shall approve or disapprove of the proposed paleontological resource specialist.

2) At least twenty (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 for approval. The letter shall be provided to the CPM no later than one week prior to the monitor beginning on-site duties.

3) At least ten (10) days prior to the termination or release of a designated paleontological resource specialist, the project owner shall obtain CPM approval of the replacement specialist by submitting to the CPM the name and resume of the proposed new designated paleontological resource specialist. Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

PAL-2 Prior to site mobilization, the designated paleontological resource specialist shall prepare a Paleontological Resources Monitoring and Mitigation Plan to identify general and specific measures to minimize potential impacts to sensitive paleontological resources, and submit this plan to the CPM for review and approval. After CPM approval, the project owner's designated paleontological resource specialist shall be available to implement the Monitoring and Mitigation Plan, as needed, throughout project construction. Protocol: The project owner shall develop a Paleontological Resources Monitoring and Mitigation Plan in accordance with the guidelines of the Society of Vertebrate Paleontologists (SVP, 1994) that shall include, but not be limited to, the following elements and measures:

1) A discussion of the sequence of project-related tasks, such as any pre-construction surveys, fieldwork, flagging or staking; construction monitoring; mapping and data recovery; fossil preparation and recovery; identification and inventory; preparation of final reports; and transmittal of materials for curation;

2) Identification of the person(s) expected to assist with each of the tasks identified within this condition for certification, a discussion of the mitigation team leadership and organizational structure, and the inter-relationship of tasks and responsibilities;

3) Where monitoring of project construction activities is deemed necessary, the extent of the areas where monitoring is to occur and a schedule for the monitoring;

4) An explanation that the designated paleontological resource specialist shall have the authority to halt or redirect construction in the immediate vicinity of a vertebrate fossil find until the significance of the find can be determined.

5) A discussion of equipment and supplies necessary for recovery of fossil materials and any specialized equipment needed to prepare, remove,

load, transport, and analyze large-sized fossils or extensive fossil deposits;

6) Inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meets the Society of Vertebrate Paleontologists standards and requirements for the curation of paleontological resources; and,

7) Identification of the institution that has agreed to receive any data and fossil materials recovered during project-related monitoring and mitigation work, discussion of any requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution.

Verification: At least forty-five (45) days prior to the start of construction, the project owner shall provide the CPM with a copy of the Paleontological Resources Monitoring and Mitigation Plan prepared by the designated paleontological resource specialist for review and approval. If the plan is not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to discuss comments and negotiate necessary changes.

PAL-3 Prior to the ground disturbance, and throughout the project construction period as needed for all new employees, the project owner and the designated paleontological resource specialist shall prepare, and the owner shall conduct, CPM-approved training to all project managers, construction supervisors, and workers who operate ground disturbing equipment. The project owner and construction manager shall provide the workers with the CPM-approved set of procedures for reporting any sensitive paleontological resources or deposits that may be discovered during project-related ground disturbance.

Protocol: The paleontological training program shall discuss 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.

The training shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during project activities. The training program shall be presented by the designated paleontological resource specialist and may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

Verification: At least thirty (30) days prior to site mobilization, the project owner shall submit to the CPM for review and approval the proposed employee training program and the set of reporting procedures the workers are to follow if paleontological resources are encountered during project construction.

If the employee-training program and set of procedures are not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to

discuss comments and negotiate necessary changes before the beginning of construction.

Documentation for training of additional new employees shall be provided in subsequent Monthly Compliance Reports, as appropriate.

PAL-4 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.
3) The PRS shall immediately notify the project owner 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.

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 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 in the Monthly Compliance Report.

PAL-5 The project owner, through the designated paleontological resource specialist, shall ensure 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.

Verification: The project owner shall maintain in its compliance files copies of signed contracts or agreements with the designated paleontological resource specialist and other qualified research specialists who will ensure the necessary data and fossil recovery, mapping, preparation for analysis, analysis, identification and inventory, and preparation for and delivery of all significant paleontological resource materials collected during data recovery and mitigation for the project. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved Paleontological Resources Report and shall keep these files available for periodic audit by the CPM.

PAL-6 The project owner shall ensure preparation of a Paleontological Resources Report by the designated paleontological resource specialist. The Paleontological Resources Report shall be completed following completion of the analysis of the recovered fossil materials and related information. The project owner shall submit the paleontological report to the CPM for approval.

Protocol: The report shall include (but not be limited to) a description and inventory list of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the paleontological resource specialist that project impacts to paleontological resources have been mitigated.

Verification: Within ninety (90) days following completion of the analysis of the recovered fossil materials, the project owner shall submit a copy of the Paleontological Resources Report to the CPM for review and approval under a cover letter stating that it is a confidential document.

REFERENCES

CEC (California Energy Commission) 2001. Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). December 31, 2001.

CEC (California Energy Commission) 2002a. Supplement to the Staff Assessment for Los Esteros Critical Energy Facility Project (01-AFC-12). February 5, 2002.

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

CEC (California Energy Commission) 2004. Commission Order Approving Project Modification: Approving a Shorter Temporary Transmission Tap Line (Order No 04-0121-06). January 21, 2004.

CBC (California Building Code). 2001.

CBC (California Building Code). 1998.

California Geological Survey (CGS), 2004. State of California Seismic Hazard Zones, Milpitas Quadrangle, Preliminary Revised Map.

California Geological Survey, 1998. Chapter 7, 8, Division 2 of the California Public Resources Code (Seismic Hazards Mapping Act).

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004a. Data Adequacy Supplement to Application for Certification 03-AFC-2. March, 17, 2004.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2004b. Response to California Energy Commission Staff Data Requests 1-57. April 30, 2004.

POWER PLANT EFFICIENCY

Testimony of Shahab Koshmashrab

INTRODUCTION

Staff has reviewed the **Power Plant Efficiency** section of the original Commission Decision for the Los Esteros Critical Energy Facility (LECEF) (the Decision) which, based on staff's analysis and findings, concluded that the LM6000 Sprint gas turbine model employed in the project, with its incorporation of water spray intercooling between the machine's two compressor stages, would yield the greatest net power output and the highest fuel efficiency among the various models available for simple-cycle plants (CEC 2002b). The applicant, in Phase 1 of the new Application for Certification, is seeking to re-license the current simple-cycle project (LECEF 2003).

ENGINEERING ASSESSMENT

Staff believes that the LM6000 Sprint model in simple-cycle configuration still represents the most fuel efficient technology available to satisfy the project objectives of providing peaking and load following power.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

As described in the Decision, the only LORS applicable to the project's efficiency are set forth in the California Environmental Quality Act (CEQA) guidelines (CEC 2002b). (These requirements are restated below.) Staff believes if Phase 1 is approved as proposed, the LECEF, operating with these LM6000 Sprint machines in the current simple-cycle configuration, will continue to meet the CEQA requirements. The project will not:

- create adverse effects on energy supplies and energy resources;
- require additional energy supply capacity; or
- consume natural gas in a wasteful, inefficient, or unnecessary manner.

CHANGE TO EXISTING CONDITIONS OF CERTIFICATION

The **Power Plant Efficiency** section of the Decision includes Condition of Certification **EFF-1**, requiring the applicant to recertify, convert the project to a combined-cycle generating facility, or close the plant permanently, within three years of the date of the original license (CEC 2002b). By submitting the new application (LECEF 2003), which seeks recertification and includes seeking a license to convert the project to combined-cycle configuration (Phase 2), the applicant will meet this condition upon approval by the Energy Commission. Therefore, staff proposes to delete **EFF-1**, below.

EFF-1 ~~The project owner shall either convert the project to a combined-cycle generating facility employing best available air emissions control technology, or shall close the plant permanently, within a period of three years from the date of this Energy Commission decision, in accordance with Public Resources Code section 25552(e)(5)(B)~~.

~~**Verification:** Within one year of the date of this Energy Commission decision, the project owner shall submit to the CPM, for review and approval, a schedule for submitting an Application for Certification for conversion of the project to a combined-cycle facility employing best available air emissions control technology. Alternatively, within one year of the date of this Energy Commission decision, the project owner shall submit to the CPM, for review and approval, a schedule for submitting a Facility Closure Plan. Either the AFC or the Closure Plan shall be pursued on a schedule that ensures that the project will be either converted to a combined cycle facility or permanently closed within three years of this Energy Commission decision.~~

The project will not require any additional analysis from the standpoint of power plant efficiency.

REFERENCES

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

POWER PLANT RELIABILITY

Testimony of Shahab Koshmashrab

INTRODUCTION

Staff has reviewed the **Power Plant Reliability** section of the original Commission Decision for the Los Esteros Critical Energy Facility (LECEF) which, based on staff's analysis and findings, concluded the following:

1. The equipment availability, redundancy, maintenance, quality assurance, and quality control factors will likely ensure that the LECEF meets industry norms for reliability.
2. The LECEF will likely be constructed to resist potential natural hazards such as flooding and seismic shaking.
3. Fuel supplies for the proposed project are available in quantities sufficient to ensure reliable project operation.
4. Water supplies for the proposed project are available in sufficient quantities to meet project needs.
5. The project will not degrade the overall reliability of the electrical system or contribute to a cumulative adverse impact to such system (CEC 2002b).

The applicant, in Phase 1 of the new Application for Certification, is seeking to re-license the current simple-cycle project (LECEF 2003).

ENGINEERING ASSESSMENT

Staff believes if Phase 1 is approved as proposed, the LECEF will continue to operate in a manner consistent with industry norms for reliable operation and will continue to satisfy the project objectives of providing peaking, load following and/or baseload power. The conclusions and findings stated above will remain unchanged and staff notes that the project has already been constructed to resist potential natural hazards.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

As with the original license, no LORS apply to power plant reliability.

CHANGE TO EXISTING CONDITIONS OF CERTIFICATION

There are no Conditions of Certification in the area of **Power Plant Reliability**.

REFERENCES

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

TRANSMISSION SYSTEM ENGINEERING

Testimony of Mark Hesters and Al McCuen

SUMMARY OF PHASE 1 REVIEW AND ANALYSIS

Staff has reviewed the information presented for Phase 1 contained in the current AFC (03-AFC-2). In addition to the current AFC, staff has reviewed the Commission Decision for the original LECEF (01-AFC-12) dated July 2002, the Staff Assessment for that AFC dated December 31, 2001, and the Staff Assessment Supplement dated February 5, 2002. Staff has also incorporated the Commission Order 04-121-06 Approving Project Modification dated January 21, 2004, and is adding conditions of certification **TSE-A1** and **TSE-A2**. The order approving the tap interconnection required a new 3-phase selector/disconnect switch for operational reliability and flexibility (**TSE-A2**), and limited its use to July 2, 2005, due to concerns that operation beyond 2005 might cause system reliability violations, and because July 2, 2005, is also the date the original license to operate the project expires. Calpine has provided supporting information indicating that there are no system reliability violations so long as the project remains at or below 195 MW gross output. This information is contained in a System Impact/Facility Study issued by PG&E on March 24, 2003, for LECEF Alternative Temporary Interconnections, and a letter from the Cal-ISO dated May 20, 2003, as well as information in the new AFC (03-AFC-2). This information supports the following conclusions:

- Continuation of the current tap to the Los Esteros Substation-Nortech line will not have any unmitigated adverse impacts on the transmission system as long as the facility operates in simple-cycle mode with a gross output of 195 MW or less.
- The California Independent System Operator has concluded that the facility can remain on the 152 foot tap interconnection so long as it operates as a simple-cycle plant with an output of 195 MW or less. (ISO letter dated April 27, 2004.)
- The Cal-ISO letter, coupled with the installation of disconnect switches, results in no concern regarding system reliability violations beyond 2005.
- The existing LECEF interconnection tap line protection scheme is adequate to assure conformance with system reliability standards.
- The current interconnection tap line will continue to comply with LORS.

If the new LECEF Application for Certification (Phase 1) is granted, the project owner will continue to use the current interconnection to PG&E so long as the facility remains in simple-cycle mode with a gross output of 195 MW or less.

Based upon review of the Commission Decision of July 2, 2002 for LECEF, Commission Order 04-121-06 approving a different tap line interconnection, related documents, and new information presented in the current LECEF AFC (03-AFC-2), staff concludes that no additional conditions of certification are needed to ensure that the project is properly

maintained to assure public health and safety, and to ensure compliance with all applicable engineering LORS[1].

CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: At least 60 days prior to the start of construction, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **Table 1: Major Equipment List** below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Table 1: Major Equipment List
Breakers
Step-up transformer
Switchyard
Busses
Surge Arrestors
Disconnects
Take off facilities
Electrical Control Building
Switchyard control building
Transmission Pole/Tower

TSE-2 Prior to the start of construction the project owner shall assign an electrical engineer and at least one of each of the following to the project: A) a civil engineer; B) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; C) a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; or D) a mechanical engineer. [California Business and Professions Code section 6704 et seq., and sections 6730 and 6736 requires state registration to practice as a civil engineer or structural engineer in California.]

[1] Commission order 04-121-06 for LECEF Phase 1 permits the current tap line interconnection to operate temporarily until July 2, 2005.

The tasks performed by the civil, mechanical, electrical or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer. The civil, geotechnical or civil and design engineer assigned in conformance with Facility Design condition **GEN-5**, may be responsible for design and review of the TSE facilities.

The project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer. This engineer shall be authorized to halt earthwork and to require changes; if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations.

The electrical engineer shall:

A. Be responsible for the electrical design of the power plant switchyard, outlet and termination facilities; and

B. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

TSE-3 The project owner shall keep the CBO informed regarding the status of engineering design and construction. If any discrepancy in design and/or construction is discovered, the project owner shall document the discrepancy and recommend the corrective action required. The discrepancy documentation shall become a controlled document and shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification.

Verification: The project owner shall submit monthly construction progress reports to the CBO and CPM to be included in response to **TSE-3**. The project owner shall transmit a copy of the CBO's approval or disapproval of any corrective action taken to

resolve a discrepancy to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

TSE-4 For the power plant switchyard, outlet line and termination, the project owner shall not begin any increment of construction until plans for that increment have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the Monthly Compliance Report:

A. Receipt or delay of major electrical equipment;

B. Testing or energization of major electrical equipment; and

C. The number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least 30 days prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

TSE-5 The project owner shall ensure that the design, construction and operation of the proposed transmission facilities will conform to all applicable LORS, including the requirements listed below. The substitution of Compliance Project Manager (CPM) and CBO approved "equivalent" equipment and an equivalent substation configuration is acceptable. The project owner shall submit the required number of copies of the design drawings and calculations as determined by the CBO.

A. The power plant switchyard and outlet line shall meet or exceed the electrical, mechanical, civil and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC), CPUC GO 128, Title 8 of the California Code and Regulations (Title 8), Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", National Electric Code (NEC) and related industry standards.

B. Breakers and buses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

C. Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

D. Termination facilities shall comply with applicable PG&E interconnection standards.

E. The project conductors shall be sized to accommodate the full output from the project.

F. The project owner shall provide:

1. The final Detailed Interconnection Facility Study (DIFS) including a description of facility upgrades, operational mitigation measures, and/or Remedial Action Scheme (RAS) sequencing and timing if applicable,

2. Executed Generation Interconnection Facility Agreement,

3. Verification of Cal-ISO Notice of Synchronization.

Verification: At least 60 days prior to the start of construction of transmission facilities, the project owner shall submit to the CBO for approval:

Design drawings, specifications and calculations conforming with CPUC General Order 95 or NESC, CPUC GO 128, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, CPUC Rule 21, applicable interconnection standards and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems and major switchyard equipment.

For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"[2] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or NESC, CPUC GO 128, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, CPUC Rule 21, applicable interconnection standards and related industry standards.

Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements TSE-5A through F above.

The Facilities Study and Generation Interconnection Facility Agreement shall be provided concurrently to the CPM and CBO.

TSE-6 The project owner shall inform the CPM and CBO of any impending changes, which may not conform to the requirements **TSE-5A** through **F**, and have not received CPM and CBO approval, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment or substation configurations shall not begin without prior written approval of the changes by the CBO and the CPM.

Verification: At least 60 days prior to the construction of transmission facilities, the project owner shall inform the CBO and the CPM of any impending changes which may not conform to requirements of **TSE-5** and request approval to implement such changes.

[2] Worst case conditions for the foundations would include for instance, a dead-end or angle pole.

TSE-7 The applicant shall provide the following Notice to the California Independent System Operator (Cal-ISO) prior to synchronizing the facility with the California Transmission system:

A. At least one (1) week prior to synchronizing the facility with the grid for testing, provide the Cal-ISO a letter stating the proposed date of synchronization; and

B. At least one (1) business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 to 1530 at (916)-351-2300.

Verification: The applicant shall provide copies of the Cal-ISO letter to the CPM when it is sent to the Cal-ISO one (1) week prior to initial synchronization with the grid. A report of conversation with the Cal-ISO shall be provided electronically to the CPM one (1) day before synchronizing the facility with the California transmission system for the first time.

TSE-8 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC General Order 95 or NESC, CPUC GO 128, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, CPUC Rule 21, applicable interconnection standards and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

"As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC General Order 95 or NESC, CPUC GO 128, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, CPUC Rule 21, applicable interconnection standards and related industry standards, and these conditions shall be provided concurrently.

An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built" drawings of the mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the "Compliance Monitoring Plan;" and

A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge.

The following conditions of certification were added as part of the order approving the project modification.

CONDITIONS OF CERTIFICATION PER ENERGY COMMISSION ORDER 04-121-06

TSE-A1: The new temporary tap interconnection shall consist of an approximately 152 foot transmission line under-crossing of the two double circuit PG&E 115 kV steel pole lines (running generally North/South) immediately adjacent to the LECEF power plant switchyard to a hard wire tap of the Nortech-PG&E Los Esteros Substation circuit utilizing three wood poles. The cable size shall be 795 ACSS.

Verification: This configuration has been implemented and conforms to existing LORS.

TSE-A2: To provide adequate operational reliability and flexibility for the new temporary interconnection, a three-phase disconnect/selector switch shall be installed at the interconnection tap point with the Nortech-PG&E Los Esteros Substation 115 kV line to be coordinated between Calpine and PG&E. At the interconnection tap point the switch is required for the circuit to the Nortech Substation.

Verification: The three-phase disconnect/selector switch has been installed.

REFERENCES

Cal-ISO (California Independent System Operator). 2003. Review of LECEF Alternative Temporary Interconnections. March 24, 2003.

CEC (California Energy Commission) 2002b. Los Esteros Critical Energy Facility Project (01-AFC-12) Commission Decision. July 2, 2002.

CEC (California Energy Commission) 2004. Commission Order Approving Project Modification: Approving a Shorter Temporary Transmission Tap Line (Order No 04-0121-06). January 21, 2004.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Los Esteros Critical Energy Facility 2 Application for Certification (03-AFC-2). December 30, 2003.

LECEF, LLC. (Los Esteros Critical Energy Facility, LLC) 2003. Amendment 3 for the Los Esteros Critical Energy Facility (03-AFC-2). July 28, 2004.

ALTERNATIVES

Testimony of Robert Worl

INTRODUCTION

This section considers potential alternatives to the recertification and continued operation of the Los Esteros Critical Energy Facility power plant (LECEF). LECEF is a 180 MW (195 MW gross output) simple-cycle power plant located in north San Jose, Santa Clara County. The purpose of this alternatives analysis is to comply with California's environmental laws by providing an analysis of a reasonable range of feasible alternatives that could reduce or avoid any potentially significant adverse impacts of the proposed project (Cal. Code Regs., tit. 14, §15126.6; Cal. Code Regs., tit. 20, §1765).

Staff reviewed the Commission Decision and the Staff Assessment for the original LECEF project. Two alternative sites and alternative technologies to the project were considered at that time. Since the LECEF is already constructed and began commercial operation March 7, 2003, consideration of alternative sites and technologies were not considered in this analysis. Focus was primarily on the impacts of not recertifying the LECEF and having LECEF cease operations effective July 2, 2005. This type of analysis is known as the No Project Alternative under CEQA.

Staff's analysis for the recertification of LECEF has identified and proposed an alternative means of handling return waste water after it has been used for plant processes and cooling. Currently, recycled water is treated on-site and utilized for cooling, for injection into the turbines to assist in controlling emissions and to add power. Return water from these processes may be re-circulated through the treatment system and used more than one time. However, problems caused by water-borne silicon and other contaminants have limited the cycles of concentration. This increases the amount of recycled water used, and the amount of waste water returned to the Water Pollution Control Plant to volumes beyond those originally modeled. Staff initially considered an alternate means of controlling the impacts from waste water return through the installation of zero liquid discharge (ZLD) equipment. Calpine, the City of San Jose and staff worked together to find a solution which fit the needs of the project and addressed the water use issue without the need for a ZLD system. The mitigation proposed to address the impacts is presented in the **Soils and Water** section and not in this Alternatives discussion.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The "Guidelines for Implementation of the California Environmental Quality Act," Title 14, California Code of Regulations Section 15126.6(a), requires an evaluation of the comparative merits of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project." In addition, the analysis must address the No Project Alternative (Cal. Code Regs., tit. 14, §15126.6(e)).

The range of alternatives is governed by the “rule of reason” which requires consideration only of those alternatives necessary to permit informed decision-making and public participation. The California Environmental Quality Act (CEQA) states that an environmental document does not have to consider an alternative if its effect cannot be reasonably ascertained and if its implementation is remote and speculative (Cal. Code Regs., tit. 14, §15125(d)(5)). However, if the range of alternatives is defined too narrowly, the analysis may be inadequate (City of Santee v. County of San Diego (4th Dist. 1989) 214 Cal. App. 3d 1438).

PROJECT OBJECTIVES

After studying the current Application for Certification (03-AFC-2), the Staff Assessment and Commission Decision in the original license proceeding (01-AFC-12) the Energy Commission staff has determined the Los Esteros Critical Energy Facility (LECEF) project objectives remain:

- To provide electrical energy in the deregulated power market;
- To be located near key infrastructure including transmission line interconnections, supplies of natural gas, and recycled water;
- Add support and reliability to the North San Jose Transmission Reinforcement Project recently approved by the CPUC; and
- To provide a reliable source of energy for the future U.S. Dataport facility, mitigating the diesel-fueled reliable energy center in that original proposed development;
- LECEF began commercial operation on March 7, 2003.

ANALYSIS OF ALTERNATIVE SITES

PROJECT SITE

The LECEF power plant is located at 800 Thomas Foon Chew Way in north San Jose, Santa Clara County, California.

ALTERNATIVE SITES

Two alternative sites were reviewed and rejected as being inferior during the original siting process for LECEF (CEC, 2001). The LECEF site itself was viewed as a preferred alternative site for the Metcalf Energy Center siting case approved by the Energy Commission in 2001. Because the project is already constructed and operating, no alternative sites are considered for the Phase 1 relicensing.

Conclusion Regarding The Existing Site

Staff believes that with the mitigation already provided by LECEF, LLC, and updated by staff in this FSA, the impacts of the operation of the LECEF have been, and will remain, mitigated to a less than significant level for all technical areas. Some of the additional mitigation staff has been developed through discussion with the applicant during our SA workshops.

NO PROJECT ALTERNATIVE

The California Independent System Operator (ISO) has analyzed the electric reliability problems of the greater San Jose area and concluded that more local generation is needed. Such generation greatly reduces stress on the transmission system and increases critical reliability margins. The LECEF project was licensed in an expedited process in 2002 to provide additional local generation, with attendant reliability benefits. The ISO and Energy Commission staff had previously identified the LECEF project location as an ideal location that would maximize the benefits of new generation for overall electricity grid reliability. The Commission has previously analyzed numerous San Jose area sites in the Metcalf Energy proceedings, and concluded that benefits of locating a project at the LECEF site included important line loss savings, a reduction of reliability must run concerns, and the ability to provide Bay Area grid reliability benefits (Metcalf Energy Center Commission Decision, p. 451, September 24, 2001).

The need for new generation in the region remains significant. Estimated need for the North San Jose area is 800 MW in 2004, rising to 900 MW by 2008. With the completion of the 120 MW PICO power plant, the North San Jose area will have approximately 420 MW of “internal” generating capacity. Even with the proposed future conversion of LECEF to combined cycle mode (adding an additional 140 MW) local generation will only account for approximately 65 percent of the area’s peak power demand, requiring continued import of 300 MW in 2008 (PG&E, 2004, pp. 4 and 5).

If the project is not re-licensed (“no project”), the increased system reliability benefits of LECEF will be forgone, and new generation projects will presumably be needed in other San Jose locations. Moreover, the use of the excellent site location near existing substations and switchyards would not be utilized. Pursuant to licensing conditions, the project would be dismantled and removed. The land might be returned to agricultural uses, or it might be developed in some other manner that is unforeseeable. If the current zoning designations for the U.S. Dataport (USDP) server farm remain in place, the land might remain unutilized until that project is eventually built. However, if USDP is built at a later date, “no project” would deprive that server farm of the reliable on-site backup power source that was considered necessary to make that project feasible. The original backup power proposal for USDP was more than 100 MW of diesel backup generators; LECEF was proposed as a cleaner, more environmentally acceptable alternative generation backup for the USDP project. If LECEF is not re-licensed, it is unclear what, if any, backup power source would be available to support a future USDP project. However, it is noteworthy that the diesel backup generator proposal would result in air pollutant emissions that are at least an order of magnitude greater than those of the LECEF.

If the project is re-licensed, it will continue to emit criteria pollutants into the greater San Jose region. Although the facility is a very modern and relatively clean gas-fired project these emissions may contribute to regional smog, and may add a slight contribution to nitrogen deposition on sensitive serpentine soils downwind of the project that host listed endangered species that rely on such soils. However, if the project is not re-licensed, it is relatively likely that additional generation sources will be built elsewhere in the region that will have similar environmental impacts. Moreover, it is doubtful that these future projects would have as beneficial a location for the purposes of transmission system

reliability. If the locations of future generation capacity is less optimal, the system will be somewhat less efficient, requiring some level of generation greater than that of LECEF to achieve a similar level of reliability.

The No Project Alternative under CEQA assumes that the LECEF project license is not renewed and the power plant is closed and removed. In the CEQA analysis, the No Project Alternative is compared to the proposed project and determined to be superior, equivalent, or inferior to it. The CEQA Guidelines state that "the purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (Cal. Code Regs., tit. §15126.6(i)). Toward that end, the No Project analysis considers "existing conditions" and "what would be reasonably expected to occur in the foreseeable future if the project were not approved…" (§15126.6(e)(2)).

The LECEF was constructed under the Energy Commission's expedited power plant review process, which was intended to provide power within a short timeframe to serve California's growing demand. The need for electricity capacity in the region, and the state, has not lessened. Estimated need for the North San Jose area is 800 MW in 2004, rising to 900 MW by 2008. The San Jose and Silicon Valley generally have an even greater need for additional local generation capacity (Metcalf Energy Center Commission Decision, p. 99, September 24, 2001).

In the original LECEF AFC, Calpine stated that the "No Project" Alternative would not provide increased peaking generation to serve the State's electricity demand. Also, the "No Project" Alternative would eliminate the expected benefits that the LECEF project brings to San Jose and the Northeastern Transmission System Reinforcement Project service area, including increased property taxes, employment, sales taxes, and sales of services. When all of the factors discussed above are considered, the project appears to be environmentally superior when compared to the "no project" alternative.

ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

LECEF has been constructed, has begun commercial operation, and is seeking recertification of its current 3-year license for the life of the project. No alternative technology, site, or demand-reduction program provides a practical alternative, or has the ability to replace the 180 MW electrical output of the LECEF in the North San Jose area served by the project. Alternative generation typically has specific resource needs, environmental impacts, permitting difficulties, and intermittent availability. Therefore, these technologies do not fulfill a basic objective of the proposed project to provide peaking, load-serving or load-following capability in order to ensure a reliable supply of electricity for north San Jose and California.

CONCLUSIONS

Staff does not consider alternative technologies (solar, wind, biomass, and hydroelectric) to be feasible alternatives to the recertification of the LECEF. While the No Project Alternative would eliminate all impacts of this project, it would also reduce the available reliable power for the North San Jose area and the statewide grid by 180

net MW. This would ensure that environmental impacts could be shifted to other power plant locations where impacts might be greater than those that would result from the continued operation of the LECEF.

No alternative sites were proposed by the applicant or by staff as the proposed project is a fully operational power plant interconnected to the grid and needing no additional linear facility construction or expansion.

Staff believes that, if the mitigation identified by staff in this Final Staff Assessment is implemented, the impacts of the continued operation of the LECEF as a simple-cycle facility with 180 MW capacity can be mitigated to an insignificant level.

REFERENCES

Aspen, (Aspen Environmental Group). 2001. Draft report prepared for the California Energy Commission on assessment of alternative generation technologies, December, 2001.

Beck, Fredric, and Singh, Virinder et al. (Beck et al.). 2001. *Renewable Energy for California: Benefits, Status and Potential,* Washington, DC: Renewable Energy Policy Project, August 24, 2001. p.17.

CEC (California Energy Commission). 2001. Commission Decision for Metcalf Energy Center, 99-AFC-3. Publication No. P800-01-023. p. 451.

CEC (California Energy Commission). 2004a. Internet Website at http://www.energy.ca.gov/wind/overview.html.

____. 2004b. Internet Website at http://www.energy.ca.gov/maps/wind_map.html.

_____. 2004c. Internet Website at http://www.energy.ca.gov/development/biomass/biomass.html.

____. 2004d. Internet Website at http://www.energy.ca.gov/maps/geothermal_map.html.

PG&E (Pacific Gas & Electric Company) 2004. System Impact Study and Facilities Study for Silicon Valley Power/Calpine 230 kV Switching Station and LECEF Interconnection into PG&E's Los Esteros Substation. Updated Draft, July 6, 2004.

GENERAL CONDITIONS
INCLUDING
COMPLIANCE MONITORING AND CLOSURE PLAN
FOR LOS ESTEROS CRITICAL ENERGY FACILITY
CURRENTLY IN OPERATION

Testimony of Lance Shaw

INTRODUCTION

The Compliance Monitoring and Closure process Compliance Plan) have been established as part of the project general conditions of certification and is required by Public Resources Code section 25532. The plan provides a means for assuring that this facility is operated and closed in compliance with air and water quality, public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission (Energy Commission) and specified in the written decision on the Application for Certification or otherwise required by law.

The Compliance Plan is composed of elements that:

- set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- state procedures for settling disputes and making post-certification changes;
- state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions;
- establish requirements for facility closure plans; and
- specify conditions of certification that follow each technical area that contain the measures required to mitigate any and all potential adverse project impacts associated with operation and closure to an insignificant level. Each specific condition of certification also includes a verification provision that describes the method of assuring that the condition has been satisfied.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

A Compliance Project Manager (CPM) will oversee the compliance monitoring and closure process of the facility and shall be responsible for:

1. ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Energy Commission Decision;
2. processing post-certification changes to the conditions of certification, project description, and ownership or operational control;

3. documenting and tracking compliance filings;
4. ensuring that the compliance files are maintained and accessible; and
5. receiving and resolving complaints.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies and the Energy Commission when handling disputes, complaints and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval the approval will involve all appropriate staff and management.

The Energy Commission has established a toll free compliance telephone number of **1-800-858-0784** for the public to contact the Energy Commission about power plant or operation-related questions, and complaints or concerns.

ENERGY COMMISSION RECORD

The Energy Commission shall maintain as a public record, in either the Compliance file or Docket file, for the life of the project (or other period as required):

- all documents demonstrating compliance with any legal requirements relating to the operation of the facility;
- all annual compliance reports filed by the project owner;
- all complaints of noncompliance filed with the Energy Commission; and
- all petitions for project or condition changes and the resulting staff or Energy Commission action.

PROJECT OWNER RESPONSIBILITIES

It is the responsibility of the project owner to ensure that the general compliance conditions and the conditions of certification are satisfied. The general compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, compliance conditions, or ownership. Failure to comply with any of the conditions of certification or the general compliance conditions may result in reopening of the case and revocation of Energy Commission certification, an administrative fine, or other action as appropriate. A summary of the General Conditions of Certification is included as **Compliance Table 1** at the conclusion of this section. The designation after each of the following summaries of the General Compliance Conditions (**COM-1, COM-2,** etc.) refers to the specific General Compliance Condition contained in **Compliance Table 1.**

GENERAL CONDITIONS OF CERTIFICATION

COM-1, Unrestricted Access

The CPM, responsible Energy Commission staff, and delegate agencies or consultants, shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the files and records maintained on site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

COM-2, Compliance Record

The project owner shall maintain project files onsite, or at an alternative site approved by the CPM, for the life of the project unless a lesser period of time is specified by the conditions of certification. The files shall contain copies of all “as-built” drawings, all documents submitted as verification for conditions, and all other project-related documents.

COM-3, Compliance Verification Submittals

Each condition of certification is followed by a means of verification. The verification describes the Energy Commission’s procedure(s) specifically tailored to each AFC to ensure post-certification compliance with adopted conditions.

Verification of compliance with the conditions of certification can be accomplished by:

1. adhering to the procedures spelled out in the verification;
2. reporting on the work done and providing the pertinent documentation in annual compliance reports filed by the project owner or authorized agent as required by the specific conditions of certification;
3. providing appropriate letters from delegate agencies verifying compliance;
4. Energy Commission staff audits of project records; and/or
5. Energy Commission staff inspections of mitigation or other evidence of mitigation.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the involved condition(s) of certification by condition number and include a brief description of the subject of the submittal**. The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: “This submittal is for information only and is not required by a specific condition of certification.” When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All submittals shall be addressed as follows:

Lance Shaw
Compliance Project Manager
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

If the project owner desires Energy Commission staff action by a specific date (allowing sufficient lead time for the CPM to process the amendment to the conditions of certification) the owner shall so state in the submittal and include a detailed explanation of the effects on the project if this date is not met.

COMPLIANCE REPORTING

During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the annual compliance reports.

COM-5, Compliance Matrix

A compliance matrix shall be submitted by the project owner to the CPM along with each and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all compliance conditions in a spreadsheet format. The compliance matrix must identify:

Satisfied conditions do not need to be included in the compliance matrix after they have been identified as satisfied in at least one monthly or in one annual compliance report.

COM-7, Annual Compliance Report

Since construction is complete, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over the life of the project unless otherwise specified by the CPM. Each Annual Compliance Report shall identify the reporting period and shall contain the following:

1. an updated compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);
2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;
3. documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Annual Compliance Report;
4. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;

5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. a listing of filings made to, or permits issued by, other governmental agencies during the year;
7. a projection of project compliance activities scheduled during the next year;
8. a listing of the year's additions to the on-site compliance file;
9. an evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date [see General Conditions for Facility Closure addressed later in this section]; and
10. a listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved complaints, and the status of any unresolved complaints.

COM-8,Operation Security Plan

1. The Operations Security Plan shall include the following:
2. permanent site fencing and security gate;
3. evacuation procedures;
4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;
5. fire alarm monitoring system;
6. site personnel background checks, including employee and routine on-site contractors [Site personnel background checks are limited to ascertaining that the employee's claims of identity and employment history are accurate. All site personnel background checks shall be consistent with state and federal law regarding security and privacy.];
7. site access for vendors; and
8. requirements for Hazardous Materials vendors to prepare and implement security plans as per 49 CFR 172.800 and to ensure that all hazardous materials drivers are in compliance with personnel background security checks as per 49 CFR Part 1572, Subparts A and B.

In addition, the Security Plan shall include one or more of the following in order to ensure adequate perimeter security:

1. security guards;
2. security alarm for critical structures;
3. perimeter breach detectors and on-site motion detectors;
4. video or still camera monitoring system.

The Project Owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to the Security Plan. The CPM may authorize modifications to these measures, or may recommend additional measures depending

on circumstances unique to the facility, and in response to industry-related security concerns.

COM-9, Confidential Information

Any information that the project owner deems confidential shall be submitted to the Energy Commission's Docket with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information, that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq.

COM-10, Department of Fish and Game Filing Fee

If required pursuant to the provisions of Fish and Game Code Section 711.4, the project owner shall pay a filing fee in the amount of $850. The payment instrument shall be provided to the Energy Commission's Siting Project Manager (PM), not the CPM, at the time of project recertification and shall be made payable to the California Department of Fish and Game. The PM will submit the payment to the Office of Planning and Research at the time of filing of the notice of decision.

COM-11, Reporting of Complaints, Notices, and Citations

Upon certification, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering with date and time stamp recording. All recorded inquiries shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during operation. The telephone number shall be provided to the CPM who will post it on the Energy Commission's web page at:

http://www.energy.ca.gov/sitingcases/power_plants_contacts.html

Any changes to the telephone number shall be submitted immediately to the CPM who will update the web page.

In addition to the annual compliance reporting requirements described above, the project owner shall report and provide copies of all complaint forms, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt, to the CPM. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form (Attachment A).

FACILITY CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30

years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations and Standards (LORS) pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place, planned closure, unplanned temporary closure and unplanned permanent closure**.**

CLOSURE DEFINITIONS

Planned Closure

A planned closure occurs at the end of a project's life, when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

Unplanned Temporary Closure

An unplanned temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency.

Unplanned Permanent Closure

An unplanned permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unplanned closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unplanned closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned.

GENERAL CONDITIONS FOR FACILITY CLOSURE

COM-12, Planned Closure

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least twelve months prior to commencement of closure activities (or other period of time agreed to by the CPM). The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission.

The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site;

2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;
3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and
4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

In the event that there are significant issues associated with the proposed facility closure plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Energy Commission may hold public hearings as part of its approval procedure.

In addition, prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Energy Commission CPM for the purpose of discussing the specific contents of the plan.

As necessary, prior to or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities, until Energy Commission approval of the facility closure plan is obtained.

COM-13, Unplanned Temporary Closure/On-Site Contingency Plan

In order to ensure that public health and safety and the environment are protected in the event of an unplanned temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety impacts and environmental impacts are taken in a timely manner.

The project owner shall resubmit an on-site contingency plan for CPM review and approval. The plan shall be submitted within 60 days (or other time agreed to by the CPM) after recertification. The approved plan must be in place within 120 days after recertification of project operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days, unless other arrangements are agreed to by the CPM, the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment. (Also see

the analysis for the technical areas of Hazardous Materials Management and Waste Management.)

In addition, consistent with requirements under unplanned permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unplanned temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that an unplanned temporary closure is likely to be permanent, or for a duration of more than twelve months, a closure plan consistent with the requirements for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

COM-14, Unplanned Permanent Closure/On-Site Contingency Plan

The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the unlikely event of abandonment.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan, consistent with the requirements for a planned closure, shall be developed and submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Energy Commission Decision. The specific action and amount of any fines the Energy Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether

the cause of the incident involves willful disregard of LORS, oversight, unforeseeable events, and other factors the Energy Commission may consider.

Moreover, to ensure compliance with the terms and conditions of certification and applicable LORS, delegate agencies are authorized to take any action allowed by law in accordance with their statutory authority, regulations, and administrative procedures.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1230 et seq., but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by current law or regulations.

Informal Dispute Resolution Procedure

The following procedure is designed to informally resolve disputes concerning the interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate this procedure for resolving a dispute. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents.

This procedure may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1230 et seq., but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The procedure encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be referred to the full Energy Commission for consideration via the complaint and investigation process. The procedure for informal dispute resolution is as follows:

Request for Informal Investigation

Any individual, group, or agency may request that the Energy Commission conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter and,

within seven working days of the CPM's request, provide a written report of the results of the investigation, including corrective measures proposed or undertaken, to the CPM. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to provide an initial report, within 48 hours, followed by a written report filed within seven days.

Request for Informal Meeting

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within 14 days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;
2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary;
3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner; and
4. after the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum which fairly and accurately identifies the positions of all parties and any conclusions reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230 et seq.

Formal Dispute Resolution Procedure-Complaints and Investigations

If either the project owner, Energy Commission staff, or the party requesting an investigation is not satisfied with the results of the informal dispute resolution process, such party may file a complaint or a request for an investigation with the Energy Commission's General Counsel. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1230 et seq.

The Chairman, upon receipt of a written request stating the basis of the dispute, may grant a hearing on the matter, consistent with the requirements of noticing provisions. The Energy Commission shall have the authority to consider all relevant facts involved and make any appropriate orders consistent with its jurisdiction (Cal. Code Regs., tit. 20, §§ 1232-1236).

POST CERTIFICATION CHANGES TO THE ENERGY COMMISSION DECISION: AMENDMENTS, OWNERSHIP CHANGES, INSIGNIFICANT PROJECT CHANGES AND VERIFICATION CHANGES

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, in order to modify project design, operation or performance requirements, change any condition of certification and to transfer ownership or operational control of the facility. It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769. Implementation of a project modification without first securing Energy Commission or Energy Commission staff approval may result in enforcement action that could result in civil penalties in accordance with section 25534 of the Public Resources Code.

A petition is required for **amendments** and for **insignificant project changes** as specified below. For verification changes, a letter from the project owner is sufficient. In all cases, changes should not be implemented until approved by the Commission or in the case of a verification change, by the CPM. The petition or letter requesting a change should be submitted to the CPM, who will file it with the Energy Commission's Docket in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of approval and the process that applies are explained below.

AMENDMENT

The project owner shall petition the energy commission, pursuant to Title 20, California Code of Regulations, Section 1769, when proposing modifications to project design, operation, or performance requirements. If a proposed modification results in deletion or change of a condition of certification, or makes changes that would cause the project not to comply with any applicable laws, ordinances, regulations or standards, the petition will be processed as a formal amendment to the final decision, which requires public notice and review of the Energy Commission staff analysis, and approval by the full commission. This process takes approximately two to three months to complete, and possibly longer for complex project modifications.

CHANGE OF OWNERSHIP

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process takes approximately one month to complete, and requires public notice and approval by the full commission.

INSIGNIFICANT PROJECT CHANGE

Modifications that do not result in deletions or changes to conditions of certification, and that are compliant with laws, ordinances, regulations and standards, and do not require any additional mitigation, may be processed as insignificant project changes. The CPM, after review and concurrence with technical staff may issue a notice of insignificant project change pursuant to section 1769(a) (2). This process requires a 14-day public review of the Notice of Insignificant Project Change of staff's intention to approve the

modification unless substantive objections are filed. If substantial objections are filed the notification must be heard at a Public Business Meeting and approved by the Commission.

VERIFICATION CHANGE

A verification may be modified by the CPM without requesting an amendment to the decision if the change does not conflict with the conditions of certification and provides an effective alternate means of verification. This process usually takes less than five working days to complete.

COM-6, KEY EVENTS LIST

PROJECT: Los Esteros Critical Energy Facility Relicense

DOCKET # (03-AFC-02)

COMPLIANCE PROJECT MANAGER: Lance Shaw

EVENT DESCRIPTION	DATE
Recertification Date/Obtain Site Control	
Online Date	
POWER PLANT SITE ACTIVITIES	
First Combustion of Gas Turbine	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
SYNCHRONIZATION WITH GRID AND INTERCONNECTION	
COMPLETE T/L CONSTRUCTION	
FUEL SUPPLY LINE ACTIVITIES	
WATER SUPPLY LINE ACTIVITIES	

TABLE 1
COMPLIANCE SECTION
SUMMARY of GENERAL CONDITIONS OF CERTIFICATION

CONDITION NUMBER	PAGE #	SUBJECT	DESCRIPTION
COM-1		Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COM-2		Compliance Record	The project owner shall maintain project files on-site. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COM-3		Compliance Verification Submittals	The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether the condition was satisfied by work performed by the project owner or his agent.
COM-4			▪
COM-5		Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each annual compliance report which includes the status of all compliance conditions of certification.
COM-7		Annual Compliance Reports	After construction ends and throughout the life of the project, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports.
COM-8		Security Plans	Thirty days prior to commencing construction, the project owner shall submit a Security Plan for the construction phase. Sixty days prior to initial receipt of hazardous material on site, the project owner shall submit an Security Plan & Vulnerability Assessment for the operational phase.
COM-9		Confidential Information	Any information the project owner deems confidential shall be submitted to the Dockets Unit with an application for confidentiality.
COM-10		Dept of Fish and Game Filing Fee	The project owner shall pay a filing fee of $850 at the time of project recertification.
COM-11		Reporting of Complaints, Notices and Citations	Within 10 days of receipt, the project owner shall report to the CPM, all notices, complaints, and citations.
COM-12		Planned Facility	The project owner shall submit a closure plan to the CPM at least twelve months prior to

CONDITION NUMBER	PAGE #	SUBJECT	DESCRIPTION
		Closure	commencement of a planned closure.
COM-13		Unplanned Temporary Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned temporary closure, the project owner shall submit an on-site contingency plan within 60 days after recertification.
COM-14		Unplanned Permanent Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned permanent closure, the project owner shall submit an on-site contingency plan within 60 days of recertification.

COMPLAINT REPORT/RESOLUTION FORM

PROJECT NAME: Los Esteros Critical Energy Facility AFC Number: (03-AFC-2)
COMPLAINT LOG NUMBER _____ Complainant's name and address: Phone number: _____
Date and time complaint received: _____ Indicate if by telephone or in writing (attach copy if written): Date of first occurrence:
Description of complaint (including dates, frequency, and duration):
Findings of investigation by plant personnel: Indicate if complaint relates to violation of Energy Commission requirement: Date complainant contacted to discuss findings: _____
Description of corrective measures taken or other complaint resolution: Indicate if complainant agrees with proposed resolution: If not, explain: Other relevant information:
If corrective action necessary, date completed:_____ Date first letter sent to complainant: _____(copy attached) Date final letter sent to complainant: _____(copy attached)
This information is certified to be correct. Plant Manager's Signature: _____ Date:_____

(Attach additional pages and supporting documentation, as required.)

LOS ESTEROS CRITICAL ENERGY FACILITY PHASE I
FINAL STAFF ASSESSMENT
PREPARATION TEAM

Executive Summary ..... Robert Worl

Introduction ..... Robert Worl

Project Description ..... Robert Worl

Air Quality ..... Gabriel D. Taylor

Biological Resources ..... Natasha Nelson

Cultural Resources ..... Dorothy Torres

Hazardous Materials ..... Geoff Lesh, P.E. and Rick Tyler

Land Use ..... James Adams

Noise and Vibration ..... Steve Baker

Public Health ..... Ramesh Sundareswaran

Socioeconomics ..... Joseph Diamond

Soil and Water Resources ..... Richard Anderson and John Kessler

Traffic and Transportation ..... Amanda Stennick

Transmission Line Safety and Nuisance ..... Obed Odoemelam, Ph.D.

Visual Resources ..... Eric Knight

Waste Management ..... Ramesh Sundareswaran

Worker Safety and Fire Protection ..... Geoff Lesh, P.E., and Rick Tyler

Facility Design ..... Kevin Robinson, Al McCuen and Steve Baker

Geology and Paleontology ..... Patrick Pilling, Ph.D., P.E., G.E.

Power Plant Efficiency ..... Shahab Khoshmashrab

Power Plant Reliability ..... Shahab Khoshmashrab

Transmission System Engineering ..... Mark Hesters and Al McCuen

Alternatives ..... Robert Worl

Compliance Monitoring and Facility Closure .....Lance Shaw

Project Assistant ..... Keith A. Muntz

Support Staff ..... Evelyn Johnson

DECLARATIONS
AND
RESUMES

DECLARATION OF
James Adams

I, **James Adams** declare as follows:

1. I am presently employed by the California Energy Commission in the **ENVIRONMENTAL OFFICE** of the Energy Facilities Siting and Environmental Protection Division as a **Planner 1**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **LAND USE**, for the **Los Esteros Critical Energy Facility 2** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: October 7, 2004 Signed: James Adams

At: Sacramento, California

James S. Adams
Environmental Protection Office
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5504
PH (916) 653-0702, FAX (916) 654-3882
Jadams@energy.state.ca.us

5/1999
Present **Environmental Planner**
Review applications for certification to acquire permits from the California Energy Commission to build electric generating power plants. Specific technical fields include socioeconomics and traffic and transportation.

11/1997
Present **Energy and Resource Consultant**
Provide clients with technical expertise on various issues related to natural resource use and development. Current activities include managing an Intervention by the Redwood Alliance before the California Public Utilities Commission regarding the decommissioning of the Humboldt Bay Power Plant's nuclear reactor.

9/1994--
10/1997 **Senior Analyst - Safe Energy Communication Council (SECC)**
Responsible for developing and/or implementing campaigns on various energy issues involving the promotion of energy efficiency and renewable energy and advocating less reliance on nuclear power. Managed educational outreach efforts to newspaper editorial writers throughout the U.S. to encourage coverage of energy issues. Participated in meetings and negotiations with key Clinton administration officials, members of Congress and staff, national coalitions, and grassroots organizations on important energy issues (e.g. U.S. Department of Energy Budget for Fiscal Years 1996-1998). Successfully raised $140,000 from private foundations to support SECC activities.

6/1978--
12/1992 **Principal Consultant - Redwood Alliance**
Provided consulting services to the Alliance; a renewable energy/political advocacy organization. Major responsibilities included managing and/or participating in several interventions/appearances before the California Public Utilities Commission, California Energy Commission, California Legislature, U.S. Congress and the U.S. Nuclear Regulatory Commission. Issues included electric utility planning options, greater reliance on energy efficiency and renewable energy, nuclear power economic analyses, decommissioning cost estimates, and nuclear waste management and disposal.

2/1983--
8/1986 **Natural Resource Specialist**
Assisted private consulting, firms, non-profit corporations and government agencies in various projects related to the enhancement and protection of national forests in Northern California and Southern Oregon. This included contracts with the U.S. Forest Service, Fish and Wildlife Service, National Park Service, the California Coastal Conservancy, and private landowners.

6/1978--
present Consultant/Journalist/Paralegal/Lobbyist
Throughout the period of work outlined above, I have written a considerable amount of news articles and reports connected to ongoing-projects and issues of personal interest. The leg, al/administrative interventions have required extensive paralegal work to support attorneys, and technical expertise to identify and assist consultants. In addition, many of the projects required consulting services and lobbying, at the local, state and federal level whenever necessary, as well as working with the print and television media as appropriate.

From 1978 through 1984 1 served on the Board of Directors for two locals non-profit agencies devoted to sustainable community development, Redwood Community Development Council and Redwood Community Action Agency (RCAA). I also was hired on staff at RCAA as a natural resource specialist which is explained more fully above. I am proficient with computers, printers, fax machines and related equipment.

EDUCATION

M.A. Social Science. Political science and natural resources emphasis. California State University at Humboldt. Graduated December 1988.

B.A. Political Science. Political and economic aspects of natural resource development, with a particular emphasis in forest ecology and appropriate technology. California State University at Humboldt. Graduated June 1978.

Academic Honors. Member of PI GAMMU MU Honor Society since 1986.

MILITARY SERVICE

7/1969--
9/1975 U.S. Navy. Air Traffic Controller.
Honorable Discharge.

DECLARATION OF
STEVE BAKER

I, STEVE BAKER, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Energy Facilities Siting and Environmental Protection Division as a **SENIOR MECHANICAL ENGINEER**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **NOISE AND VIBRATION** for the **LOS ESTEROS CRITICAL ENERGY FACILITY 2 PROJECT** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

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: October 4, 2004 Signed: Steve Baker

At: Sacramento, California

STEVE BAKER, P.E.
Senior Mechanical Engineer

Experience Summary

Thirty years experience in the electric power generation field, including mechanical design, QA/QC, construction/startup and business development/licensing of nuclear, coal-fired, hydroelectric, geothermal and windpower plants; and engineering and policy analysis of thermal power plant regulatory issues.

Education

- California State University, Long Beach--Master of Business Administration
- California State Polytechnic University, Pomona--Bachelor of Science, Mechanical Engineering
- Registered Professional Engineer (Mechanical), California —
  No. M27737 expires 6/30/06

Professional Experience

1990 to Present--Senior Mechanical Engineer, Siting & Environmental Division - California Energy Commission

Technical lead person for the analysis of generating capacity, reliability, efficiency, noise, and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases. Key contributor to Commission's investigation into market impediments to the deployment of advanced high-efficiency generating technologies.

1987 to 1990--Generation Systems/Facility Design Unit Supervisor, Siting & Environmental Division - California Energy Commission

Responsible for supervising the analysis of generating capacity, reliability, efficiency, safety, and mechanical, civil/structural, and geotechnical engineering aspects of power plant siting cases.

1981-1986--Operations Manager, Alternate Energy - Santa Fe Pacific Realty Corporation

Participated in and supervised identification, evaluation and feasibility analysis, licensing and permitting of hydroelectric, geothermal, windpower and biomass power projects.

1974-1981--Mechanical Engineer, Quality Engineer - Bechtel Power Corporation and Bechtel National, Inc.

Wrote equipment specifications, drew flow diagrams and P&ID's, performed system design and safety analysis for nuclear power plants and nuclear fuel processing plant. Wrote and implemented QA/QC procedures for nuclear power plant. Participated in construction/startup of large coal-fired power plant.

NGC Geothermal Issues Questionnaire

Please answer the following questions, preferably in electronic format.

1. What are the top five environmental issues that you have experienced as causing conflicts or delay for approval of geothermal projects?

Air Quality:

Hydrogen Sulfide, a constituent of the geothermal brine/steam is potentially harmful, and even at a minimal level is noxious.

Ammonia, a constituent of the geothermal brine/steam is emitted in volume, and is both noxious and potentially adds to the formation of PM10, in the air basin.

Potential changes in the local biotic environment resulting from emissions may occur through aerosol deposition.

Biological Resources:

Geothermal development is often only possible on or near land areas that contain other valuable resources and may be classified as wilderness, national or state parks, wildlife refuges etc that in part were established to protect threatened or endangered species and plants. Wells, brine/steam pipelines, and plant infrastructure sites involve more dispersed land use than do central facility plants where subsurface utilities bring natural gas, cooling water and carry return/waste water. Loss of surface habitat and habitat access due to the development of geothermal projects results, including additional potential habitat loss resulting from the development of pads, pipelines, transmission lines and access roads directly related to project development.

Water and Soils:

Subsidence from depletion of subsurface water/brine as a result of extraction of the geothermal resource may impact areas in close proximity to wells, but also impact the geothermal reservoir at a distance from the development.

Need for large volumes of cooling water, not readily available without exacerbating water conflicts. This is particularly true of projects that cannot condense enough water from the steam/brine geothermal resource to significantly reduce the need for external sources of cooling water.

There is risk of surface discharges of brine from ruptures or other accidents to soils and surface waters, and possibly damage to subsurface aquifers. Though minimized through modern design, materials, drilling and operations practices and management, the risk remains one of public and agency concern.

Jurisdictional/Permitting:

As mentioned above, geothermal projects are often on lands that require use and attention to resources from multiple agencies and as well as public and private land owners. Project development may require extensive mitigation for a particular resource or constellation of resources, and permits from multiple sources. The time required for permitting from multiple sources can be problematic and difficult to coordinate. Jurisdictional conflicts between agencies, developers and property

owners may take extra time to resolve.

Cultural:

By their very nature, geothermal reservoirs of a size capable of development often have surface features that have made them a focal point for customary, and religious use by tribal peoples for centuries. There is a high probability that many such geothermal regions have significant archaeological, historical and cultural features and values that project through time to the present, including use of the resource and the area surrounding it for religious, cultural and medicinal practices by native groups and others.

More western cultural values associated with the economics of tourism, as well as the parallel medicinal and recreational values noted above, may also be impacted.

2. List any issues that have not been identified in the report's list of issues and identify the sites at which the issues arose (may include issues at other geothermal sites).

   Socioeconomics may play a role that sometimes overlaps the other named areas. Any development is going to impact the local economy through jobs during construction and operation, impacts to the tax base for affected communities, and the potential for inducing change from a variety of sources.

   Financing for geothermal projects is unique compared to most other forms of energy projects in that these projects are generally more expensive to design and build, and operation and maintenance are more labor-intensive compared to comparable natural gas projects. Though the after-construction benefits of using steam/brine as a fuel instead of fossil fuels can be a huge savings for actual project costs and eventual investment returns, it makes the traditional means of financing (large financial institutions) more cautious.

3. List any interest groups not represented in the report that you think are potential interested parties.

What public outreach steps do you feel would be helpful for the following groups to take to minimize or avoid the key issues identified?

a. Geothermal developers
   Early identification of agencies and their constituents with jurisdictional and/or resource management interests impacted by project development. Contact and discussion with these centered around a variety of scoping issues including size, timing, permits required.

   Follow up with informal discussions with the agencies centered around identifying and resolving potential conflicts and establishing a forum for ongoing discussion and search for mutual benefit.

   Outreach to groups, organizations, individuals (property owners, farmers, tribes, and individuals who use the affected lands and areas) establishing

forums for exchange of information and ideas.

Public agencies
These agencies have a need to be proactive in working with developers and their human constituents to develop forums for information exchange. Problem identification, practical alternatives for projects and project features could be the focus including resource uses, rights of way, etc. In addition agencies often have constituents (flora and fauna, recreational users, land planning responsibilities, etc) that need to be clearly identified early in a planning or scoping process so that maximum best uses, mitigation, or alternatives can be thoroughly discussed, enhancing the potential for best-use, best-practices alternatives to be considered.

b. Geothermal industry organizations

Education, public awareness can be enhanced by working with agency and public policy groups and individuals. Chambers of Commerce, schools, elected officials, agency staff, media oulets, all need to be used early and often in areas where geothermal potential exisits. On a broader front, continued work with and through elected public officials is of tremendous value in reaching the public. Sponsoring programs, learning opportunities of all types has tremendous long-term value. Developing an aware and knowledgable public has both risks and rewards. But for permitting, financing and operation of geothermal power plants, the rewards would seem to outweigh all the risks.

DECLARATION OF
Joseph Diamond Ph. D.

I, **Joseph Diamond,** declare as follows:

1. I am presently employed by the California Energy Commission as a **Planner II-Economist**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Socioeconomics**, for the **LECEF 2 Phase 1 PROJECT** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: Oct. 4, 2004 Signed: Dr Joseph Diamond

At: Sacramento, California

Dr. Joseph Diamond
Work:(916)654-3877

Ph.D. with experience in economic policy.

BUSINESS AFFILIATION

California Energy Commission
1516 9th St. MS-40
Sacramento, CA 95814

EDUCATION

Michigan State University	Ph.D.	Resource Development
University of Rhode Island	M.A.	Economics
University of New Hampshire	B.A.	Economics

DECLARATION OF
Mark Hesters

I, **Mark Hesters** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering OFFICE** of the Energy Facilities Siting and Environmental Protection Division as an **Associate Electrical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Transmission System Engineering**, for the **Los Esteros Critical Energy Facility 2 Phase 1** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: 10/4/04 Signed: _____

At: Sacramento, California

Mark Hesters
Associate Electrical Engineer

Mark Hesters has ten years of experience in electric power regulation. He worked in the Engineering Office of the California Energy Commission's Energy Facilities Siting & Environmental Protection Division since 1998 providing analysis of California transmission systems and testimony on transmission systems in several Commission power plant certification processes. Prior to that Mark worked in the CEC's Electricity Analysis Office providing lead analysis on Southern California Edison resource issues and modeling support for all areas of California. He holds a B.S. degree from the University of California at Davis in Environmental Policy Analysis and Planning.

DECLARATION OF
John S. Kessler

I, **John S. Kessler,** declare as follows:

1. I am presently a consultant employed by the California Energy Commission in the Water and Soil Resources Unit of the Energy Facilities Siting and Environmental Protection Division as a Senior Technical Specialist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Soil and Water Resources, for the **Los Esteros Critical Energy Facility, Phase I Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: November 10, 2004 Signed: John S. Kessler

At: Pollock Pines, California

JOHN S. KESSLER
Kessler and Associates, LLC
2801 Shady Lane, Pollock Pines, CA 95726
Ofc: (530) 644-2010, Fax: (530) 644-2051
Email: zephyr@innercite.com

PROFESSIONAL EXPERIENCE:

Mr. Kessler is a licensed Civil Engineer in California with over 25 years experience in water supply and power generation, which includes planning and managing project dams, water conveyance facilities and powerhouses with responsibilities in operations, maintenance, regulatory compliance and safety. Since forming Kessler and Associates, LLC in May 2000, Mr. Kessler has served on numerous projects evaluating and coordinating water supply developments. As a consultant to the California Energy Commission, Mr. Kessler has assessed potential soil and water resource impacts and evaluated water supply alternatives for over ten proposed gas-fired generation plants, ranging in total development costs from $10 - $500 million. His guidance to the Energy Commission has been instrumental in conserving the state's limited fresh water supplies for higher priority uses such as domestic and irrigation needs, and substantiating a sound basis for the Commission to approve power plants subject to avoiding or minimizing the use of fresh water for power plant cooling. The Water Supply Alternatives analyses have included evaluation of alternative sources of water supply, pipeline routes, reliability, environmental effects and economic feasibility. In 2001, Mr. Kessler was awarded the Outstanding Performance Award from the California Energy Commission, and continues to support the Energy Commission in this capacity today.

May 2000 - Present: Principal - Kessler and Associates
Established Kessler and Associates to provide engineering, regulatory and operating services related to energy and associated water supply projects;

California Energy Commission (CEC) – Soil & Water Resource Assessments of Proposed Gas-Fired Generating Facilities (Serving as Project Manager or Technical Lead for the following projects:)

- Valero Cogeneration Project, 01-AFC-05, a 4-month certification proceeding of two combustion turbine generators rated at 51 MW each; Provided a unique water conservation condition to avoid use of fresh water by either implementing recycled water from City of Benicia or by conserving an equivalent quantity of fresh water within the refinery operations, so as to avoid a net increase from existing fresh water use; Testified in Evidentiary Hearings and the final Commission decision adopted our recommendation to require use of recycled water or to otherwise conserve;

- East Altamont Energy Center, 01-AFC-6, a 12-month certification proceeding of a natural gas-fired, combined cycle generating facility rated at 1,100 MW; Prepared a Water Supply Alternatives Analysis, and coordinated closely with representatives of DWR, Byron-Bethany Irrigation District and the Mountain House Community to demonstrate the feasibility of using

recycled water for EAEC cooling and landscape irrigation purposes; Testified in Evidentiary Hearings and the final Commission decision adopted our recommendation to require use of recycled water;

- Russell City Energy Center, 01-AFC-7, a 6-month certification proceeding of a natural gas-fired, combined cycle generating facility rated at 600 MW; Developed conditions to assure the implementation of recycled water supply as proposed;

- Los Esteros Critical Energy Facility, 01-AFC-12, a 4-month certification proceeding of four combustion turbine generators rated at a combined total of 180 MW; Developed conditions to assure the implementation of recycled water supply as proposed, and coordinated the resolution of storm water discharge issues into Coyote Creek with responsible agencies including City of San Jose, Santa Clara Valley Water District, San Francisco Regional Water Quality Control Board, and the U.S. Army Corps of Engineers; Testified in Evidentiary Hearings;

- Inland Empire Energy Center, 01-AFC-17, a 12-month certification proceeding of a natural gas-fired, combined cycle generating facility rated at 670 MW; Developed conditions to assure the implementation of recycled water supply as proposed;

- Avenal Power Plant, 01-AFC-20, a 12-month certification proceeding of a natural gas-fired, combined cycle generating facility rated at 600 MW; Duke Energy suspended processing of its application until further notice.

- Tesla Power Plant, 01-AFC-21, a 12-month certification proceeding of a natural gas-fired, combined cycle generating facility rated at 1,120 MW; Prepared a Water Supply Alternatives Analysis, and coordinated closely with representatives of DWR, Zone 7 of the Alameda County Flood Control District and City of Tracy to demonstrate the feasibility of using recycled water for Tesla cooling, process and landscape irrigation purposes; Testified in Evidentiary Hearings and the pending Commission decision adopts our recommendations to require use of recycled water;

- San Joaquin Valley Energy Center, 01-AFC-22, a 12-month certification proceeding of a natural gas-fired, combined cycle generating facility rated at 1,060 MW; Developed conditions to assure the implementation of recycled water supply as proposed; Testified in Evidentiary Hearings;

- Blythe II Energy Project, 02-AFC-01, a 12-month certification proceeding of a natural gas-fired, combined cycle generating facility rated at 520 MW; Prepared a Water Supply & Cooling Alternatives Analysis to demonstrate the feasibility of using Dry Cooling to minimize use of Colorado River groundwater for cooling, process and landscape irrigation purposes;

- Los Esteros Critical Energy Facility – Recertification & Conversion, 03-AFC-2, a proceeding to relicense Phase I consisting of four combustion turbine generators rated at a combined total of 180 MW, and to license Phase II consisting of a combined-cylce conversion to a combined total capacity of 320 MW; Analyzed effects to assure that the project operates in accordance with permits for recycled water supply and wastewater discharge, without degradation affecting the quality of the City of San Jose's recycled water program and marketability to other customers;

- San Francisco Electric Reliability Project, 04-AFC-01, a 12-month certification proceeding of a natural gas-fired, simple cycle generating facility consisting of three combustion turbine generators

rated at a total capacity of 145 MW; The project involves conveyance of the City of San Francisco's raw wastewater, treatment at the power plant site to produce recycled water according toTitle 22 standards, and utilization of the recycled water for cooling and process needs.

CEC – Assessment of Alternative Generation Technologies
Serving as the author of the Hydropower Chapter discussing the status of development, potential for new development, costs, and deployment constraints including environmental effects, in comparison to development of gas-fired generation technologies;

CEC - Water Discharge Assessment of Coastal Power Plants – Executive Order 22-01
Served as Project Manager of Water Resources to assess the generation curtailments resulting from regulatory-required cooling water discharge limitations at various coastal thermal power plants;

CEC - Environmental Performance Report of California's Electric Generation Facilities
Co-authored the 2001 and draft 2003 Water and Biological Resources Sections, providing research and analysis of trends in power plant water resource utilization affected by technological changes, improved environmental safeguards, regulatory influences in market development, and diminishing supplies of fresh water;

CPUC – EIR for PG&E's Application for Authorization to Divest its Hydroelectric Generating Facilities and Related Assets
Served as Hazards Section Leader and Team Member of the Public Services and Utilities Section in preparing the EIR for considering PG&E's divestiture of its entire hydroelectric system; The environmental assessment included evaluating the safety and potential risks of PG&E's dams throughout its hydroelectric system in Northern California.

Upper Hangtown Creek Watershed Restoration Project
Serving as the Hydrologist to define reaches of stream running as both surface and sub-surface flow, and quantifying contributions from those reaches in order to assess and recommend restoration opportunites to Upper Hangtown Creek after 150 years of alteration from mining and lumber mill activities. The project is being coordinated with the Resource Conservation District and other local, state and federal agencies.

Utica Power Authority – Dam Safety and Regulatory Compliance Services
Serving as UPA's FERC License Coordinator, managing the implementation of new license conditions for environmental protection and compliance monitoring in consultation with state and federal agencies. I have personally prepared resource management plans in water resources addressing minimum instream flows, flushing flows, drought contingencies, water conveyance, canal dewatering, water quality monitoring, stream gaging, and transportation. In addition, I have guided the preparation of other resource management plans including those in biological, cultural resource and geotechnical categories. Serve as UPA's Dam Safety Engineer in analyzing project monitoring data and advising on various regulatory matters, including the successful restoration of Flume 14 ($2.5 MM) that was destroyed in a wildfire during September 2001 which presented numerous environmental, construction and safety challenges in the Stanislaus River canyon; Prepared a comprehensive regulatory checklist and schedule for compliance monitoring of applicable federal, state and local regulations and agreements.

El Dorado Irrigation District – Regulatory Permitting and Compliance Services
Supported EID with regulatory permitting including securing a FERC License Amendment for its El Dorado Hydroelecric Project. Project repairs, at a cost of over $30MM, were recently

completed to repair flood damages to El Dorado Diversion Dam, construct a new 2-mile long tunnel, and rehabilitate two generating units and associated equipment. In support of EID's dam safety program, I prepared new Emergency Action Plans for Caples, Silver, and Echo Lakes and El Dorado Forebay Dams in accordance with FERC's revised guidelines. Subsequently, I provided annual updates and personnel training including facilitating EAP Tabletop and Functional Exercises with emergency response agencies. I am currently preparing Standard Operating Procedures and facilitating employee training for project operations, supporting historic water rights documentation, preparing license compliance plans in accordance with the Relicensing Settlement Agreement, and developing a work management database for scheduling future regulatory compliance and O&M tasks, and documenting history.

Haida Corporation – Advisor for Project Feasibility, Regulatory and Strategic Matters
Served as co-author and preparer of a feasibility study and report for development of the Reynolds Creek Hydroelectric Project on Prince of Wales Island, Alaska; I also developed regulatory permitting and interconnection negotiating strategies in preparation for project construction;

September 1995 – April 2000: Hydroelectric Director - El Dorado Irrigation District
Managed operation, maintenance and regulatory activities and the acquisition of the El Dorado Hydroelectric Project from PG&E to EID; Acquisition activities included providing technical expertise in sale negotiations, FERC and CPUC regulatory approval processes, serving as EID's representative before hearings at the CPUC, and managing the preparation of the EIR to support EID's Acquisition, Operation and Permanent Repairs of the El Dorado Hydroelectric Project and the Acquisition of 17,000 AF/year New Water Rights; After several previous court challenges, this EIR continues to be valid and served as a critical step in the SWRCB issuing its final decision to award EID with the new water rights. The EIR also supported EID's success in acquiring the El Dorado Project on October 15, 1999 that included an unprecedented $15 Million payment from PG&E to EID to assume ownership. During 1998 – 2000, I represented EID and assisted in the preparation of a License Application for renewing the major license of the El Dorado Hydroelectric Project. This project has significant public and regulatory interests to assure that it provides a balance of environmental protection, focusing on aquatic resources and recreation in the alpine lakes and South Fork American River.

Aug. 1993 – Sept. 1995: Project Engineer - Northern California Power Agency
Managed planning of various enhancements and aquatic resource studies, including small hydro and fish screen improvements, associated with the North Fork Stanislaus River Hydroelectric Project and relicensing studies associated with the Angels and Utica Projects; Coordinated initial development phases of new biomass generation for the Gridley Rice Straw Project in conjunction with D.O.E., private and U.C. Davis research groups which led to receiving a $1 Million federal grant for prototype development testing in the production of ethanol;

July 1984 – August 1993: Hydro Supervisor – Pacific Gas & Electric Company
Supervised the operations, maintenance, capital improvements and regulatory compliance activites for the El Dorado and Chili Bar Hydroelectric Projects;

Aug. 1979 – July 1984 - Hydraulic Engineer and Hydrographer/Hydrologist - PG&E
Managed various capital projects within PG&E's and its water district/agency partner's hydroelectric systems; Coordinated the establishment of computerized operations modeling for PG&E's hydroelectric system for the purpose of predicting hydropower production in order to determine the most economical mix of hydro and thermal resources, and supported various relicensings throughout PG&E's hydroelectric system. I also maintained numerous stream gages and prepared final records for USGS approval and publication.

EDUCATION AND PROFESSIONAL CERTIFICATES:

- State Of California Professional Civil Engineer, License No. C034897;
- B.S. Civil Engineering, University Of California, Davis, June 1979;
- A.A. Diablo Valley College, Pleasant Hill, June 1976;

HONORS AND AWARDS:

- 2001 Outstanding Performance Award from the State of California - Energy Commission;
- 1999 Outstanding Achievement Award for Transfer of the El Dorado Hydroelectric Project from PG&E to the El Dorado Irrigation District;

PROFESSIONAL ASSOCIATIONS:

- American Society of Civil Engineers

Jsk:JK's Resume – 2004-R1

DECLARATION OF
Shahab Khoshmashrab

I, **Shahab Khoshmashrab** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Systems Assessment and Facilities Siting Division as a **Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Reliability**, for the **LECEF2 Phase 1 Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, 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 addressed therein.

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: October 5, 2004 Signed: S. Khoshmashrab

At: Sacramento, California

Shahab Khoshmashrab
Mechanical Engineer

Experience Summary

Nine years experience in the Mechanical, Civil, Structural, and Manufacturing Engineering fields involving engineering and manufacturing of various mechanical components and building structures. This experience includes QA/QC, construction/licensing of electric generating power plants, analysis of noise pollution, and engineering and policy analysis of thermal power plant regulatory issues.

Education

- California State University, Sacramento-- Bachelor of Science, Mechanical Engineering
- Registered Professional Engineer (Mechanical), California

Professional Experience

2001-2004--Mechanical Engineer, Systems Assessment and Facilities Siting– California Energy Commission

Performed analysis of generating capacity, reliability, efficiency, noise and vibration, and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases.

1998-2001--Structural Engineer – Rankin & Rankin

Engineered concrete foundations, structural steel and sheet metal of various building structures including energy related structures such as fuel islands. Performed energy analysis/calculations of such structures and produced structural engineering detail drawings.

1995-1998--Manufacturing Engineer – Carpenter Advanced Technologies

Managed manufacturing projects of various mechanical components used in high tech medical and engineering equipment. Directed fabrication and inspection of first articles. Wrote and implemented QA/QC procedures and occupational safety procedures. Conducted developmental research of the most advanced manufacturing machines and processes including writing of formal reports. Developed project cost analysis. Developed/improved manufacturing processes.

DECLARATION OF
Shahab Khoshmashrab

I, **Shahab Khoshmashrab** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Systems Assessment and Facilities Siting Division as a **Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Efficiency**, for the **LECEF2 Phase 1 Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, 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 addressed therein.

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: October 5, 2004 Signed: S. Khoshmashrab

At: Sacramento, California

DECLARATION OF
Eric Knight

I, Eric Knight declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Protection Office of the Systems Assessment and Facilities Siting Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Visual Resources, for the LECEF 2 Phase 1 Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: 10-5-04 Signed: Eric Knight

At: Sacramento, California

ERIC KNIGHT

Planner II

EDUCATION

BA – Environmental Studies, California State University, Sacramento, 1993
Minor – Government, CSUS, 1993

PROFESSIONAL EDUCATION

CEQA Workshop, Association of Environmental Professionals, February 2004 and 1999
CEQA Overview and Update, UC Davis Extension Program, June 1998
Land Use Planning for Environmental Professionals, UC Davis Ext., May 1996
Introduction to ArcView and Avenue (GIS), ESRI, August 1995 and May 1998

EXPERIENCE

June 2000 to present

California Energy Commission, Systems Assessment & Facilities Siting Division, Environmental Protection Office
Planner II (Planner I from October 1998 to June 2000)

Responsible for preparing, or overseeing the preparation of, independent analyses of the potential visual and land use impacts of power plant projects and identifying measures to mitigate significant environmental effects. Other responsibilities include reviewing power plant applications for data adequacy, conducting field reconnaissance, writing information requests, participating in workshops with applicants and the public, preparing written testimony, presenting oral testimony at hearings, and monitoring compliance with conditions of certification.

June 1995 – October 1998

California Energy Commission, Energy Facilities Siting & Environmental Protection Division, Engineering Office
Energy Analyst/Planner I

Promoted the use of urban planning tools by local governments. Assembled a GIS database for a community-planning project in San Diego. Authored a chapter to the National Wind Coordinating Committee's handbook *Permitting of Wind Energy Facilities*. Helped to write, edit and review various Energy Commission publications.

June 1994 – June 1995

Department of Toxic Substances Control, California EPA
Program Technician
(Student Assistant: March 1993 – January 1994)

Provided regulatory assistance to hazardous waste generators, transporters and storage facility operators.

January 1992 – June 1992

Sacramento Valley Toxics Campaign
Student Intern

Filed public record requests with state and federal agencies. Conducted research and authored an article for the campaign newsletter. Helped to organize community meetings, press conferences and public outreach events.

DECLARATION OF
Geoffrey Lesh

I, **Geoffrey Lesh** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Energy Facilities Siting and Environmental Protection Division as a **Mechanical Engineer.**

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Hazardous Materials Management and the Worker Safety and Fire Protection Sections** for the **Los Esteros Critical Energy Facility 2, Phase 1 project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: 10/7/04 Signed: Geoffrey Lesh

At: Sacramento, California

Geoffrey Lesh, P.E.
Mechanical Engineer

WORK HISTORY

California Energy Commission Mechanical Engineer 2002 - Current
• Review and analyze applicants' plans for safe management of hazardous materials, and for protecting worker safety.

Self-Employed Independent Investor 2000 - 2002
• Wrote market analysis computer software and traded personal account.

Read-Rite Corp Wafer Engineering Manager 1994 - 2000
• Designed and developed wafer manufacturing processes for computer data storage systems. Managed team of engineers and technicians responsible for developing wet and dry chemical processes for manufacturing, including process and safety documentation.
• Managed process and equipment selection for manufacturing processes.
• Processes included vacuum processed metals and ceramics, grinding-polishing, plating, etching, encapsulation, process troubleshooting, and SPC reporting.

Dastek Corp (Komag Joint Venture Start-up) Wafer Engineering Manager 1992 - 1994
• Developed wafer processes for new technology recording head for hard disk drives.
• Managed team of engineers and technicians.
• This position included start-up of wafer fab, including line layout, purchase, installation, and startup of new process equipment, etc.

Komag, Inc Alloy Development Manager 1989 - 1992
• Developed new vacuum-deposited recording alloys
• Responsible for planning and carrying-out tests, designing experiments, analyzing results, managing test lab conducting materials characterizations.
• Extensive process modeling and data analysis.

Verbatim Corp (Kodak) Process Development Manager 1983 - 1989
• Mechanical engineering for computer disk manufacturing, including product, process, and equipment including metal-ceramic-plastic processes for optical disk development.
• Production processes included plating, metal evaporation, reactive sputtering, laser-based photolithography, injection molding.
• Steering Committee Member, *Center for Magnetic Recording Research, UC San Diego*

IBM Corp Mechanical/Process Engineer 1977 - 1983
• Product development for photocopiers and computer tape-storage systems.

EDUCATION

Stanford University, Master of Science Degree	Materials Science and Engineering
UC-Berkeley, Bachelor of Science Degree (Double Major)	Mechanical Engineering, Materials Science and Engineering
University of Santa Clara, Graduate Certificate	Magnetic Recording Engineering
Registered Professional Engineer, California	Mechanical #M32576 Metallurgical #MT1940

DECLARATION OF
NATASHA NELSON

I, NATASHA NELSON declare as follows:

1. I am presently employed by the California Energy Commission in the **BIOLOGICAL RESOURCES UNIT** of the Systems Assessment and Facilities Siting Division as a **BIOLOGIST**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **BIOLOGICAL RESOURCES**, for the **LOS ESTEROS CRITICAL ENERGY FACILITY II - PHASE 1 (03-AFC-2)** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: 10/4/04 Signed: Natasha Nelson

At: Sacramento, California

NATASHA NELSON
Planner II

Experienced in biological resource assessment including endangered species surveys, endangered species mitigation and monitoring, coordination with state and federal agencies, and riparian restoration. Educational background emphasized biological resources, general ecology, geographic information systems, and small mammals.

PROFESSIONAL EXPERIENCE

2001 – to date BIOLOGIST, California Energy Commission. I provide independent biological resource assessments of proposed energy plants and related facilities and review the implementation of biological resource conditions of certification required by the Warren-Alquist Act and the California Environmental Quality Act (CEQA). Once energy facilities are constructed and operating, I am responsible for making sure each facility operates in compliance with associated biological resources conditions of certification. These conditions of certification involve endangered species protection, habitat restoration and monitoring, off-site habitat compensation, and wildlife surveys. Agency permit coordination is an important component of my work..

1997 - 2001 BIOLOGIST, Aspen Environmental Group. I was the project manager or technical writer for many projects that involved National Environmental Policy Act (NEPA) and CEQA documentation. The majority of projects were for utility infrastructure (e.g., power plants, transmission lines, petroleum pipelines) and included aspects of Section 404 Clean Water Act permitting and state or federal Endangered Species Act compliance. I performed reconnaissance level wildlife and plant surveys, and researched issues of concern. I also created adaptive management plans for wildlife and habitat restoration in desert and riparian areas.

1996 - 1997 BIOLOGIST, Bureau of Land Management. As the wildlife biologist for the West Mojave Coordinated Planning effort I gathered and synthesized data regarding the state- and federally-listed species in the Mojave desert. I updated and verified all mapping information used in the planning effort including species' range and occurrence data. Most mapping was done using ARC-INFO's AML language and the California Department of Fish and Game database programs (Rarefind and NDDB). During public meetings I gave overviews and presentations of my work to date.

EDUCATION

- B. S. **BIOLOGY**, 1993, Willamette University, Salem, Oregon
- M. S. **WILDLIFE SCIENCE**, 1996, Oregon State University, Corvallis, Oregon

PROFESSIONAL AFFILIATIONS

- Conservation Biology
- Society for Ecological Restoration

DECLARATION OF
DR. OBED ODOEMELAM

I, **Obed Odoemelam** declare as follows:

1. I am presently employed by the California Energy Commission in the **Environmental Protection Office** of the Energy Facilities Siting and Environmental Protection Division as a **Staff Toxicologist**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Transmission Line Safety and Nuisance** for the **Los Esteros Critical Energy Facility 2 Phase 1** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: 10/6/04 Signed: O Odoemelam

At: Sacramento, California

RESUME

DR. OBED ODOEMELAM

EDUCATION:

1979-1981 University of California, Davis, California. Ph.D., Ecotoxicology

1976-1978 University of Wisconsin, Eau Claire, Wisconsin. M.S., Biology.

1972-1976 University of Wisconsin, Eau Claire, Wisconsin. B.S., Biology

EXPERIENCE:

1989
The Present: California Energy Commission. Staff Toxicologist.

Responsible for the technical oversight of staffs from all Divisions in the Commission as well as outside consultants or University researchers who manage or conduct multi-disciplinary research in support of Commission programs. Research is in the following program areas: Energy conservation-related indoor pollution, power plant-related outdoor pollution, power plant-related waste management, alternative fuels-related health effects, waste water treatment, and the health effects of electromagnetic fields. Serve as scientific adviser to Commissioners and Commission staff on issues related to energy conservation. Serve on statewide advisory panels on issues related to multiple chemical sensitivity, ventilation standards, electromagnetic field regulation, health risk assessment, and outdoor pollution control technology. Testify as an expert witness at Commission hearings and before the California legislature on health issues related to energy development and conservation. Review research proposals and findings for policy implications, interact with federal and state agencies and industry on the establishment of exposure limits for environmental pollutants, and prepare reports for publication.

1985-1989 California Energy Commission.

Responsible for assessing the potential impacts of criteria and noncriteria pollutants and hazardous wastes associated with the construction, operation and decommissioning of specific power plant projects. Testified before the Commission in the power plant certification process, and interacted with federal and state agencies on the establishment of environmental limits for air and water pollutants.

1983-1985 California Department of Food and Agriculture.

Environmental Health Specialist.

Evaluated pesticide registration data regarding the health and environmental effects of agricultural chemicals. Prepared reports for public information in connection with the eradication of specific agricultural pests in California.

DECLARATION OF
PATRICK A. PILLING, PH.D., P.E., G.E.

I, PATRICK A. PILLING, declare as follows:

1. I am presently employed by Black Eagle Consulting, Inc. under contract with the California Energy Commission Systems Assessment and Facilities Siting and Environmental Protection Division as a **GEOTECHNICAL ENGINEER.**

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **GEOLOGY AND PALEONTOLOGY**, for the **LOS ESTEROS CRITICAL ENERGY FACILITY 2 PHASE 1** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: October 4, 2004 Signed: _____

At: Reno, Nevada

PATRICK A. PILLING, Ph.D., P.E., G.E.

Executive Vice President
Principal Geotechnical Engineer

Education

- B.S. – Civil Engineering –1986 – Santa Clara University
- M.S. – Civil Engineering – 1991 – San Jose State University
- Ph.D. – Civil Engineering – 1997 – University of Nevada, Reno

Registrations

- P.E. - Civil - Nevada – No. 9153
- P.E. - Civil – California – No. C 49578
- P.E. - Geotechnical – California – No. GE 2292
- P.E. - Civil - Oregon – No. 19675PE
- P.E. – Geotechnical – Oregon – No. 19675PE
- P.E. - Civil – Arizona – No. 35310
- P.E. - Civil – Utah – No. 971338-2202

Associated Experience

- University of Nevada, Reno - Course Instructor - CE 771 - Mining Waste Containment Design
- University of Nevada, Reno - Course Instructor - CE 771 - Practical Foundation Engineering

Experience

1997 to Present: Black Eagle Consulting, Inc.; Executive Vice President. Dr. Pilling maintains over 18 years of construction, geotechnical, transportation, and mining engineering experience, and has supervised the engineering and construction of such projects throughout the western United States and South America. As Executive Vice President, Dr. Pilling oversees daily office operations, including personnel and accounting issues, coordinates company marketing efforts, and performs project management, engineering and laboratory analyses, and report preparation on most projects. Dr. Pilling presently serves as our project manager of the Reno Retrack construction management team reviewing geotechnical design submittals for this rail project.

1996 to 1997: SEA, Incorporated; Senior Geotechnical Engineer. Dr. Pilling provided project coordination, management, supervision, and development, and performed field exploration, engineering analyses, and report preparation.

1990 to 1996: WESTEC; Project Manager. Mr. Pilling was responsible for general geotechnical analyses on most projects, as well as design, management, and permitting of heap leach and tailings storage facilities projects. His experience varied from foundation design recommendations for small pump house structures to detailed liquefaction and seepage/slope stability analyses for large earthen embankments.

1986 to 1990: Case Pacific Company; Project Manager. Mr. Pilling provided cost estimating, project management, and contract negotiation on a wide variety of projects. Responsibilities included design and construction of drilled shafts, earth retention, and underpinning systems, in addition to construction scheduling and cost control.

Affiliations

- American Public Works Association
- American Concrete Institute: Concrete Field Testing Technician Grade I
- National Society of Professional Engineers
- Secretary/Treasurer - National Society of Professional Engineers, Northern Nevada Chapter
- American Society of Civil Engineers
- International Association of Foundation Drilling
- National Council of Examiners for Engineering and Surveying
- American Society of Engineering Education
- Deep Foundations Institute

Publications

Ashour, M., P. A. Pilling, G. M. Norris, and H. Perez, June 1996, "Development of a Strain Wedge Model Program for Pile Group Interference and Pile Cap Contribution Effects," Report No. CCEER-94-4, University of Nevada, Reno; Federal Study No. F94TL16C, Submitted to State of California Department of Transportation (CalTrans).

Ashour, M., P. A. Pilling, and G. M. Norris, March 1997, "Documentation of the Strain Wedge Model Program for Analyzing Laterally Loaded Isolated Piles and Pile Groups," Proceedings, 32nd Symposium on Engineering Geology and Geotechnical Engineering, Boise, Idaho, pp. 344-359.

Ashour, M., P. Pilling, and G. Norris, 1998, "Updated Documentation of the Strain Wedge Model Program for Analyzing Laterally Loaded Piles and Pile Groups," Proceedings, 33rd Engineering Geology and Geotechnical Engineering Symposium, University of Nevada, Reno, pp. 177-178.

Ashour, M., G. Norris, and P. Pilling, April 1998, "Lateral Loading of a Pile in Layered Soil Using the Strain Wedge Model," Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 124, No. 4, pp. 303-315.

Ashour, M., G. M. Norris, S. Bowman, H. Beeston, P. Pilling, and A. Shamsabadi, March 2001, "Modeling Pile Lateral Response in Weathered Rock," Proceeding 36th Engineering Geology and Geotechnical Engineering Symposium, University of Nevada, Las Vegas, 2001.

Ashour, M., G. Norris, and P. Pilling, July/August 2002, "Strain Wedge Model Capability of Analyzing the Behavior of Laterally Loaded Isolated Piles, Drilled Shafts, and Pile Groups," Journal of Bridge Engineering, ASCE, Vol. 7, No 4, pp. 245-354.

Ashour, M., P. Pilling, and G. M. Norris, March 26 – 31, 2001, "Assessment of Pile Group Response Under Lateral Load," Proceedings, 4th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, University of Missouri – Rolla, MO, Paper 6.11.

Norris, G. M., M. Ashour, P. A. Pilling, and P. Gowda, March 1995, "The Non-Uniqueness of p-y Curves for Laterally Loaded Pile Analysis," Proceedings, 31st Symposium on Engineering Geology and Geotechnical Engineering, Logan, Utah, pp. 40-53.

Norris, G. M., P. K. Gowda, and P. A. Pilling, February 1993, "Strain Wedge Model Formulation for Piles," Report No. CIS 91-11, University of Nevada, Reno.

Pilling, P. A., 1997, "The Response of a Group of Flexible Piles and the Associated Pile Cap to Lateral Loading as Characterized by the Strain Wedge Model," Doctoral Dissertation, University of Nevada, Reno.

Pilling, P. A. and P. V. Woodward, March 1995, "Dependent Facility Closure in California," Proceedings, Mine Closure: Creating Productive Public and Private Assets, Sparks, Nevada, pp. 315-326.

Pilling, P.A. and H. E. Beeston, March 1998, "Expansion Testing of Clay Soils in Forensic Investigations," Proceedings, 33rd Symposium on Engineering Geology and Geotechnical Engineering, Reno, Nevada, pp. 119-127.

Pilling, P.A., M. Ashour, and G.M. Norris, 2001, "Strain Wedge Model Hybrid Analysis of a Laterally Loaded Pile Group," Journal of the Transportation Research Board, Transportation Research Record No. 1772, Paper No. 01-0174, pp. 115-121.

Pilling, P.A., July 2002, "Assessing the Liquefaction Potential of Sand Deposits Containing an Appreciable Amount of Gravel," Program with Abstracts 2002 Annual Meeting Association of Engineering Geologists and American Institute of Professional Geologists, Reno, Nevada, p35.

Awards

- Hugh B. Williams Industry Advancement Scholarship, International Association of Foundation Drilling (ADSC), 1993-94.
- National Society of Professional Engineers, Northern Nevada Chapter, Young Engineer of the Year, 1996.

DECLARATION OF
KEVIN ROBINSON

I, **Kevin Robinson**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Systems Assessment and Facilities Siting Division as a **MECHANICAL ENGINEER**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I co-authored the staff testimony on **FACILITY DESIGN** for the **LOS ESTEROS CRITICAL ENERGY FACILITY 2 PHASE 1** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

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: 10-4-04 Signed: Kevin Robinson

At: Sacramento, California

KEVIN ROBINSON
Mechanical Engineer

Experience Summary

Four years experience in the electric generation field, including mechanical design, QA/QC and construction of hydroelectric plant systems; and engineering and policy analysis of geothermal, natural gas-fired and thermal power plant regulatory issues.

Education

- California State University, Chico—Bachelor of Science, Mechanical Engineering
- Certified EIT, California

Professional Experience

2001 to Present—Mechanical Engineer, Systems Assessment & Facility Siting Division, Engineering Section – California Energy Commission

Responsible for analysis of generating capacity, reliability, efficiency, and the mechanical, civil/structural engineering aspects of power plant siting cases.

2000 to 2001—Mechanical Engineer, Oroville Field Division, Engineering Section – California Department of Water Resources

Assist in the preparation of designs, technical specifications and cost estimates for mechanical equipment at a hydroelectric power plant. Coordinate the design, installation, and inspection of mechanical equipment. Assist in preparing test reports, and recommendations for corrective action.

DECLARATION OF
Lance Shaw

I, Lance Shaw declare as follows:

1. I am presently employed by the California Energy Commission in the Compliance Unit of the Energy Facilities Siting and Environmental Protection Division as a Compliance Project Manager.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Compliance and Closure section, for the Los Esteros Critical Energy Facility (LECEF 2 Phase 1) based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: 7 Oct. 04 Signed: Lance Shaw

At: Sacramento, California

Resume of Lance Shaw
Compliance Project Manager (Planner II)

Experience Summary: **California Energy Commission (CEC)** – Oct. '02 to Present, Compliance Proj. Mgr. System Assessment & Facilities Siting Div. (SAFSD). Facilities Siting and Environmental Protection Division. Duties include: Managing multiple compliance projects including processing amendments to Commission Decisions. Reviewing Staff Assessments sections with emphasis on conditions of certification and verifications. Preparing and presenting testimony on compliance general conditions, and plant closure issues in public forums, workshops and hearings. Developing Memoranda of Understanding between the Commission and delegate Chief Building Officials (CBO) to ensure that projects are designed constructed and operated in conformance with the Commission Decision; all applicable laws, ordinances, regulations and standards; and the California Building Code.

CEC - Aug. '99 to Oct.'02, Siting Proj. Mgr., SAFSD. Duties included managing the work of multidisciplinary teams analyzing potential impacts of proposed power plants. Assisted on data adequacy on Morro Bay, and alternatives analysis on Three Mountain Power Project. Project manager of Blythe Energy Project, San Mateo Substation Project, Scott Substation Project, Rio Linda/Elverta Power Project, Roseville Energy Facility, and Avenal Energy Project.

Telecommunications Division of General Services – July '94 to July '99, Associate Telecom Engr., & Proj. Mgr. Duties included managing the work of teams designing and installing public service safety systems for several state agencies, including Dept. of Water Resources, Dept. of Corrections, Highway Patrol, and Dept. of Parks and Recreation. Before promoting to the Associate level, I worked as an electrical engineer.

U.S. Small Business Administration, Disaster Relief Div. – July '92- July '94, Construction Analyst (Team Lead) Trained, managed, and reviewed the work of as many as 30 engineers, architects, contractors and others working in "declared disaster" areas. Assessed disaster-related damage losses to business and homeowners, and recommending approvals for low interest loans, to restore the economy rapidly. I worked such disasters as Big Bear/ Landers earthquake of 6/92, Hurricane Iniki (on Kauai) 9/92, Dakota floods of 8/93, and Northridge earthquake of 1/94.

Prior to '92, I managed multi-disciplinary teams as a project manager in several industries. I have managed a mechanical engineering department, a marketing department, and a sale and service department, purchasing departments. I have successfully managed and performed in 5 Fortune 500 companies (Including GE's Nuclear Energy Div.) and start-ups. I worked 15 years in "Silicon Valley" managing high-technology project teams in the semiconductor wafer processing equipment industry, computer manufacturing, and semiconductor marketing engineering. As an adjunct (graduate and undergraduate) professor for the University of Phoenix's 6-campus Sacramento Valley Region, I earned the distinction as the most outstanding undergraduate business professor in 1998, and again in 1999. I was one of the editors on two best-selling business/creative books by Roger von Oech, Ph.D. "A Whack on the Side of the Head", and "A Kick in the Seat of the Pants". I wrote and got published two articles on creative parenting as a single joint-custody dad of two pre-schoolers.

Education: Bachelor of Science, Electrical Eng. – New Mexico State Univ. 1/68.
Master of Arts, Business Administration – Arizona State Univ. 8/69.

DECLARATION OF
AMANDA STENNICK

I, **AMANDA STENNICK** declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Protection of the Energy Facilities Siting and Environmental Protection Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **TRAFFIC AND TRANSPORTATION**, for the **LECEF 2 PHASE 1 STAFF ASSESSMENT (**based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: Amanda Stennick Signed: 10/04/04

At: Sacramento, California

AMANDA STENNICK

EDUCATION

B.A. 1986 University of California, Davis, Urban and Economic Geography

WORK EXPERIENCE

Oct. 1993 to April 1998 **Planner I.** California Energy Commission, Energy Facilities Siting and Protection Division.

- Provide technical analysis of proposed energy planning, conservation, and development programs on land use and socioeconomic resources. Specific tasks include the analysis of potential impacts, identification of suitable mitigation measures, preparation of testimony, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Recent work includes participation in the environmental justice task force, and preparation of environmental justice white paper, presented to Commissioners; research and preparation of discussion on discount rates and net present value for the SFEC siting project; preparation of socioeconomic section on 1996 Quincy Library Group Report; preparation of forestry section on 1997 CEC Global Climate Change Report; ongoing demographic research for environmental justice issues in siting cases.

April 1998 present **Planner II.** California Energy Commission, Energy Facilities Siting and Protection Division.

- Provide technical analysis of proposed energy planning, conservation, and development programs on land use and socioeconomic resources. Specific tasks include the analysis of potential impacts, identification of suitable mitigation measures, preparation of testimony, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Recent work includes participation in the environmental justice task force, and preparation of environmental justice white paper, presented to Commissioners; research and preparation of discussion on discount rates and net present value for the SFEC siting project; preparation of socioeconomic section on 1996 Quincy Library Group Report; preparation of forestry section on 1997 CEC Global Climate Change Report; ongoing demographic research for environmental justice issues in siting cases.

1992 to 1993 **Environmental Analyst/Planner.** Beak Consultants.

- Environmental Planner for EIR/EA for the Mammoth County Water District, involving the analyses of potential impacts resulting from lake water transfers and maintenance of instream flows in the Mammoth Lakes Basin. Prepared land use, socioeconomics, recreation, and public services and utilities sections of EIR/EA.

- Environmental Planner for an Effluent Treatment Plant EIR for Simpson Paper company. Prepared land use, socioeconomics, recreation, public services and utilities, cumulative impacts sections, and mitigation monitoring.

- Environmental Planner for Folsom/SAFCA Reoperation. Work involved determining parameters of project description with respect to water modeling, project geographic boundaries, and agency jurisdictional boundaries; compliance with federal, state, and local plans and policies.

1990 to 1992

Environmental Analyst/Project Manager. ECOS. Inc.

- Project Manager/Planner. EIR for a Planned Development, General Plan Amendment, and rezone request for a 504-acre Business and Industrial Park expansion for the Port of Sacramento. Prepared work scope and budget for Public Improvements Plan and a Specific Plan for 80-acre Mixed Use/Water Related development; and Mitigation Monitoring Plan and Statement of Overriding Considerations for the City of West Sacramento. Specific tasks included coordination with subcontractors on technical sections of EIR; meetings with Assistant Port Director and City staff to present Public Improvements Plan, Specific Plan, tentative parcel map, and critical project phasing; discussion with CDFG and Port staff on regional approach to mitigation for project-impacted endangered species.

- Project Manager/Planner. EIR for the Wildhorse Residential/Recreational Planned Development for the City of Davis. Specific tasks included CEQA compliance, writing technical sections on land use, project alternatives, and cumulative impacts, and determining appropriate project alternatives as based on traffic models and allowable housing densities.

- Project Manager. Yolo County Powerline Ordinance. Project tasks included developing siting policies and mitigation measures for placement of powerlines and substations.

1989 to 1990

Assistant Planner. Sacramento County Planning Department.

- Principal Author. Energy Component of the Public Services and Facilities Element of the Sacramento County General Plan. Coordinate work efforts with the CEC, SMUD, and PG&E to develop environmental and siting policies for energy facilities and transmission lines; identify environmental impacts and appropriate mitigation measures.

1987 to 1989

Planner/Assistant Planner. Yolo County Community Development

- Planning liaison for Homestake Mining Company's (HMC) McLaughlin Mine. Conducted meetings on the Technical Review Panel's environmental monitoring of HMC's McLaughlin Mine, and

prepared staff reports on the implementation of use permit phasing, regarding issues of water quality, and impacts of the tailings pond on biologic resources. Specific tasks included site visits to monitor the revegetation plan and other mitigation measures as specified in the use permit; oral and written presentations to the Planning Commission.

1988 **Consultant.** Pan Pacific Energy Development Corporation.

- Consulting job to develop a regional energy plan for rural areas of developing countries including decentralized non-fossil fuel power plants in agricultural regions. Attended IREC and AWEA International Conference in Honolulu.

PROFESSIONAL AND CONTINUING EDUCATION

1988	California Environmental Quality Act (UC Davis)
1989	Subdivision Map Act (UC Davis)
1991	Fiscal Impact Analysis (UC Davis)
1994	APA Conference (San Francisco)
1994	Environmental Justice Conference (UC Berkeley)
1998	California Environmental Quality Act (California Energy Commission)

PROFESSIONAL AFFILIATIONS

Association of Environmental Professionals
American Planning Association

DECLARATION OF
Ramesh Sundareswaran

I, **Ramesh Sundareswaran** declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Systems Assessment & Facilities Siting Division as a Health & Safety Program Specialist II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimonies on Public Health and Waste Management, for the LECEF 2 phase I project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: 11-10-04 Signed: S. R

At: Sacramento, California

RAMESH SUNDARESWARAN

SUMMARY

Offer progressively responsible experience in management, organizational, technical and policy areas related to urban environmental management, pollution control, regulatory compliance and occupational health and safety.

EMPLOYMENT

6/00 -present *Associate(California Energy Commission, Sacramento, CA)*
Provided first-line technical advice and input on subjects regarding hazardous materials management, industrial waste management, fire protection and occupational health and safety as part of review of power plant and energy resource licensing. Conducted safety and health assessments to determine risks from hazardous materials and wastes. Prepared and presented expert witness testimonies and recommendations to upper management during licensing regulatory compliance proceedings.

12/97-6/00 *Associate(SF Regional Water Quality Control Board, Oakland, CA)*
Performed a wide variety of consultative, advisory and evaluative duties in the areas of pollution control due to hazardous chemicals use/release in various industries. Provided expert testimony in formal hearings regarding regulatory compliance of responsible parties. Coordinated with other public agencies and informed and involved the public in addressing environmental risk, mitigation and prevention.

6/92 -12/97 *Environmental Engineer(BPS Inc, Torrance, CA)*
Developed, planned, coordinated and executed various projects in the areas of environmental mitigation, pollution prevention, regulatory compliance and end-of-pipe treatment for media such as groundwater,

wastewater, soil, air and man-made structures and different pollutants. Prepared workplans, reports, process designs, bids and specifications for such projects. Liaised with governmental agencies and negotiated environmental permits and variances for clients. Advised clients on regulatory interpretations. Testified as fact and expert witness in environmental litigations. Oversight and supervision of staff, subcontractors and vendors in completion of projects. Peer reviewed US Environmental Protection Agency(EPA)'s Industrial Accident Release Prevention Requirements document.

4/90-6/92 *Environmental Engineer (Dames & Moore, Santa Ana, CA)*
Served as technical lead and also provided project team member support for a wide spectrum of environmental projects. Responsibilities included accountability for technical, financial and quality performance. Prepared business proposals and performed new client business development. Was expert panel member on US EPA's treatibility testing guidance document.

8/88-4/90 *Environmental Engineerr (JKB Assoc., Carson, CA)*
Provided management and technical support for various projects ranging from environmental protection to rehabilitation of impaired natural resources. Oversaw subcontractors and vendors in completion of projects. Wrote technical/cost proposals and reports.

6/88-8/88 *Hazardous Waste Specialist (Orange County Health Care Agency, Santa Ana, CA)*
Rendered regulatory oversight for various projects to protect public health and environment. Involved in policy-making and development of environmental regulations.

1/87-6/88 *Instructor (US EPA Air Pollution Training Institute, San Luis Obispo, CA)*

Taught various air pollution courses to both industry and government.
Assisted course director in program administration.

OTHER EMPLOYMENT

Marketed corrosion mitigation technologies for over 6 years.

EDUCATION

1987-1988	Master of Engineering, Environmental Engineering, Cal Poly, San Luis Obispo, California
1980-1982	Master of Business Administration, Armstrong University, Berkeley, California
1974-1979	Bachelor of Chemical Engineering, Kaktiya University, India

DECLARATION OF
Gabriel D. Taylor

I, **Gabriel D. Taylor** declare as follows:

1. I am presently employed by the California Energy Commission in the **Environmental Office** of the Systems Assessment & Facility Siting Division as a **Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Air Quality**, for the **Los Esteros Critical Energy Facility 2 Phase 1** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: 11/10/04 Signed: [signature]

At: Sacramento, California

Gabriel D. Taylor

1516 9th Street, MS 40, Sacramento, CA 95814
gtaylor@energy.state.ca.us
(916) 654-4482

OBJECTIVE

A position involving detailed problem solving, technical analysis and hands-on engineering with opportunities for professional growth.

EMPLOYMENT HISTORY

California Energy Commission, MECHANICAL ENGINEER, Sacramento, CA (Dec. 1999 – Present)
Power Plant Siting Division, Air Quality section. Reviewed and analyzed permit amendments and Applications For Certification (AFC) for power plants of greater then 50 MW output. Testified as an expert witness in support of my analysis.

General Electric Nuclear Energy, ENGINEERING CO-OP, San Jose, CA (Jan. – Aug. 1998)
Chemistry Technologies Group, Hydrogen Water Chemistry (HWC) division. Participated in the production process for HWC systems from the receipt of the purchase order through delivery. My duties included mechanical design & verification, AutoCAD drafting, complete document issuing, and factory acceptance testing.

Laney College, TEACHING ASSISTANT, Oakland, CA (Jan. – Dec. 1996)
Engineering 45 (Properties of Materials): Repaired laboratory equipment (including six metallurgical microscopes), prepared laboratory exercises and conducted lab sessions, graded thirty to thirty-five homework assignments per week, tutored students individually and in groups.

University of California, Berkeley, TECHNICAL TUTOR, Berkeley, CA (Aug. – Dec. 1996)
Privately tutored college students in Calculus, Linear Algebra & Differential Equations, Physics, Chemistry, Properties of Materials, and Engineering Statics.

Peet's Coffee & Tea, SALES ASSOCIATE, Emeryville, CA (April 1994 – July 1996)

COMPUTER SKILLS

- Windows 3.1/95/98
- MS-DOS
- UNIX
- Mac OS
- AutoCAD 13/14
- Claris CAD
- MathCAD 6.0
- Visio
- MS Excel
- MS Power Point
- MS Word 97
- HP-VEE
- DOS Batch Programming
- FORTRAN 77/90
- Hardware Assembly
- Software Installation

EDUCATION

University of California, Berkeley
Bachelor of Science
Double Major: Mechanical Engineering and Materials Science & Engineering
3.12 UCB GPA (1993 – Graduation)

Peralta Community College (Fall 1993 – Fall 1996)
4.0 Overall GPA

TECHNICAL COURSE WORK

- Bonding, Crystallography & Crystal Defects
- Corrosion & Electrochemistry
- Electronic Techniques for Engineers
- Energy, Politics and Society
- Engineering Mechanics
- Experimental Materials Science Laboratory
- Experimentation & Measurement Laboratory
- Fluid Dynamics & Applied Fluid Dynamics
- Heat & Mass Transfer
- Mechanical Behavior & Processing of Materials
- Mechanical Engineering Design Laboratory
- Phase Transformation & Kinetics
- Properties of Materials
- Technical Communication & Writing
- Thermal Environmental Control Systems
- Thermodynamics

RECOGNITION & ACTIVITIES

- Published: "The Challenges Facing Hydroelectric Power" in The California Engineer (Fall 1997)
- Hazardous Waste Operations and Emergency Response Certified (HAZWOPER, Title 8 CCR 5192)
- President, Materials Science & Engineering Association (MSEA) (Fall 1997)
- MSEA Representative to the Engineer's Joint Council (Spring 1997)
- Industry Liaison, Engineer's Joint Council (Fall 1997)
- Member of the UC Berkeley Materials Science & Engineering Association
- Member of the American Society of Mechanical Engineers (ASME)
- Member of the American Society of Heating, Refrigerating & Air-Conditioning Engineers (ASHRAE)

DECLARATION OF
Dorothy Torres

I, Dorothy Torres declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Energy Facilities Siting and Environmental Protection Division as a PlannerII.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Cultural Resources, for the Los Esteros Critical Energy Facility 2 Phase 1 Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

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: 10/4/04 Signed: Dorothy Torres

At: Sacramento, California

Dorothy E. Torres

EXPERIENCE:

September 2002-Present

Planner II: Cultural, Socioeconomic and Visual Unit, Systems Assessment and Facilities Division, California Energy Commission. Duties: As a Planner II, I Identify, describe, and analyze complex cultural resources issues related to electrical energy production facilities, alternative energy technologies, energy research and development and Commission programs. This includes the preparation of sections of initial studies, environmental impact reports and Commission reports.

In addition, I prepare independent assessments of the cultural resources aspects of Notices of Intention, Applications for Certification, and Small Power Plant Exemptions. The final analyses include the preparation and presentation of expert technical testimony, which is presented at Commission hearings.

I also coordinate and work with federal, state, regional and local governments; cultural resources related agencies; environmental organization and universities; Native American or other ethnic groups; archaeological or historical professional organizations; and members of the general public regarding energy-related issues to assure their input into the Commission power plant siting process and other Commission programs.

Moreover, I lead or participate in workshops and meetings concerning Commission projects, programs and policies, amongst and between project applicants, staff, other governmental agencies, private organizations, and the public.

In addition, I examine and evaluate existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the visual, cultural aspects of proposed energy facilities on Commission programs. After permitting, I evaluate the licensee's compliance with conditions of certification for power plant facilities.

April 2001-August 2002

Planner I: Cultural, Socioeconomic and Visual Unit,

Systems Assessment and Facilities Division, California Energy Commission. Duties: I gather, organize and analyze cultural resources data and identify issues, impacts and mitigation measures ensuring compliance with the California Environmental Quality Act. I provide oversight for consultants working on siting applications in the area of cultural resources. I participate in workshops and meetings concerning Energy Commission projects and programs. In addition, I Interact with Division technical staff and staff representing other Divisions, local and regional government staff/decision makers, federal and state agency representatives and consultants/experts in the areas of anthropology, archaeology, history and related fields. I prepare written assessments of energy related documents.

December 1998-March 2001

Energy Analyst: Community and Cultural Resources Unit, Energy Facilities Siting and Environmental Protection Division, California Energy Commission. Duties: I assist in gathering, organizing and analyzing cultural resources data and identify issues, impacts and mitigation measures. I assist in coordinating with local governments, resource protection agencies, environmental organizations and business organizations. Furthermore, I participate in workshops and meetings concerning Energy Commission projects and programs. I evaluate existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the cultural resource aspect of proposed energy facilities. I prepare written assessments of energy related documents.

EDUCATION:

Spring 1988 — M.A., Anthropology
California State University, Sacramento

Spring 1980 — B.A., Anthropology and History
California State University, Sacramento

Professional Organizations — Society for California Archaeology
Sacramento Archaeological Society

DECLARATION OF
Rick Tyler

I, **Risk Tyler** declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Energy Facilities Siting and Environmental Protection Division as a Sr. Mechanical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Hazardous Materials and Worker Safety Fire Protection Sections, for the **Los Esteros Critical Energy Facility 2, Phase 1 project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: 10/12/04 Signed: _____

At: Sacramento, California

RICK TYLER

Associate Mechanical Engineer

CALIFORNIA ENERGY COMMISSION
430 Ashore Ave.
Sacramento, California 95831
(916) 392-1663

EDUCATION B.S., Mechanical Engineering, California State University, Sacramento. Extra course work in Statistics, Instrumentation, Technical Writing, Management; Toxicology, Risk Assessment, Environmental Chemistry, Hazardous Materials Management, Noise Measurement, and regulations regarding control of toxic substances.

Near completion of course work necessary to obtain a certificate in hazardous materials management from University of California, Davis.

EXPERIENCE

Jan. 1998-Present

California Energy Commission - Associate Mechanical Engineer
Energy Facility Siting and Environmental Protection Division

Responsible for review of Applications for Certification (applications for permitting) for large power plants including the review of handling practices associated with the use of hazardous and acutely hazardous materials, loss prevention, safety management practices, design of engineered equipment and safety systems associated with equipment involving hazardous materials use, evaluation of the potential for impacts associated with accidental releases and preparation and presentation of expert witness testimony and conditions of certification. Review of compliance submittals regarding conditions of certifications for hazardous materials handling, including Risk Management Plans Process Safety Management.

April 1985-Jan. 1998

California Energy Commission - Health and Safety
Program Specialist; Energy Facility Siting and Environmental Protection Division.

Responsible for review of Public Health Risk Assessments, air quality, noise, industrial safety, and hazardous materials handling of Environmental Impact Reports on large power generating and waste to energy facilities, evaluation of health effects data related to toxic substances, development of recommendations regarding safe levels of exposure, effectiveness of measures to control criteria and non-criteria pollutants, emission factors, multimedia exposure models. Preparation of testimony providing Staff's position regarding public health, noise, industrial safety, hazardous materials handling, and air quality issues associated with proposed power plants. Advise Commissioners, Management, other Staff and the public regarding issues related to health risk assessment of hazardous materials handling.

Nov. 1977-
April 1985

California Air Resources Board - Engineer (last 4 years Associate level)

Responsible for testing to determine pollution emission levels at major industrial facilities; including planning, supervision of field personnel, report preparation and case development for litigation; evaluate, select and acceptance-test instruments prior to purchase; design of instrumentation systems and oversight of their repair and maintenance; conduct inspections of industrial facilities to determine compliance with applicable pollution control regulations; improved quality assurance measures; selected and programmed a computer system to automate data collection and reduction; developed regulatory procedures and the instrument system necessary to certify and audit independent testing companies; prepared regulatory proposals and other presentations to classes at professional symposia and directly to the Air Resources Board at public hearings. As state representative, coordinated efforts with federal, local, and industrial representatives.

PROFESSIONAL AFFILIATIONS/ LICENSES

Past President, Professional Engineers in California
Government Fort Sutter Section;
Past Chairman, Legislative Committee for Professional Association of Air Quality Specialists. Have passed the Engineer in Training exam.

PUBLICATIONS, PROFESSIONAL PRESINTATIONS AND ACCOMPLISHMENTS

Authored staff reports published by the California Air Resources Board and presented papers regarding continuous emission monitoring at symposiums.

Authored a paper entitled "A Comprehensive Approach to Health Risk Assessment", presented at the New York Conference on Solid Waste Management and Materials Policy.

Authored a paper entitled "Risk Assessment A Tool For Decision Makers" at the Association of Environmental Professionals AEP Conference on Public Policy and Environmental Challenges.

Conducted a seminar at University of California, Los Angeles for the Doctoral programs in Environmental Science and Public Health on the subject of "Health Risk Assessment".

Authored a paper entitled "Uncertainty Analysis -An Essential Component of Health Risk Assessment and Risk Management" presented at the EPA/ORNL expert workshop on Risk Assessment for Municipal Waste Combustion: Deposition, Uncertainty, and Research Needs.

Presented a talk on off-site consequence analysis for extremely hazardous materials releases. Presented at the workshop for administering agencies conducted by the City of Los Angeles Fire Department.

Evaluated, provided analysis and testimony regarding public health and hazardous materials management issues associated with the permitting of more than 20 major power plants throughout California.

Developed Departmental policy, prepared policy documents, regulations, staff instruction, and other guidance documents and reference materials for use in evaluation of public health and hazardous materials management aspects of proposed power plants.

Project Manager on contracts totaling more than $500,000.

RES.RT

DECLARATION OF
Robert Worl

I, **Robert Worl** declare as follows:

1. I am presently employed by the California Energy Commission in the **Siting Office** of the Energy Facilities Siting and Environmental Protection Division as a **Planner II, Project Manager.**

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **Project Description and Alternatives Sections**, for the **Los Esteros Critical Energy Facility 2, Phase 1 project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, 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 addressed therein.

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: October 8, 2001 Signed: Robert Worl

At: Sacramento, California

Robert C. Worl
Planner II, Siting Project Manager
California Energy Commission

Employment

Planner I and II, California Energy Commission, Siting May 2001 – Present
As project manager coordinating a resource specialist team evaluating Applications for Certification (AFC's) by power plant developers under Energy Commission guidelines. Coordination of evaluations and research efforts according to the process established to insure protection of public health, safety, and the environment and insuring timely development of needed electrical energy facilities.

Training Coordinator, Operator IV, , North Slope Borough 1980-2000
First built and operated by the North Slope Borough (NSB) in 1979, and contracted to Piquniq Management Corporation in 1994, the facilities provided solid waste, landfill, water/wastewater and oily waste collection, treatment and disposal for the Prudhoe Bay oil field.

Research and Organization Consultant, Robert Worl Associates 1989-1995
Work with municipal and non-profit organizations serving rural Alaska. Board/Management workshops focusing on communication, strategic planning, goal setting, and staff coaching.

Research Associate, Professional Growth Systems, Inc. (PGS) 1987-1989
Specializing in strategic planning, board and management organization, alignment training, and executive coaching for business and government.

NPR-A Coordinator, North Slope Borough 1977-1978
Represent local interests on a Federal-State-Local Government Task Force mandated by Congress to develop a long-range use plan for the newly created National Petroleum Reserve-Alaska.

Director, Health-Social Services, North Slope Borough 1975-1977
Develop this new Department, included research, program planning, grant and proposal writing, and negotiation of contracts with Federal and State agencies. Recruited and trained staff, developed a regional health board

Publications:

Beaufort Sea Sociocultural Systems Update Analysis. Worl, Robert, Worl, Rosita, and Lonner, Thomas. Alaska OCS Socioeconomic Studies Program, Technical Report No. 64. Anchorage. 1981

Beaufort Sea Sociocultural Systems. Worl Associates (Robert and Rosita Worl). Alaska OCS Socioeconomic Studies Program, Technical Report Nos. 9 and 22. Anchorage: Mineral Management Service (formerly Bureau of Land Management) 1978

Native Livelihood and Dependence. Worl, Robert (Contributor and Editor), National Petroleum Reserve-Alaska, Land Use Study, Anchorage: Bureau of Land Management. 1978

Education

BA degree, Central Washington State College
2 years graduate study, University of Alaska-Anchorage
Additional Courses: Advanced Land Use Planning and Administration, Hazardous Waste Operation and Emergency Response (HAZWOPR) Confined Space, H2S, CPR and First Aid