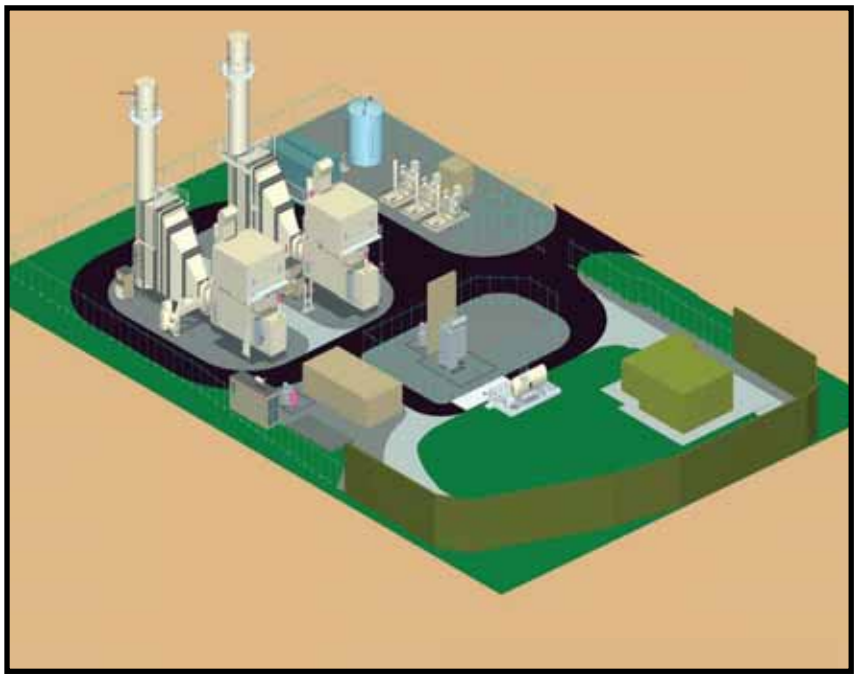
Preliminary Staff Assessment

CHULA VISTA ENERGY UPGRADE PROJECT

Application For Certification (07-AFC-4)
San Diego County



CALIFORNIA ENERGY COMMISSION

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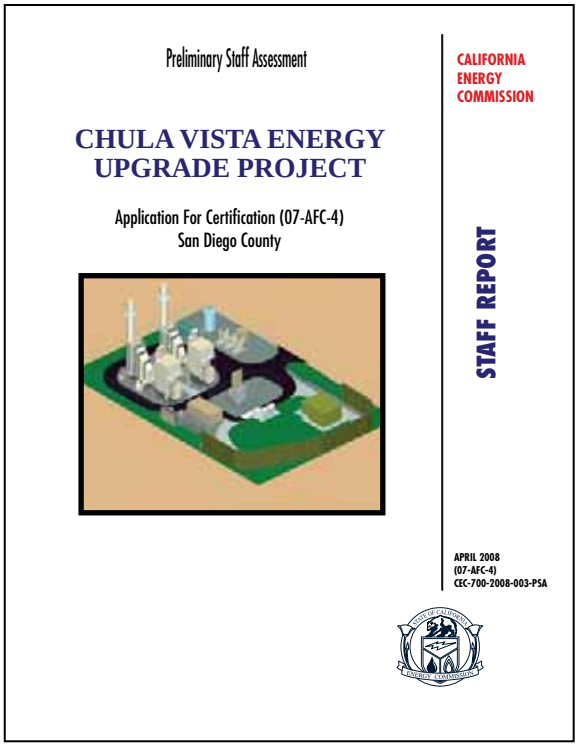
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CHULA VISTA ENERGY UPGRADE PROJECT
(07-AFC-4)
PRELIMINARY STAFF ASSESSMENT

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EXECUTIVE SUMMARY

Christopher Meyer

INTRODUCTION

This Preliminary Staff Assessment (PSA) contains the California Energy Commission (Energy Commission) staff's evaluation of MMC Energy Incorporated's (the Applicant) Application for Certification (AFC) (07-AFC-4) for the Chula Vista Energy Upgrade Project (CVEUP). The proposed CVEUP electric generating plant and related facilities are under the Energy Commission's jurisdiction and cannot be constructed or operated without the Energy Commission's certification. This PSA examines engineering, environmental, public health and safety aspects of the CVEUP, based on the information provided by the applicant and other sources available at the time the PSA was prepared. The PSA contains analyses similar to those normally contained in an Environmental Impact Report required by the California Environmental Quality Act (CEQA). When issuing a license, the Energy Commission is the lead state agency under CEQA, and its process is functionally equivalent to the preparation of an EIR. After a 30-day public comment period on the PSA, staff will issue its testimony in the form of the Final Staff Assessment.

The Energy Commission staff has the responsibility to complete an independent assessment of the project's engineering design and its potential effects on the environment, the public's health and safety, and whether the project conforms to all applicable laws, ordinances, regulations and standards (LORS). The staff also recommends measures to mitigate potential significant adverse environmental effects and conditions of certification for construction, operation and eventual closure of the project, if approved by the Energy Commission.

This PSA 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 Staff Assessment will be the next iteration of staff analysis, and will serve as staff's testimony in evidentiary hearings to be held by the Committee of two Commissioners who are hearing this case. The Committee will hold evidentiary hearings and will consider the recommendations presented by staff, the applicant, all parties, government agencies, and the public prior to proposing its decision. The Energy Commission will make the final decision, including findings, after the Committee's publication of its proposed decision.

PROJECT LOCATION AND DESCRIPTION

The proposed site is located on a 3.8-acre parcel in the City of Chula Vista's Main Street Industrial Corridor and within the city's Light Industrial zoning district. The project site address is 3497 Main Street, Chula Vista, California and is located immediately north of the Otay River between Interstate 5 and Interstate 805. Access to the site is via an easement that runs south from Main Street within an adjacent property. This easement also provides access to employee parking for newly constructed industrial buildings immediately east of the project site.

The proposed CVEUP would be a nominal 100 megawatt (MW) peaking facility, with construction planned to begin in the fall of 2008 and commercial operation planned by the fall of 2009. Primary equipment for the generating facility would include two General Electric (GE) LM6000 natural gas-fired turbine-generators and associated equipment.

The CVEUP would replace the existing older and less efficient technology with newer, more efficient equipment with lower emissions. This site is currently occupied by MMC's Chula Vista Power Plant, a 44.5 MW simple-cycle, natural gas-fired peaking power plant using Pratt & Whitney FT4 Twinpac™ technology. As part of the CVEUP, the existing power plant and air pollution control equipment would be removed from the southern portion of the project parcel. The proposed plant, using GE LM6000 technology, would be constructed on vacant land in the northern portion of the parcel. Some of the facilities that serve the existing plant would be reused for the new power plant. These facilities include the existing transmission connection; natural gas, water, and sanitary sewer pipelines; fencing and sound attenuation wall; utility/control building; stormwater runoff retention basin; and the 12,000-gallon aqueous ammonia storage tank and tank refilling station. Once the new plant is constructed, the existing plant would be dismantled and removed. The existing power equipment would be sold for salvage and the foundations, piping, and other equipment associated with the existing plant will be removed.

Because the proposed CVEUP would reuse the existing electrical transmission, natural gas, water service, and sanitary sewer pipelines, the proposed project would have no new or modified offsite linear facilities. The existing plant connects to San Diego Gas and Electric's (SDG&E's) electrical transmission system at the Otay Substation, which is approximately 1,020 feet north of the project site. This connection consists of a 69 kilovolt (kV) single-circuit transmission system mounted on wooden poles that runs north from the project parcel along its western boundary.

The existing plant connects with the Sweetwater Authority's water supply system through a 4-inch-diameter onsite pipe. Project water uses would include turbine washes and process makeup, site landscape irrigation, and domestic and sanitary uses. The existing pipeline extends south from Main Street within an existing utility easement that runs in the access lane and connects the parcel with Main Street immediately to the east. Reclaimed water is not currently available in or near this location.

The CVEUP would also use the existing project's 8-inch-diameter sanitary wastewater pipeline that currently serves the project site located within a sanitary sewer easement that runs along the western boundary of the property.

PUBLIC AND AGENCY COORDINATION

On August 16 and 28, 2007, the Energy Commission Staff provided the AFC to a comprehensive list of libraries, agencies and organizations. Extensive coordination has occurred with the numerous local, state and federal agencies that have an interest in the project. Particularly, Energy Commission staff has worked with the City of Chula Vista, California Independent System Operator (California ISO), San Diego Air Pollution Control District (SDAPCD), California Air Resources Board, and the U.S. Environmental Protection Agency (U.S. EPA) to identify and resolve issues of concern. In addition, staff

has coordinated the review and analysis of the project with U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Army Corp of Engineers, Native American tribes and other interested parties. Staff also contacted the local water agencies to ensure minimization of water usage and a clearer understanding of potential impacts.

A publicly noticed workshop was conducted on January 17, 2008. Although much of the information gathered during this workshop will be used to prepare the Final Staff Assessment (FSA) and addressed in that document, specific concerns in the areas of Hazardous Materials and Socioeconomics were addressed in the PSA. Additionally, responses to comments on the PSA will be included in the FSA.

ENVIRONMENTAL JUSTICE

Executive Order 12898, “Federal Actions to address Environmental Justice in Minority Populations and Low-Income Populations,” focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of this mission. The order requires the U.S. EPA and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

For all siting cases, Energy Commission staff conducts an environmental justice screening analysis in accordance with the “Final Guidance for Incorporating Environmental Justice Concerns in U.S. EPA’s National Environmental Policy Act (NEPA) Compliance Analysis” dated April 1998. The purpose of the screening analysis is to determine whether a minority or low-income population exists within the potentially affected area of the proposed site.

California Statute, Section 65040.12 (c) of the Government Code, defines “environmental justice” to mean “fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.” In light of the progress made by federal environmental agencies on environmental justice, the Energy Commission has examined federal guidelines pursuant to its desire to follow environmental justice principles for the environmental review of this project.

The steps recommended by these guidance documents to assure compliance with the Executive Order are: (1) outreach and involvement; (2) a screening-level analysis to determine the existence of a minority or low-income population; and (3) if warranted, a detailed examination of the distribution of impacts on segments of the population. Though the Federal Executive Order and guidance are not binding on the Energy Commission, staff finds these recommendations helpful for implementing this environmental justice analysis. Staff has followed each of the above steps for the following 11 sections in the PSA: Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Socioeconomics, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management. Staff

has determined that the project would not cause significant adverse direct, indirect, or cumulative socioeconomic impacts on the area's housing, schools, police, emergency services, hospitals, and parks and recreation because most of the construction and operation workforce already resides within the local or regional labor market area.

The purpose of the environmental justice screening analysis is to determine whether a low-income and/or minority population exists within the potentially affected area of the proposed site. Staff conducted the screening analysis in accordance with the "Final Guidance for Incorporating Environmental Justice Concerns in U.S. EPA's NEPA Compliance Analysis" (Guidance Document) dated April 1998. People of color populations, as defined by this Guidance Document, are identified where either:

- the minority population of the affected area is greater than fifty percent of the affected area's general population; or
- the minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

Staff has reviewed Census 2000 information which indicates that the minority population by census block (the smallest geographic unit for which the Census Bureau collects and tabulates data) is 73.41 to 81.13 percent within a six-mile and one-mile radius of the proposed CVEUP. The Census 2000 Census found that the below-poverty population is 13.34 percent within a one-mile radius of the proposed project site.

OUTREACH

The Commission held an Informational Hearing and Site Visit for the CVEUP on November 29, 2007. In preparation for that event, the Public Adviser's Office had flyers placed in local newspapers to notify the public of the upcoming hearing. The hearing was held in the City of Chula Vista to facilitate public involvement. Additionally, a publicly noticed workshop was conducted related to this proposed project on January 17, 2008 in Chula Vista to discuss data requests and data responses. Staff coordinated with the city and local residents on the scheduling and location of the January 17, 2008 workshop to maximize public participation.

STAFF'S ASSESSMENT

Each technical area section of the PSA contains a discussion of the project setting, impacts, and where appropriate, mitigation measures and conditions of certification. The PSA includes staff's assessment of:

- 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;
- project alternatives;
- compliance of the project with all applicable laws, ordinances, regulations and standards (LORS) during construction and operation;
- environmental justice for minority and low income populations, when appropriate; and
- proposed conditions of certification.

Staff has prepared its preliminary analyses and has made preliminary recommendations for all technical areas.

SUMMARY OF PROJECT RELATED IMPACTS

The project as proposed is inconsistent with the City of Chula Vista General Plan, including General Plan Policy E 6.4, the map boundaries of the City of Chula Vista Multi-Species Conservation Plan Subarea Plan 75 – 99 percent Conservation Area – Habitat Preserve, and the Uniform Fire Code. However, staff believes that coordination with the City of Chula Vista in addition to implementation of the applicant's and the staff's proposed mitigation measures and the staff's proposed conditions of certification, the CVEUP would comply with all applicable laws, ordinances, regulations, and standards (LORS), and that significant adverse direct, indirect, and cumulative impacts will not occur. For a more detailed review of potential impacts, see staff's technical analyses in the PSA. The status of each technical area is summarized in the table below. The discussion following the table identifies the items necessary for completion of the FSA and provides a discussion of associated issues.

Technical Area	Complies with LORS	Impacts Mitigated
Air Quality	Yes	Yes
Biological Resources	Yes	Yes
Cultural Resources	Yes	Yes
Efficiency	Yes	Yes
Facility Design	Yes	Yes
Geology & Paleontology	Yes	Yes
Hazardous Materials	Yes	Yes
Land Use	Yes	Yes
Noise	Yes	Yes
Public Health	Yes	Yes
Reliability	Yes	Yes
Socioeconomic Resources	Yes	Yes
Soil & Water Resources	Yes	Yes
Traffic & Transportation	Yes	Yes
Transmission Line Safety/Nuisance	Yes	Yes
Transmission System Engineering	Yes	Yes
Visual Resources	Yes	Yes
Waste Management	Yes	Yes
Worker Safety and Fire Protection	Yes	Yes

CONCLUSIONS AND RECOMMENDATIONS

The PSA is a document of the Energy Commission staff so, by its very nature, the conclusions and recommendations presented are considered staff's initial analysis of the project.

Each technical area assessment in the PSA includes a discussion of the project and the existing environmental setting; the project's conformance with laws, ordinances, regulations and standards (LORS); whether the facility can be constructed and operated safely and reliably; project specific direct and cumulative impacts; the environmental consequences of the project using the proposed mitigation measures; conclusions and recommendations; and any proposed conditions of certification under which the project should be constructed and operated, should it be approved.

In summary this PSA finds that:

- As shown in the above table, the project is in conformance with all Laws, Ordinances, Regulations and Standards (LORS).
- The map boundaries of the City of Chula Vista Multi-Species Conservation Plan Subarea Plan 75 – 99 percent Conservation Area – Habitat Preserve include the proposed laydown areas for the CVEUP. The two proposed laydown areas are disturbed areas previously and/or currently used as construction laydown areas. After review of the proposed CVEUP and Section 5.4.1 of the City of Chula Vista's Multi-Species Conservation Plan Subarea Plan, staff and U.S. Fish and Wildlife Service recommend that the map boundaries of the Subarea Plan are corrected to

reflect the actual boundaries of the preserve. With correction of this mapping conflict, the CVEUP will be in compliance with all LORS.

- The City of Chula Vista General Plan was revised after the City of Chula Vista permitted the existing 44.5 MW Chula Vista Power Plant. General Plan Policy E 6.4 states that the Agency [Chula Vista Redevelopment Agency] should "*avoid siting new or re-powered energy facilities or other major toxic emitters within 1,000 feet of a sensitive receptor*". The project as proposed is inconsistent with the revised general plan and would require a Conditional Use Permit if licensed by the City of Chula Vista. Staff has reviewed the City of Chula Vista General Plan and the Special Use Permit issued for the Chula Vista Power Plant in 2000 and has proposed mitigation to address the inconsistency. With staff has proposed Condition of Certification **LAND-1,** the CVEUP would be in compliance with all LORS. This issue will be further addressed in the FSA.
- The proposed CVEUP has only one access point and the AFC makes no mention of a secondary access point through the perimeter fence. Both the California Fire Code (24 CCR Part 9, chapter 5, section 503.1.2) and the Uniform Fire Code (sections 901 and 902) require that access to the site be reviewed and approved by the fire department. All power plants licensed by the Energy Commission have more than one access point to the power plant site and with the secondary access point proposed by staff, the CVEUP will be in compliance with all LORS.
- With the proposed conditions of certification included in the various technical areas, the project's construction and operation impacts can be mitigated to a level less than significant.
- The San Diego Air Pollution Control District has determined that the project complies with the appropriate rules and requirements of the District and will not contribute to the degradation of the air quality. The applicant has identified all required emissions reductions credits needed for operation of the proposed project.
- Staff evaluated the greenhouse gas (GHG) emissions from the proposed project and recommends reporting of the GHG emissions as the Air Resources Board develops greenhouse gas regulations and/or trading markets. Prior to the finalization of the Presiding Members Proposed Decision, the project may be subject to additional reporting requirements and GHG reductions not discussed here.
- Transmission system impacts and appropriate mitigation have been fully identified at this point and are acceptable and would comply with all applicable laws, ordinances, regulations, and standards. The project interconnection to the grid would not require additional downstream transmission facilities other than those Special Protection Schemes proposed by the applicant.

INTRODUCTION

Christopher Meyer

PURPOSE OF THIS REPORT

This Preliminary Staff Assessment (PSA) is the California Energy Commission staff's independent analysis of the proposed MMC Energy Inc. Chula Vista Energy Upgrade Project (here after referred to as CVEUP). This PSA is a staff document. It is neither a Committee document, nor a draft decision. The PSA describes the following:

- the proposed project;
- the existing environment;
- 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, local organizations and intervenors which may lessen or eliminate potential impacts;
- the proposed conditions under which the project should be constructed and operated, if it is certified; and
- project alternatives.

The analyses contained in this PSA are based upon information from the: 1) Application For Certification (AFC), 2) responses to data requests, 3) supplementary information from local, state, and federal agencies, interested organizations and individuals, 4) existing documents and publications, 5) independent field studies and research, and 6) comments at workshops. 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 PSA presents preliminary conclusions about potential environmental impacts and conformity with LORS, as well as proposed conditions that apply to the design, construction, operation and closure of the facility.

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 PRELIMINARY STAFF ASSESSMENT

The PSA contains an Executive Summary, Introduction, Project Description, and Project Alternatives. The environmental, engineering, and public health and safety analysis of the proposed project is contained in a discussion of 20 technical areas. Each technical area is addressed in a separate chapter. They include the following: air

quality, public health, worker safety and fire protection, transmission line safety and nuisance, 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, local system effects, 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 20 technical area assessments 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).

ENERGY COMMISSION SITING PROCESS

The Energy Commission has the exclusive authority to certify the construction, modification 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 impacts including potential impacts to public health and safety, potential measures to mitigate those impacts [Pub. Resources Code, §25519), and compliance with applicable governmental laws or 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 contained 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)].

In addition, staff must assess the completeness and adequacy of the measures proposed by the applicant to ensure compliance with health and safety standards, and the reliability of power plant operations [Cal. Code Regs., tit. 20, §1743(b)]. Staff is required to develop a compliance plan (coordinated 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 (CEQA). No additional Environmental Impact Report (EIR) is required because the Energy Commission's site certification program

has been certified by the Resources Agency as meeting all requirements of a certified regulatory program [Pub. Resources Code, §21080.5 and Cal. Code Regs., tit. 14, §15251 (j)]. The Energy Commission is the CEQA lead agency and is subject to all other applicable portions of CEQA.

The staff prepares a PSA that presents for the applicant, intervenors, organizations, agencies, other interested parties and members of the public, the staff's analysis, conclusions, and recommendations. Where it is appropriate, the PSA incorporates comments received from agencies, the public and parties to the siting case, and comments made at the workshops.

Staff will provide a comment period to resolve issues between the parties and to narrow the scope of adjudicated issues in the evidentiary hearings. During the period after the publishing of the PSA, staff will conduct one or more workshops to discuss its findings, proposed mitigation, and proposed compliance-monitoring requirements. Based on the workshops and written comments, staff may refine its analysis, correct errors, and finalize conditions of certification to reflect areas where agreements have been reached with the parties, and publish a Final Staff Assessment (FSA).

The FSA 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. 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 party may appeal the decision to the Energy Commission.

OUTREACH

The Energy Commission's outreach program is primarily facilitated by the Public Adviser's Office (PAO). This is an ongoing process that to date has involved the following efforts:

LIBRARIES

On August 24, 2007, the Energy Commission sent the CVEUP AFC to the San Diego County Library System (Bonita, El Cajon, and Vista Branches), the City of Chula Vista

Public Library, the National City Public Library, and to libraries in Eureka, Fresno, Los Angeles, Sacramento, San Diego, and San Francisco.

INITIAL OUTREACH EFFORTS

The PAO's public outreach is an integral part of the Energy Commission's AFC review process. The PAO reviewed information provided by the applicant and also conducted their own outreach efforts to identify and locate local elected and certain appointed officials, as well as "sensitive receptors" (including schools, community, cultural and health facilities, daycare and senior-care centers, as well as environmental and ethnic organizations) within a six-mile radius of the proposed site for the project. The PAO notified--by letter and attached notice--all elected local (that is, county and city) officials, as well as the 55 sensitive receptors identified within six miles of the proposed site.

In addition, the PAO distributed--as an insert in 17,581 copies of the November 24, 2007 issue of the San Diego Union-Tribune--a bilingual (English and Spanish) notice for the November 29, 2007 informational hearing and site visit held locally for this project.

Energy Commission regulations require staff to notice, at a minimum, property owners within 1,000 feet of a project and 500 feet of a linear facility (such as transmission lines, gas lines and water lines). This was done for the CVEUP. Staff's ongoing public and agency coordination activities for this project are discussed under the Public and Agency Coordination heading in the **Executive Summary**.

ENVIRONMENTAL JUSTICE

Executive Order 12898, "Federal Actions to address Environmental Justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of this mission. The order requires the United States Environmental Protection Agency (U.S. EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

For all siting cases, Energy Commission staff conducts an environmental justice screening analysis in accordance with the "Final Guidance for Incorporating Environmental Justice Concerns in U.S. EPA's National Environmental Policy Act (NEPA) Compliance Analysis" dated April 1998. The purpose of the screening analysis is to determine whether a minority or low-income population exists within the potentially affected area of the proposed site.

California Statute, Section 65040.12 (c) of the Government Code, defines "environmental justice" to mean "fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." In light of the progress made by federal environmental agencies on environmental justice, the Energy Commission has examined federal guidelines pursuant to its desire to follow environmental justice

principles for the environmental review of this project. Staff's specific activities, with respect to environmental justice for the CPV Sentinel project, are discussed in the Executive Summary.

PROJECT DESCRIPTION

Christopher Meyer

INTRODUCTION

MMC Energy, Inc. filed an Application for Certification to the California Energy Commission on August 10, 2007, to construct and operate a simple cycle (peaking) power plant. The proposed Chula Vista Energy Upgrade Project would be a nominally rated 100 megawatt (MW) electrical generating facility that would be constructed on 3.8 acres of land situated within the City of Chula Vista in San Diego County, California. The proposed project consists of two natural gas-fired General Electric LM6000 combustion turbine generators. The project would supply quick-start peaking capacity, energy, and ancillary services into the California Independent System Operator's San Diego Area Local Capacity Requirement Area.

PROJECT PURPOSE AND OBJECTIVES

As described in the Application for Certification (AFC), the applicant's objectives are to design, build, own, and operate the Chula Vista Energy Upgrade Project (CVEUP) in order to meet the need for additional electric generation capacity, energy, and ancillary services in Southern California and, in particular, quick-start peaking capacity needs identified by San Diego Gas and Electric (SDG&E), the Energy Commission, the California Public Utilities Commission (CPUC), and the California Independent System Operator (California ISO) for the San Diego Local Capacity Requirements Area.

The CVEUP AFC identifies several basic objectives for the development of the proposed power project. These objectives include:

- To construct and operate a nominal 100-MW, natural gas-fired, simple cycle generating facility specifically designed to serve electricity demand in the San Diego region.
- To respond to the Request for Offers circulated by SDG&E indicating that additional peak electrical generation capacity is needed in the project area.
- To provide quick-start peaking capacity to the project area that has been identified by the California ISO as a local reliability area where power generation is needed to support local demand for energy.
- To upgrade and improve the existing facility by replacing the existing gas combustion turbines with more efficient equipment while reusing the existing infrastructure.
- To generate power at a location near the electric load, thereby increasing reliability of the regional electricity grid and reducing regional dependence on imported power.
- To site the project at a brown field location with a currently operating power plant and existing water, natural gas, and electrical interconnections.

Construction of the power plant would start in the fall of 2008 with commercial operation planned by the fall of 2009. Construction is expected to cost approximately $80 million.

PROJECT LOCATION

The proposed project is located on a 3.8-acre parcel in the City of Chula Vista's Main Street Industrial Corridor, 1.8 miles east of Interstate 5 and 1.2 miles west of Interstate 805, within the city's Light Industrial zoning district. The project site is immediately north of the Otay River and the Otay Valley Regional Park Trail. The project site address is 3497 Main Street, Chula Vista, California. Access to the site is via an easement that runs south from Main Street within an adjacent property. This easement also provides access to employee parking for newly constructed industrial buildings immediately east of the project site. The location of the proposed project site is shown on **Project Description Figure 1**.

PROJECT FEATURES

The main project features would consist of a 3.8-acre power plant site, a 1.5-acre construction laydown area adjacent to the project site, and a 2.7-acre construction laydown area approximately 3.4 miles to the east. The project site is situated in an industrial area in the southwestern part of the City of Chula Vista. The power plant site is located in Section 23, Township 18 south, and Range 2 west of the San Bernardino Base and Meridian 7.5 Minute Topographic Map. The Assessor's Parcel Number is 629-06-204.

The primary proposed project features include the following:

- A power plant on a 3.8-acre property, including an existing soundwall on the southern boundary of the property;
- Reuse of the existing transmission connection; natural gas, water, and sanitary sewer pipelines; fencing and sound attenuation wall; utility/control building; stormwater runoff retention basin; and the 12,000-gallon aqueous ammonia storage tank and tank refilling station;
- Upgrades to the existing SDG&E Otay Substation;
- Two natural gas-fired, GE Energy LM6000 SPRINT gas combustion turbines and associated selective catalytic reduction (SCR) equipment;
- Two construction laydown areas; and
- Salvage of the existing 44.5 MW Pratt & Whitney FT4 Twinpac GCT and removal of the associated foundations and piping.

Project Setting: The 3.8-acre proposed power plant site is currently the site of the 44.5 MW operational Chula Vista Power Plant. The surrounding area is primarily characterized by industrial/commercial, with the Otay River and proposed Otay River Regional Park Trail immediately south of the site. The Otay Substation is approximately 1300 feet to the north of the proposed project site. The nearest current residence to the power plant site is approximately 350 feet to the west.

Zoning/General Plan: The proposed power plant site is zoned ILP (Limited Industrial Precise Plan) and is located in City of Chula Vista's Main Street District of the

Montgomery Subarea within the Southwest Area Plan, an area slated for redevelopment by the City. Permitted uses in the I-L zone include, but are not limited to: manufacturing; wholesale businesses, storage and warehousing; laboratories; car washing establishments; electrical substations and gas regulator stations; and any other limited manufactured use which is determined by the City's Planning Commission to be of the same general character as the other uses in this area. The existing electrical power-generating facility on the site was permitted by the City of Chula Vista in 2000 under a Special Use Permit (SUP).

Transmission Lines: Electricity generated by the proposed project would be delivered to the existing SDG&E Otay Substation via the existing transmission line connecting the Chula Vista Power Plant switchyard to the Otay Substation at the 69 kilovolt (kV) bus. The applicant has chosen to install Special Protection Schemes to reduce CVEUP generation instead of reconductoring the South Bay-Sweetwater and Otay-Otay Tap 69 kilovolt (kV) transmission lines as mitigation of overloads forecasted under contingency conditions, avoiding environmental impacts from reconductoring.

Roads: The applicant would use the existing access road to the Chula Vista Power Plant off Main Street.

Gas Line: Fuel would be supplied to the project site via the existing natural gas line for the operational Chula Vista Power Plant.

Water Supply: The proposed project would continue to use the existing 4-inch water supply pipeline that serves the Chula Vista Power Plant through an agreement with Sweetwater Authority. This pipe will provide water for drinking, safety showers, fire protection, service water, and sanitary uses. Part of this water will be treated by a truck-mounted demineralizer and then stored in a storage tank for SPRINT water injection, fogger inlet cooling, water wash of the combustion turbine compressor section, and, potentially, water injection for nitrogen oxide control.

Wastewater Discharge: The proposed project would discharge any process water that has come into contact with the plant or its facilities to a concrete-lined holding basin from which it would be discharged to the sanitary sewer. Sanitary wastewater disposal would be through the existing Chula Vista Power Plant's connection with the City of Chula Vista's sanitary sewer system.

PROJECT CONSTRUCTION AND OPERATION

If approved by the Energy Commission, MMC Energy, Inc. proposes to initiate project construction in fall of 2008. It is expected to take about 8 months for construction and startup testing, and the CVEUP could begin commercial operation as early as the fall of 2009, assuming there are no unanticipated delays. Construction would be scheduled between 7 a.m. and 7 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or complete critical construction activities. During some construction periods and during the start-up phase, some activities will continue 24 hours a day, 7 days a week. Construction access will be from a road leading off Main Street. Materials and equipment will be delivered by truck.

The proposed CVEUP is expected to employ up to 2 full-time employees. It will be designed as peaking facility to serve SDG&E load during periods of high demand, which generally occur during daytime hours, and more frequently during the high-peak summer months than during other times. Per the San Diego Air Pollution Control District requirements and the contract between the applicant and SDG&E, the CVEUP would be allowed to operate up to 4,400 hours per engine per year with no seasonal restrictions (a capacity factor of 50 percent). Actual operation will depend upon actual SDG&E system demand and California Independent System Operator (California ISO) dispatch requirements. Despite the allowed operating hours, the historic capacity factor of peaking power plants of this size is approximately 6 percent.

FACILITY CLOSURE

CVEUP would be designed for a 30-year operating life. At some point in the future, the proposed project would cease operation and shut down. At that time, it would be necessary to ensure that the closure occurs in a manner that protects public health and safety and the environment from adverse effects.

Although the setting for the proposed CVEUP project does not appear to present any special or unusual closure problems, it is impossible to foresee exactly what the situation will be 30 or more years down the road when the proposed project ceases to operate. Therefore, provisions must be made to provide the flexibility needed to deal with specific situations and project settings at the time of closure. Laws, ordinances, regulations and standards relating to CVEUP's closure are identified in the technical sections of this assessment. CVEUP's closure would meet the requirements of all laws, ordinances, regulations, and standards in effect at the time of closure.

NOTEWORTHY PUBLIC BENEFITS

The proposed project would upgrade an existing power plant with a more efficient, less polluting, and quieter facility, addressing complaints received from the local residents on the current operation of the Chula Vista Power Plant. By upgrading an existing facility, the environmental impacts of constructing a new power plant and all the associated linear facilities in an undisturbed area can be avoided, as well as avoiding the operating of two smaller peaker power plants in the area. Unlike the existing Chula Vista Power Plant, the proposed project would be operated under the jurisdiction of the California Energy Commission and the existing facility would be removed. The California Energy Commission specializes in both the permitting and operational oversight of power plants in California. If the project is approved, the conditions of certification proposed by staff to address environmental impacts would be monitored by the California Energy Commission, as specified in Title 20, Section 1770 of the California Code of Regulations.

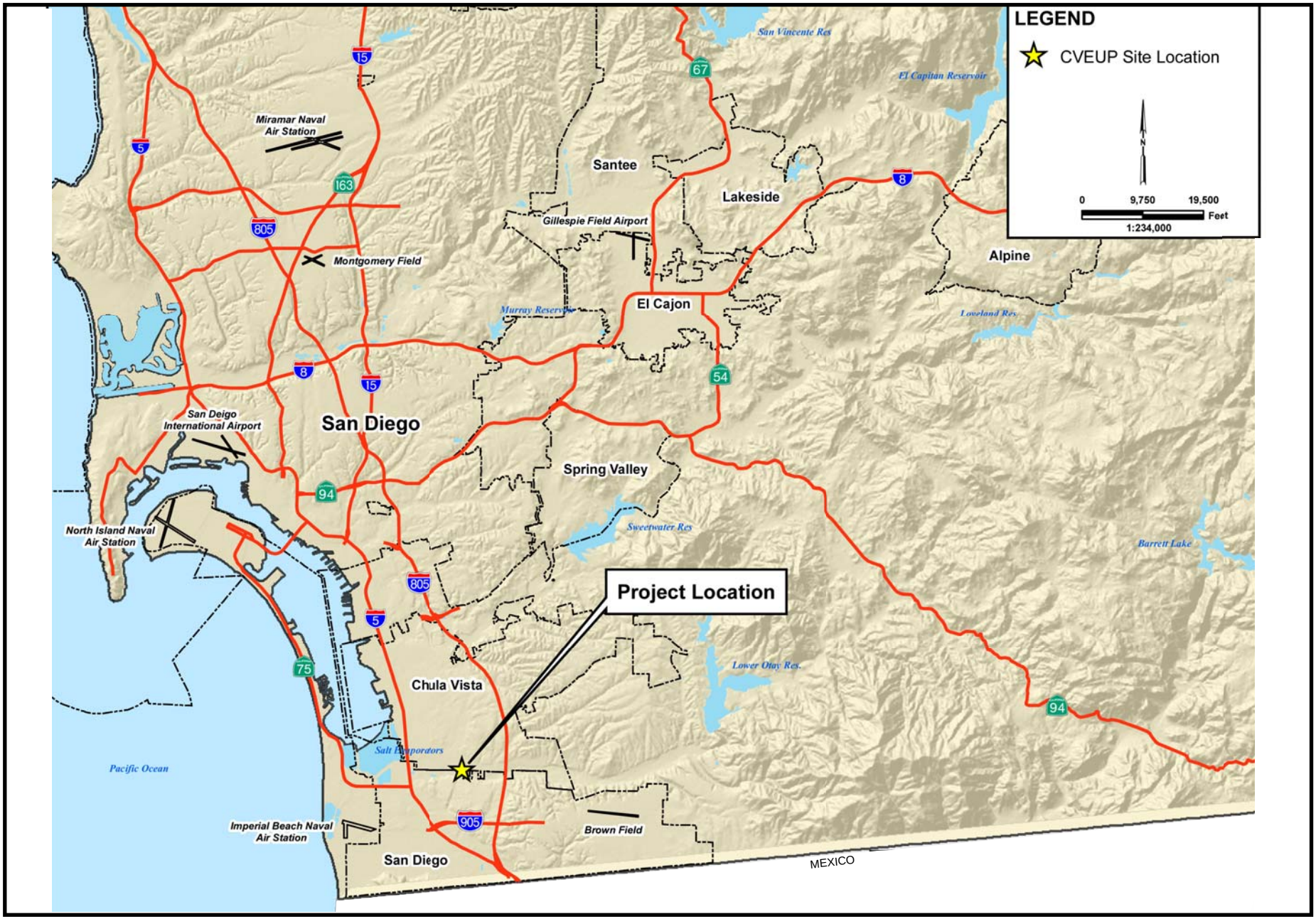
The applicant proposes to provide peaking power and quick start capability as dispatched by SDG&E during periods of high demand (MMC 2007b, AFC §§ 1.1.1,2.1.15, 2.2.2.1). The fact that the project consists of two combustion turbine generators configured as independent equipment trains provides inherent reliability. A

single equipment failure cannot disable more than one train, thus allowing the plant to continue to generate (at reduced output). In light of this and the additional reliability-enhancing features of the project described above, the applicant's prediction of an equivalent availability factor of 92 to 98 percent appears achievable. Staff believes this should provide an adequate level of reliability.

The proposed project has important public benefits in the way of both fiscal and non-fiscal effects. These include capital costs, construction payroll, and annual property taxes and sales taxes. More than half the property tax revenue to San Diego County of $855,420 will go directly to the Chula Vista Redevelopment Agency, with another $157,800 to the City of Chula Vista. Sale tax from construction would total $139,500 and another $23,250 of sales tax would be generated from operation. The school impact fee from the proposed project would be $344. The proposed eight month construction schedule would result in a payroll of $8.9 million, with an annual operations payroll of $112,000.

PROJECT DESCRIPTION - FIGURE 1

Chula Vista Energy Upgrade Project - Project Vicinity



CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, APRIL 2008

SOURCE: AFC Figure 1.1-2

ENVIRONMENTAL ASSESSMENT

AIR QUALITY

William Walters, P.E.

SUMMARY OF CONCLUSIONS

The Chula Vista Energy Upgrade Project would comply with all applicable laws, ordinances, regulations, and standards and would not result in significant air quality impacts provided the recommended conditions of certification are adopted by the California Energy Commission and implemented by the project owner. The applicant has agreed in principle to fund the creation of emission reduction credits through the Carl Moyer Fund, in sufficient quantity to fully offset all nonattainment pollutants and their precursors at a minimum ratio of 1:1.

California Energy Commission staff has assessed the potential for both localized impacts and regional impacts for the project's construction and operation, and as a product of this analysis, staff has recommended mitigation and monitoring requirements that should provide mitigation and monitoring sufficient to reduce the adverse construction and operating emission impacts to less than significant.

Staff continues to work with the San Diego Air Pollution Control District regarding the Preliminary Determination of Compliance permit conditions that need to be resolved prior to completion of the Final Determination of Compliance and the Final Staff Assessment. Staff's continued discussions with the District are primarily related to adding mass emission limits (pounds per hour, per day, and per year) for normal operations, start-up and shut-down operations, and initial commissioning to the permit conditions. Depending on the District's response to staff comments, staff may add conditions of certification to the Final Staff Assessment that stipulate mass emissions limits for the Chula Vista Energy Upgrade Project.

The State has demonstrated a clear willingness to address global climate change though research, adaptation and inventory reductions. In that context, staff evaluated the greenhouse gas emissions from the proposed project and recommends reporting of the GHG emissions as the Air Resources Board develops greenhouse gas regulations and/or trading markets. The project may be subject to additional reporting requirements and GHG reductions not discussed here.

INTRODUCTION

This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to the construction and operation of the proposed Chula Vista Energy Upgrade Project (CVEUP) by MMC Energy Inc. (applicant). The CVEUP will be located in Chula Vista approximately 850 feet south of the intersection of Main Street and Albany Road.

Criteria air pollutants are defined as those air contaminants for which the state and/or federal government has established an ambient air quality standard to protect public health. The criteria pollutants analyzed are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), respirable particulate matter (PM10), and fine

particulate matter (PM2.5). In addition, volatile organic compound (VOC) emissions are analyzed because they are precursors to both O_3 and particulate matter. Because NO_2 and SO_2 readily react in the atmosphere to form other oxides of nitrogen and sulfur respectively, the terms nitrogen oxides (NOx) and sulfur oxides (SOx) are also used when discussing these two pollutants.

In carrying out the analysis, the California Energy Commission staff evaluated the following major points:

- Whether CVEUP is likely to conform with applicable federal, state and San Diego Air Pollution Control District (SDAPCD, or District) air quality laws, ordinances, regulations, and standards (Title 20, California Code of Regulations, section 1744 [b]);
- Whether CVEUP is likely to cause significant air quality impacts, including new violations of ambient air quality standards or contributions to existing violations of those standards (Title 20, California Code of Regulations, section 1742 [b]); and
- Whether the mitigation proposed for CVEUP is adequate to lessen the potential impacts to a level of insignificance (Title 20, California Code of Regulations, section 1742 [b]).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws and policies pertain to the control of criteria pollutant emissions and mitigation of air quality impacts. Staff's analysis examines the project's compliance with these requirements.

AIR QUALITY Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
40 Code of Federal Regulations (CFR) Part 52	Nonattainment New Source Review (NSR) requires a permit and requires Best Available Control Technology (BACT) and offsets. Permitting and enforcement delegated to SDAPCD. Prevention of Significant Deterioration (PSD) requires major sources to obtain permits for attainment pollutants. A major source for a simple-cycle combustion turbine is defined as any one pollutant exceeding 250 tons per year. Since the emissions from CVEUP would not exceed 250 tons per year, PSD does not apply.
40 CFR Part 60 Subpart KKKK	New Source Performance Standard (NSPS) for gas turbines: 15 parts per million (ppm) NOx at 15% O_2 and fuel sulfur limit of 0.060 lb SOx per million Btu heat input. BACT will be more restrictive.
40 CFR Part 70	Title V: federal permit. Title V permit application is required within one year of start of operation. Permitting and enforcement delegated to SDAPCD.
40 CFR Part 72	Acid Rain Program. Requires permit and obtaining sulfur oxides credits. Permitting and enforcement delegated to SDAPCD.
State	
Health and Safety Code (HSC) Section 40910-40930	Permitting of source needs to be consistent with Air Resource Board (ARB) approved Clean Air Plans.
HSC Section 41700	Restricts emissions that would cause nuisance or injury.
Local – San Diego Air Pollution Control District (SDAPCD) Rule and Regulations	
Regulation II – Permits	This regulation sets forth the regulatory framework of the application for and issuance of construction and operation permits for new, altered, and existing equipment. Included in these requirements are the federally delegated requirements for New Source Review, Title V Permits, and the Acid Rain Program. Regulation II Rule 20.1 and 20.3 establishes the pre-construction review requirements for new, modified, or relocated facilities, in conformance with the federal New Source Review regulation to ensure that these facilities do not interfere with progress in attainment of the national ambient air quality standards and that future economic growth in the San Diego County is not unnecessarily restricted. This regulation establishes Best Available Control Technology (BACT) and emission offset requirements.

Regulation IV – Prohibitions	This regulation sets forth the restrictions for visible emissions, odor nuisance, various air emissions, and fuel contaminants. This regulation also specifies additional performance standards for stationary gas turbines. However, for this project these provisions are less strict than the new source rule requirements of Regulation II.
Regulation X – Standards of Performance for New Stationary Sources	Regulation X incorporates provisions of 40 CFR Part 60, Chapter I, and is applicable to all new, modified, or reconstructed sources of air pollution. Sections of this federal regulation apply to stationary gas turbines (40 CFR Part 60 Subpart KKKK) as described above in the federal LORS description. These subparts establish limits of NO_2 and SO_2 emissions from the facility as well as monitoring and test method requirements. SDAPCD has not yet been delegated enforcement authority for this NSPS, but expects delegation later this year.
Regulation XI – National Emission Standards for Hazardous Air Pollutants	Regulation XI adopts federal standards for hazardous air pollutants (40 CFR Part 63) by reference. No such standards presently exist that would apply to the project.
Regulation XII – Toxic Air Contaminants – New Source Review	Regulation XII, Rule 1200, establishes the pre-construction review requirements for new, modified, or relocated sources of toxic air contaminant, including requirements for Toxics Best Available Control Technology (T-BACT) if the incremental project risk exceeds rule triggers.
Regulation XIV – Title V Operating Permits	Regulation XIV, Rule 1401 defines the permit application and issuance as well as compliance requirements associated with the Title V federal permit program. Any new source which qualifies as a Title V facility must obtain a Title V permit within 12 months of starting operation modification of that source. Regulation II, Rule 1412 defines the requirements for the Acid Rain Program, including the requirement for a subject facility to obtain emission allowances for SOx emissions as well as monitoring SOx, NOx, and carbon dioxide (CO_2) emissions from the facility.

The District is currently working on several new rules, of which only one would directly impact the construction or operation of the proposed project. A fugitive dust rule, to be numbered Rule 55, is in the development process at the District. This rule may be promulgated before or during the proposed project's construction; however, District staff has indicated that the Energy Commission's standard construction fugitive dust control measures are more stringent than the measures currently anticipated to be included in this future rule (Hamilton 2008).

SETTING

METEOROLOGICAL CONDITIONS

The climate of San Diego County is controlled by a semi-permanent subtropical high-pressure system that is located off the Pacific Ocean. In the summer, this strong high-pressure system results in clear skies, high temperatures, and low humidity. Very little precipitation occurs during the summer months because storms are blocked by the

high-pressure system. Beginning in the fall and continuing through the winter, the high pressure weakens and moves south, allowing storm systems to move through the area. Temperature, winds, and rainfall are more variable during these months, and stagnant conditions occur more frequently than during summer months. Weather patterns include periods of stormy weather with rain and gusty winds, clear weather that can occur after a storm, or persistent fog. The City of Chula Vista receives an average of 10 inches of rain annually (WC 2008).

Temperature, wind speed, and wind direction data collected in Chula Vista at the J Street monitoring station, about 2.7 miles north of the project site, were processed and provided to the applicant by the SDAPCD (MMC 2007b, p. 5.1-19). The most predominant annual wind direction from this monitoring site is from the west-southwest to the west-northwest (onshore). Onshore winds are also the most predominant during both the spring and summer. The winds during autumn also have a strong onshore component with nearly as strong an offshore component (winds from the east-southeast to east-northeast). The winds during the winter have a slightly higher offshore component than an onshore component. In all cases, annual and seasonal, the wind frequencies outside the stated onshore and offshore directions are fairly low. The average wind speed is relatively low (3.5 miles per hour), but dead calm hours occur less than 2% of the time. The wind speeds are generally higher during daylight hours and are highest during the spring.

Along with the wind flow, atmospheric stability and mixing heights are important factors in the determination of pollutant dispersion. Atmospheric stability reflects the amount of atmospheric turbulence and mixing. In general, the less stable an atmosphere, the greater the turbulence, which results in more mixing and better dispersion. The mixing height, measured from the ground upward, is the height of the atmospheric layer in which convection and mechanical turbulence promote mixing. Good ventilation results from a high mixing height and at least moderate wind speeds with the mixing layer. In general, mixing is more limited at night and in the winter in San Diego when there is a higher potential for the presence of lower level inversion layers along with low surface winds.

EXISTING AIR QUALITY

The project is located within the jurisdiction of the San Diego Air Pollution Control District (District). The applicable federal and California ambient air quality standards (AAQS) are presented in **AIR QUALITY Table 2**. As indicated in this table, the averaging times for the various air quality standards (the duration over which they are measured) range from 1 hour to annual average. The standards are read as a mass fraction, in parts per million (ppm), or as a concentration, in milligrams or micrograms of pollutant per cubic meter of air (mg/m^3 or $\mu g/m^3$).

AIR QUALITY Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.08 ppm (157 µg/m^3)	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 µg/m^3)	0.03 ppm (56 µg/m^3)
	1 Hour	—	0.18 ppm (338 µg/m^3) [a]
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	0.030 ppm (80 µg/m^3)	—
	24 Hour	0.14 ppm (365 µg/m^3)	0.04 ppm (105 µg/m^3)
	3 Hour	0.5 ppm (1300 µg/m^3)	—
	1 Hour	—	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM10)	Annual Arithmetic Mean	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	15 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.

Source: ARB 2008a.
[a] ARB has approved a revised 1-hour standard for NO_2 (0.18 ppm or 338 ug/m^3) and a new annual standard for NO_2 (0.030 ppm or 56 ug/m^3). These standards were recently approved by the Office of Administrative Law and are set to become effective as of March 30, 2008. While these standards were approved after the project application became data adequate, to be conservative, staff is analyzing potential impacts based on these new standards.

The U.S. Environmental Protection Agency (U.S. EPA), California Air Resource Board (ARB), and the local air district classify an area as attainment, unclassified, or nonattainment, depending on whether or not the monitored ambient air quality data show compliance, insufficient data is available, or non-compliance with the ambient air quality standards, respectively. The CVEUP project site is located within the San Diego Air Basin (SDAB) and, as stated above, is under the jurisdiction of the San Diego Air Pollution Control District. This area is designated as nonattainment for both

the federal and state ozone and PM10 standards. **AIR QUALITY Table 3** summarizes federal and state attainment status of criteria pollutants for the SDAB.

AIR QUALITY Table 3
Federal and State Attainment Status for the San Diego Air Basin

Pollutant	Attainment Status	
	Federal	**State**
Ozone	Nonattainment (8-hr)	Serious Nonattainment (1-hr)
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM10	Attainment	Nonattainment
PM2.5	Attainment	Nonattainment

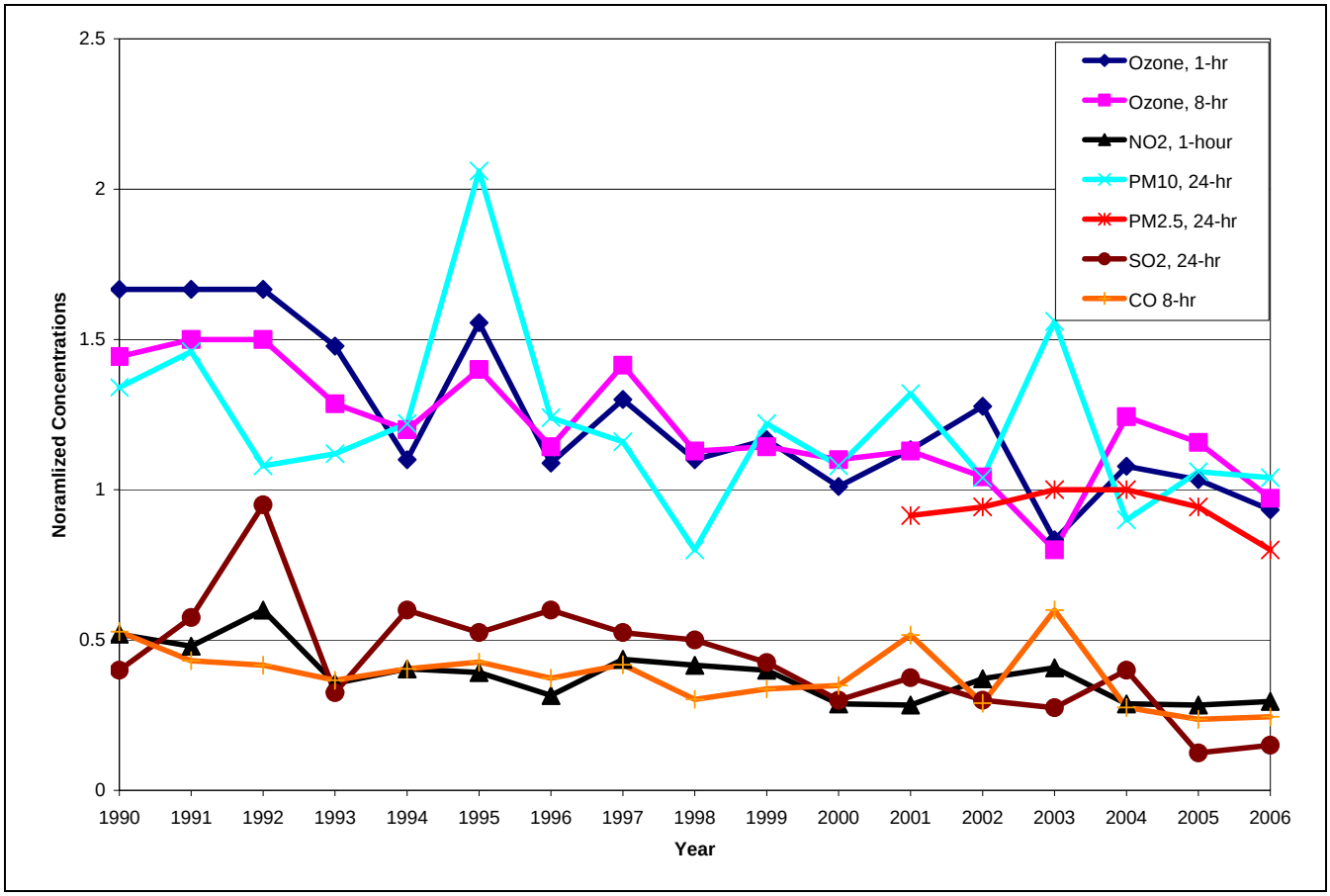
Source: ARB 2008b, U.S. EPA 2008.

The project site is located in southern San Diego County, in Chula Vista approximately one-sixth of a mile south of the intersection of Main Street and Albany Avenue. The project site is located approximately 1.25 miles west of Interstate 805, 1.75 miles east of Interstate 5, and 3.6 miles north of the Mexican border.

The monitoring station closest to the proposed project site, and with a long-term record of all the criteria pollutants, is the Chula Vista Station, located at 80 East J Street, in Chula Vista, California, approximately 2.7 miles north of the project site. This station monitors ambient concentrations of lead, ozone, NO_2, CO, PM10, PM2.5, and SO_2. This station should be fairly representative of the site location; however, it may not be conservative for all pollutants due to the project area's more industrial setting and resulting heavy truck traffic, as well as two major upwind stationary sources (South Bay Power Plant and Hanson Aggregates).

AIR QUALITY Figure 1 summarizes the historical air quality data for the project location, recorded at Chula Vista air monitoring station (1990–2006 for Ozone, PM10, CO, NO_2, SO_2; 1999–2006 for PM2.5). In **AIR QUALITY Figure 1**, the short-term normalized concentrations are provided from 1990 to 2006. Normalized concentrations represent the ratio of the highest measured concentrations in a given year to the most stringent applicable national or state ambient air quality standard. Therefore, normalized concentrations lower than *1* indicate that the measured concentrations were lower than the most stringent ambient air quality standard.

AIR QUALITY Figure 1
Normalized Maximum Short-Term Historical Air Pollutant Concentrations



Source: ARB 2006a, ARB 2008c, SDAPCD 2008a.

A normalized concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. For example, in 1992 the highest 8-hour average ozone concentration measured at the Chula Vista J Street station was 0.105 ppm. Since the most stringent ambient air quality standard is the state standard of 0.07 ppm, the 1992 normalized concentration is 0.105/0.07 = 1.5.

Following is a more in-depth discussion of ambient air quality conditions in the project area.

Ozone

In the presence of ultraviolet radiation, both nitrogen oxides (NOx) and volatile organic compounds (VOC) go through a number of complex chemical reactions to form ozone. **AIR QUALITY Table 4** summarizes the best representative ambient ozone data collected from the Chula Vista monitoring station. The table includes the maximum 1-hour and 8-hour ozone levels and the number of days above the state or national standards. Ozone formation is higher in spring and summer and lower in the winter. The SDAB was classified as an attainment area for the previous federal 1-hour ozone standard (no longer applicable) and is classified as a basic nonattainment area for the federal 8-hour ozone standard. The SDAB is also classified as a serious nonattainment area for the state 1-hour ozone standard.

AIR QUALITY Table 4
Ozone Air Quality Summary, 1990–2006 (ppm)

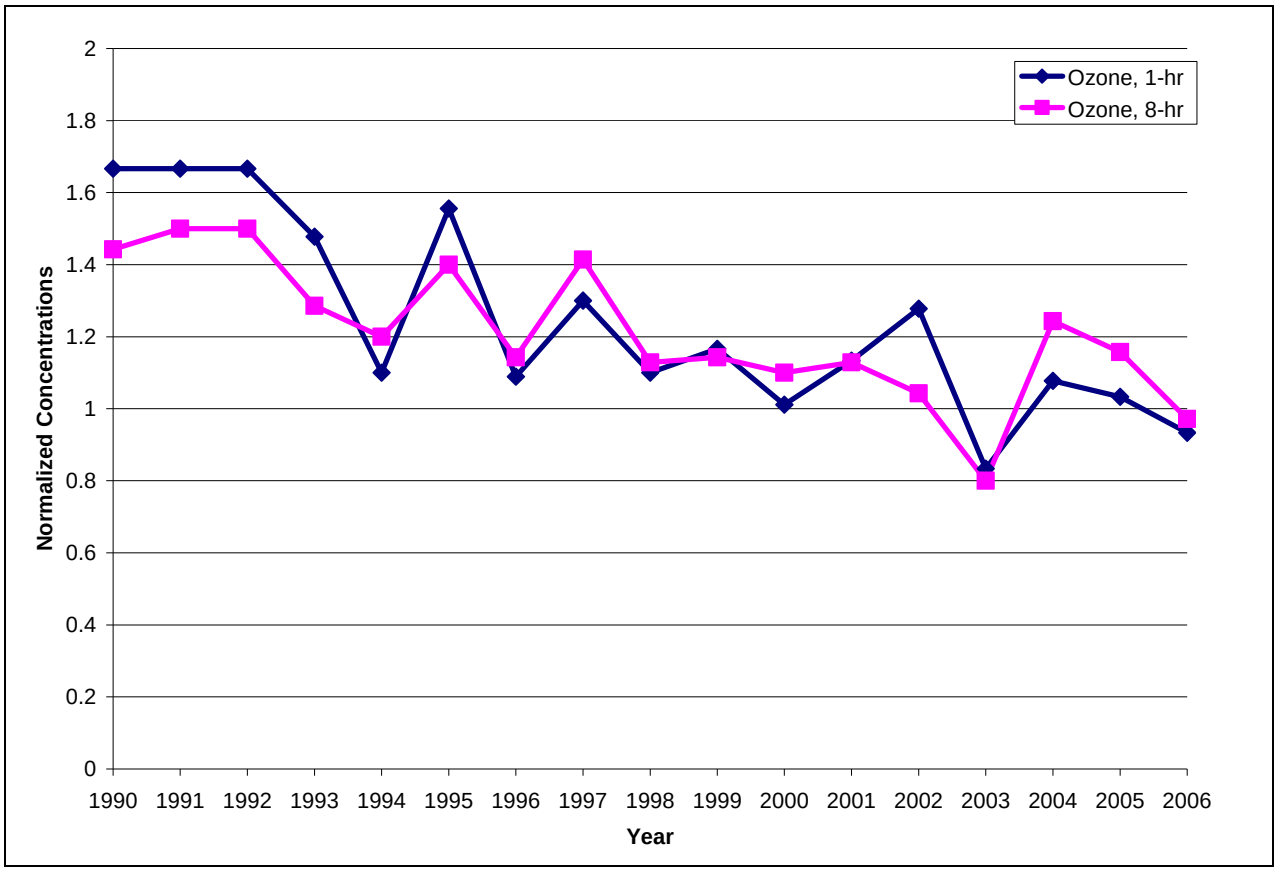
Year	Days Above CAAQS 1-Hr	Month of Max. 1-Hr Avg.	Max. 1-Hr Avg.	Days Above NAAQS 8-Hr	Month of Max. 8-Hr Avg.	Max. 8-Hr Avg.
Chula Vista						
1990	21	JUN	0.150	10	OCT	0.101
1991	13	OCT	0.150	6	APR	0.105
1992	14	SEP	0.150	6	APR	0.105
1993	12	SEP	0.133	2	SEP	0.090
1994	4	SEP	0.099	0	OCT	0.084
1995	7	FEB	0.140	1	FEB	0.098
1996	1	JUN	0.098	0	OCT	0.080
1997	10	NOV	0.117	3	NOV	0.099
1998	2	JUL	0.099	0	OCT	0.079
1999	4	APR	0.105	0	APR	0.080
2000	0	APR	0.091	0	MAR	0.077
2001	2	SEP	0.102	0	JUN	0.079
2002	1	SEP	0.115	0	MAY	0.073
2003	0	OCT	0.075	0	JUL	0.056
2004	1	MAY	0.097	1	MAY	0.087
2005	0	OCT	0.093	0	APR	0.081
2006	0	JUN	0.084	0	MAY	0.068
California Ambient Air Quality Standard (CAAQS): 1-Hr, 0.09 ppm, 8-Hr, 0.070 ppm National Ambient Air Quality Standard (NAAQS): 8-Hr, 0.08 ppm						

Source: ARB 2006a, ARB 2008c.

The yearly trends from 1990 to 2006 for the maximum 1-hour and 8-hour ozone concentrations, referenced to the most stringent standard, and the number of days exceeding the California 1-hour standard and the federal 8-hour standard for the Chula Vista (1990–2006) monitoring station are shown in **AIR QUALITY Figure 2** and **Figure 3**, respectively.

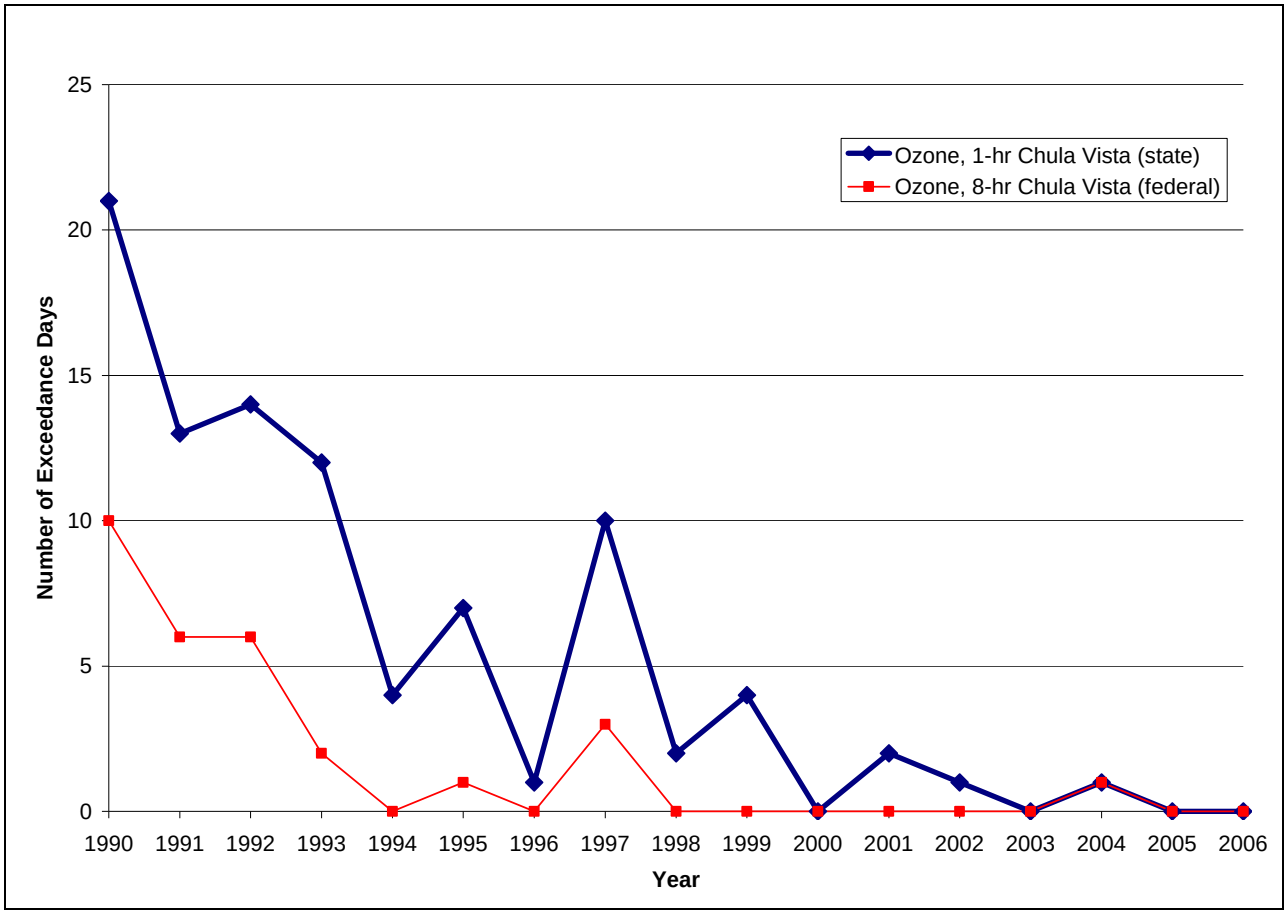
As these two figures show, the 1-hour and 8-hour ozone concentrations were highest in 1990 and the number of exceedances was also highest in 1990. From 1997 to the present, the trend for the number of exceedances, as well as the peak concentrations, has remained relatively flat.

AIR QUALITY Figure 2
Normalized Ozone Air Quality Maximum Concentrations



Source: ARB 2006a, ARB 2008c.
A normalized concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. The standard used for 1-hour ozone is the state standard of 0.09 ppm, and for 8-hour ozone is the state standard of 0.070 ppm.

AIR QUALITY Figure 3
Ozone – Number of Days Exceeding the Air Quality Standards



Source: ARB 2006a, ARB 2008c.

Respirable Particulate Matter (PM10)

As **AIR QUALITY Table 5** indicates, the project area annually experiences a number of violations of the state 24-hour PM10 standards. The SDAB is classified as an attainment area for the federal PM10 standard and as a nonattainment area for the state PM10 standards.

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NOx, SOx and VOC from turbines, and ammonia from NOx control equipment, given the right meteorological conditions, can form particulate matter in the form of nitrates (NO_3), sulfates (SO_4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted, but are formed through complex chemical reactions in the atmosphere.

AIR QUALITY Table 5
PM10 Air Quality Summary, 1990–2006 (μg/m^3)

Year	Days * Above Daily CAAQS	Month of Max. Daily Avg.	Max. Daily Avg.	Annual Arithmetic Mean
Chula Vista				
1990	38	NOV	67	31.7
1991	41	JAN	73	33.8
1992	12	JAN	54	29.0
1993	12	NOV	56	26.9
1994	12	JAN	61	28.0
1995	31	DEC	103	32.2
1996	12	JAN	62	27.3
1997	12	OCT	58	28.3
1998	0	APR	40	22.8
1999	--	DEC	61	--
2000	--	NOV	54	--
2001	12	JAN	66	28.6
2002	6	DEC	52	27.1
2003	12	NOV	78	27.6
2004	0	JAN	45	26.5
2005	13	OCT	53	27.0
2006	12	OCT	52	26.3

CAAQS-California Ambient Air Quality Standard: 24-Hr, 50 μg/m^3; Annual Arithmetic, 20 μg/m^3
National Ambient Air Quality Standard: 24-Hr, 150 μg/m^3

* Days above the state standard (calculated), rounded to nearest whole day: PM10 is monitored approximately once every six days. This value is a mathematical estimate of how many days the PM10 concentrations would have been greater than the ambient air quality standard had each day been monitored.

-- Data not available

Source: ARB 2006a, ARB 2008c.

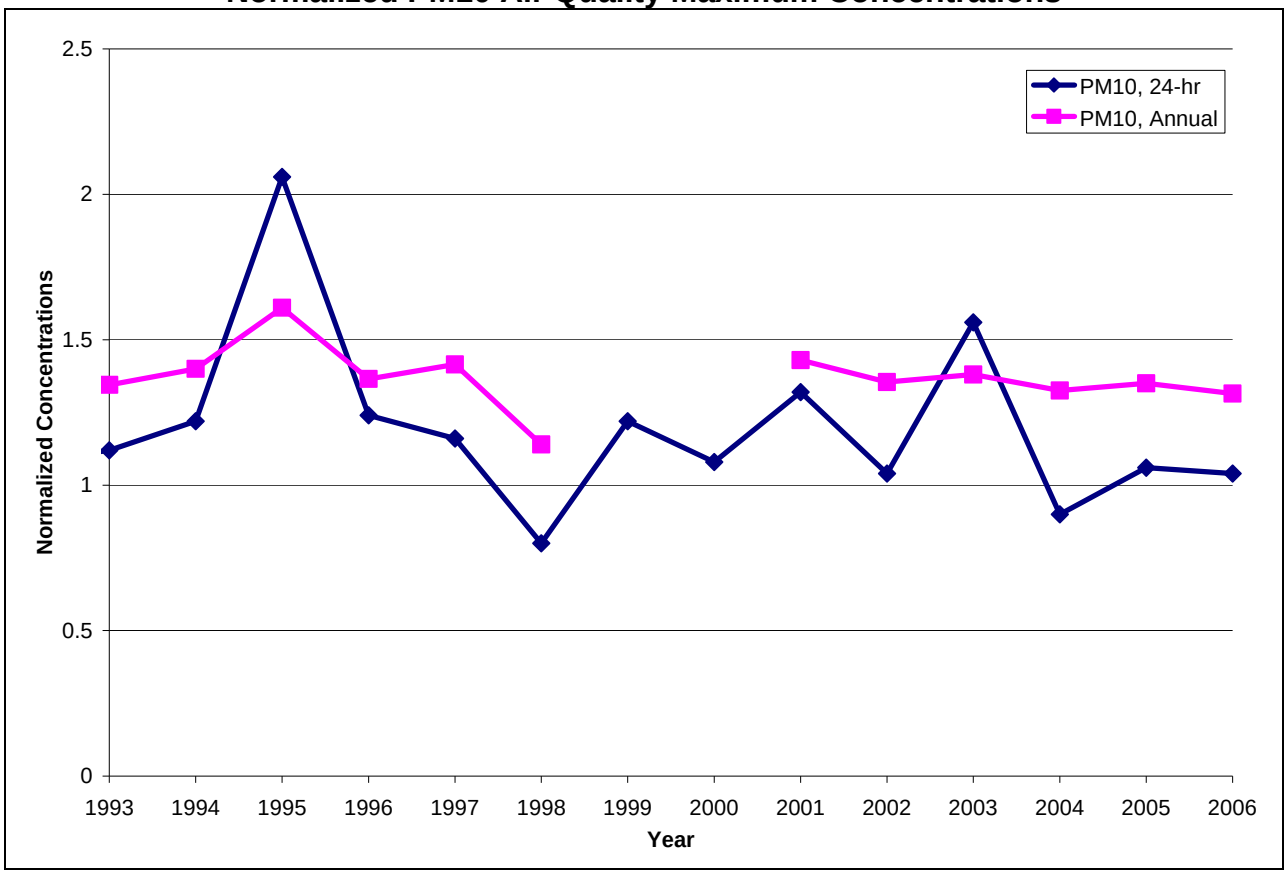
PM nitrate (mainly ammonium nitrate) is formed in the atmosphere from the reaction of nitric acid and ammonia. Nitric acid in turn originates from NOx emissions from combustion sources. The nitrate ion concentrations during the wintertime are a significant portion of the total PM10 and are likely even a higher contributor to particulate matter of less than 2.5 microns (PM2.5). The nitrate ion is only a portion of the PM nitrate, which can be in the form of ammonium nitrate (ammonium plus nitrate ions) and some as sodium nitrate. If the ammonium and the sodium ions associated with the nitrate ion are taken into consideration, PM nitrate contributions to the total PM are even more significant.

As shown in **AIR QUALITY Table 5**, the highest PM10 concentrations are generally measured in the fall and winter when there are frequent low-level inversions. During the wintertime high PM10 episodes, the contribution of ground level releases to ambient PM10 concentrations is disproportionately high.

The 1990 to 2006 yearly trends for the maximum 24-hour PM10 and Annual Arithmetic Mean PM10, referenced to the most stringent standard, and the number of days exceeding the California 24-hour PM10 standard for the Chula Vista (1990–2006) monitoring station is shown in **AIR QUALITY Figure 4** and **Figure 5**, respectively.

As the two figures show, there is an overall gradual downward trend for PM10 concentrations and number of violations of the California 24-hour standard since 1995; however, there has been little progress since 1997.

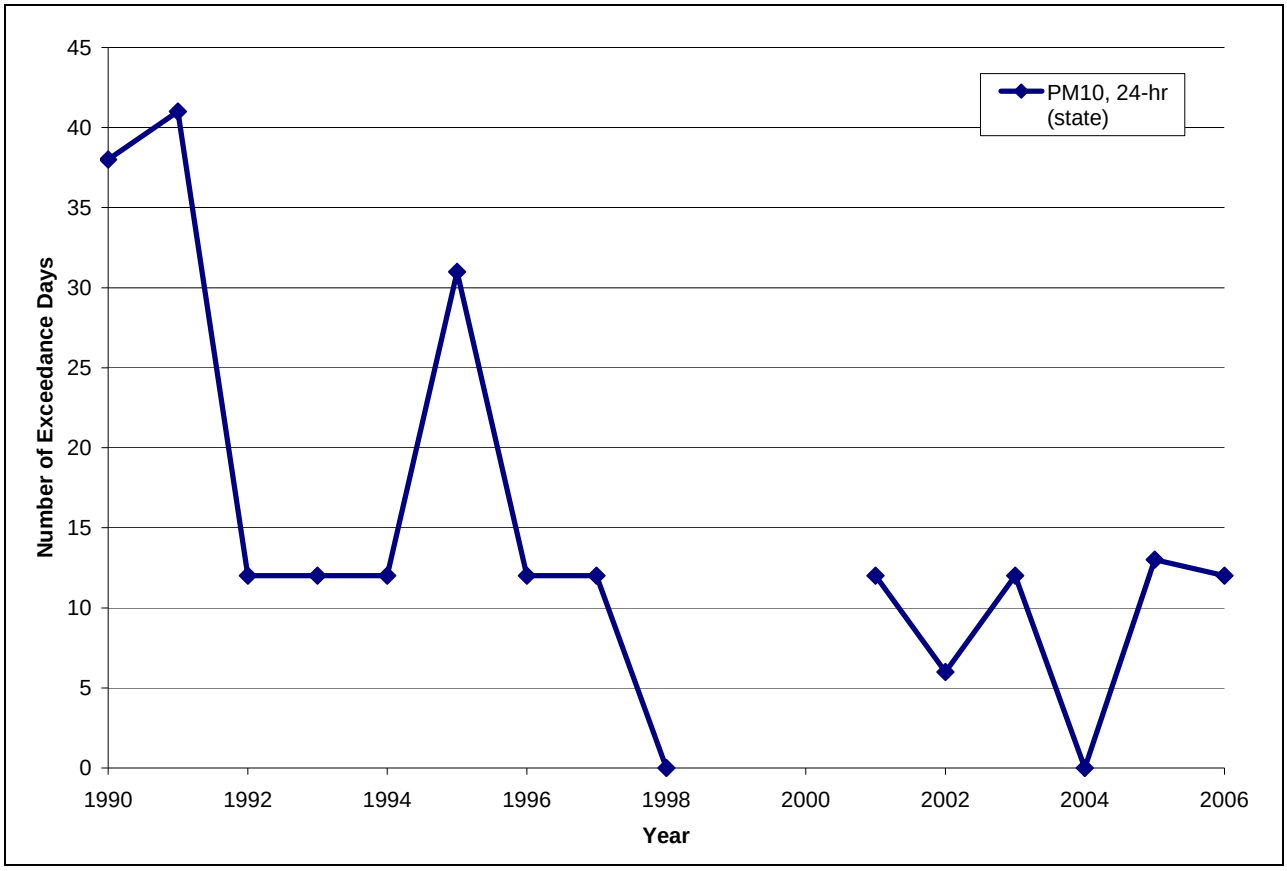
AIR QUALITY Figure 4
Normalized PM10 Air Quality Maximum Concentrations



Source: ARB 2006a, ARB 2008c.

A normalized concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. The standard used for 24-hour PM10 is the state standard of 50 $\mu g/m^3$, for the Annual Arithmetic Mean is the state standard of 20 $\mu g/m^3$.

AIR QUALITY Figure 5
PM10 24-Hour – Number of Days Exceeding the Air Quality Standard



Source: ARB 2006a, ARB 2008c.

Fine Particulate Matter (PM2.5)

The SDAB is currently classified as nonattainment for the state fine particulate matter (PM2.5) standard and attainment of the federal standards. The highest PM2.5 concentrations are generally measured in the winter. The relative contribution of wood-smoke particles to the PM2.5 concentrations may be even higher than their relative contribution to PM10 concentrations, considering that most of the wood-smoke particles are smaller than 2.5 microns.

As **AIR QUALITY Table 6** indicates, the 24-hour (three-year average 98th percentile) PM2.5 concentration levels have been declining from 1999–2006 at the Chula Vista monitoring station. The annual arithmetic means also appear to have been declining from 1999–2006, but as of 2004 continue to be above the California Ambient Air Quality Standards of 12 $\mu g/m^3$.

AIR QUALITY Table 6
PM2.5 Air Quality Summary, 1999–2005 (μg/m^3)

Year	National Maximum Daily	98th Percentile Maximum Daily	3-Yr National 98th Percentile Maximum Average	State Annual Average	National Annual Average
Chula Vista					
1999	47.1	31.5	--	--	15.1
2000	40.5	32.5	--	--	13.1
2001	41.0	31.0	32	--	15.5
2002	41.0	36.0	33	13.9	13.9
2003	40.5[a]	39.2	35	14.4	14.4
2004	32.7	30.7	35	12.2	12.2
2005	34.3	30.2	33	12.0	11.8
2006	30.2	24.0	28	11.2	11.2

California Ambient Air Quality Standard: Annual Arithmetic Mean, 12 μg/m^3
National Ambient Air Quality Standard: 24-Hr Avg. Conc., 35 μg/m^3 (based on 98% of the daily concentrations, average over three years); Annual Arithmetic Mean, 15 μg/m^3
-- Data not available
a – Value is second highest day. The highest day occurred during the 2003 firestorm and is not representative.

Source: ARB 2006a, ARB 2008c, SDAPCD 2008a.

The maximum daily PM2.5 concentrations shown in **AIR QUALITY Table 6** all occurred in the late fall or winter (fourth and first quarters).

Carbon Monoxide (CO)

The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level in what is known as the stable boundary layer. These conditions occur frequently in the wintertime and late in the afternoon, persist during the night, and may extend one or two hours after sunrise. Since mobile sources (motor vehicles) are the main cause of CO, ambient concentrations of CO are highly dependent on motor vehicle activity. In fact, the peak CO concentrations occur during the rush hour traffic in the mornings and afternoons. CO concentrations in San Diego County and the rest of the state have declined significantly due to two statewide programs: 1) the 1992 wintertime oxygenated gasoline program, and 2) Phases I and II of the reformulated gasoline program. New vehicles with oxygen sensors and fuel injection systems have also contributed to the decline in CO levels in the state. Today, all the areas of California are in attainment with the CO ambient air quality standards.

As **AIR QUALITY Table 7** shows, the maximum 1-hour and 8-hour CO concentrations in the project area are less than the California Ambient Air Quality Standards. CO is considered a local pollutant, as it is found in high concentrations only near the source of emission. Automobiles and other mobile sources are the principal sources of the CO emissions. High levels of CO emissions can also be generated from fireplaces and wood-burning stoves. According to the data recorded at the Chula Vista air monitoring station, there have been no violations of the California Ambient Air Quality Standards since before 1990 (see **AIR QUALITY Figure 1 and Table 7**).

AIR QUALITY Table 7
CO Air Quality Summary, 1990–2006 (ppm)

Year	Month of Max. 8-Hr Average	Maximum 1-Hr Average	Maximum 8-Hr Average
Chula Vista			
1990	JAN	7.0	4.75
1991	JAN	7.0	3.88
1992	JAN	7.0	3.75
1993	DEC	5.3	3.30
1994	DEC	7.2	3.64
1995	NOV	5.4	3.84
1996	JAN	5.7	3.36
1997	DEC	5.4	3.76
1998	DEC	4.1	2.73
1999	NOV	5.4	3.04
2000	DEC	5.8	3.14
2001	DEC	5.6	4.65
2002	FEB	4.3	2.61
2003	OCT	6.9	5.40
2004	JAN	3.9	2.48
2005	NOV	2.8	2.13
2006	NOV	2.7	2.20
California Ambient Air Quality Standard: 1-Hr, 20 ppm; 8-Hr, 9.0 ppm National Ambient Air Quality Standard: 1-Hr, 35 ppm; 8-Hr, 9 ppm			

Source: ARB 2006a, ARB 2008c, SDAPCD 2008a.

Nitrogen Dioxide (NO_2)

As shown in **AIR QUALITY Table 8,** the maximum 1-hour and annual concentrations of NO_2 at the Chula Vista monitoring station are lower than the California and National Ambient Air Quality Standards. Approximately 75 to 90% of the NOx emitted from combustion sources is NO, while the balance is NO_2. NO is oxidized in the atmosphere to NO_2, but some level of photochemical activity is needed for this conversion. This is why the highest concentrations of NO_2 generally occur during the fall and not in the winter, when atmospheric conditions favor the trapping of ground-level releases, but lack significant photochemical activity (less sunlight). In the summer, the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions (atmospheric unstable conditions) generally disperse pollutants, preventing the accumulation of NO_2 to levels approaching the California 1-hour ambient air quality

standard. The formation of NO_2 during the summer in the presence of ozone is according to the following reaction:

$$NO + O_3 \rightarrow NO_2 + O_2$$

In urban areas, ozone concentration levels are typically high. These levels drop substantially at night as the above reaction takes place between ozone and NO. This reaction explains why, in urban areas, ozone concentrations at ground level drop, while aloft and in downwind rural areas (without sources of fresh NOx emissions), ozone concentrations can remain relatively high.

AIR QUALITY Table 8
NO_2 Air Quality Summary, 1990–2006 (ppm)

Year	Month of Max. 1-Hr Average	Maximum 1-Hr Average	Maximum Annual Average
Chula Vista			
1990	FEB	0.130	0.024
1991	FEB	0.120	0.023
1992	JAN	0.150	0.022
1993	SEP	0.089	0.019
1994	JAN	0.101	0.020
1995	FEB	0.098	0.020
1996	FEB	0.079	0.019
1997	NOV	0.109	0.019
1998	DEC	0.104	0.018
1999	SEP	0.100	0.019
2000	DEC	0.072	0.017
2001	OCT	0.071	0.017
2002	NOV	0.093	0.018
2003	OCT	0.102	0.018
2004	MAY	0.072	0.016
2005	NOV	0.071	0.016
2006	OCT	0.074	0.017
California 1-Hr Ambient Air Quality Standard: 0.18 ppm California Annual Arithmetic Mean Ambient Air Quality Standard: 0.03 ppm National Annual Arithmetic Mean Ambient Air Quality Standard: 0.053 ppm			

Source: ARB 2006a, ARB 2008c.

Sulfur Dioxide (SO_2)

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels, such as natural gas, contain very little sulfur and consequently have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content, such as coal, emit very large amounts of SO_2 when combusted.

Sources of SO_2 emissions within the SDAB come from every economic sector and include a wide variety of fuels: gaseous, liquid, and solid. The SDAB is designated attainment for all the SO_2 state and federal ambient air quality standards. **AIR QUALITY**

Table 9 shows the historical 1-hour, 24-hour and annual average SO_2 concentrations collected from the Chula Vista monitoring station. As **AIR QUALITY Table 9** shows, concentrations of SO_2 are far below the state and federal SO_2 ambient air quality standards.

AIR QUALITY Table 9
SO_2 Air Quality Summary, 1990–2006 (ppm)

Year	Maximum 1-Hr Avg.	Month of Max. 24-Hr Avg.	Maximum 24-Hr Avg.	Annual Average
Chula Vista				
1990	0.060	APR	0.016	0.002
1991	0.070	OCT	0.023	0.002
1992	0.120	AUG	0.038	0.002
1993	0.056	AUG	0.013	0.002
1994	0.098	AUG	0.024	0.002
1995	0.081	AUG	0.021	0.003
1996	0.087	JUL	0.024	0.004
1997	0.081	AUG	0.021	0.003
1998	0.149	JUL	0.020	0.003
1999	0.084	JUN	0.017	0.002
2000	0.045	APR	0.012	0.003
2001	0.049	AUG	0.015	0.003
2002	0.044	JUN	0.012	0.004
2003	0.030	JUL	0.011	0.004
2004	0.042	FEB	0.016	0.003
2005	0.016	OCT	0.005	0.003
2006	0.017	JAN	0.006	0.003
California Ambient Air Quality Standard: 1-Hr, 0.25 ppm; 24-Hr, 0.04 ppm National Ambient Air Quality Standard: 3-Hr, 0.5 ppm; 24-Hr, 0.14 ppm; Annual, 0.030 ppm				

Source: ARB 2006a, ARB 2008c, SDAPCD 2008a.

Visibility

Visibility in the region of the project site depends upon the area's natural relative humidity and the intensity of both particulate and gaseous pollution in the atmosphere. The most straightforward characterization of visibility is probably the visual range (the greatest distance at which a large dark object can be seen). However, in order to characterize visibility over a range of distances, it is more common to analyze the changes in visibility in terms of the change in light extinction that occurs over each additional kilometer of distance (1/km). In the case of a greater light extinction, the visual range will decrease.

The SDAB is currently designated as unclassified for visibility reducing particles.

Summary

In summary, staff recommends the background ambient air concentrations in **AIR QUALITY Table 10** for use in the modeling and impacts analysis. The maximum criteria pollutant concentrations from the past three years of available data collected at the

monitoring stations within San Diego County were used to determine the recommended background values.

AIR QUALITY Table 10
Staff Recommended Background Concentrations (µg/m^3)

Pollutant	Averaging Time	Recommended Background	Limiting Standard	Percent of Standard
NO_2	1 hour	139	338	41%
	Annual	32	56	57%
PM10	24 hour	53	50	106%
	Annual	27	20	135%
PM2.5	24 hour	34.3	35	98%
	Annual	12.2	12	102%
CO	1 hour	4,485	23,000	20%
	8 hour	2,756	10,000	28%
SO_2	1 hour	110	655	17%
	3 hour	55	1,300	4%
	24 hour	42	105	40%
	Annual	8	80	10%

Source: ARB 2006a, ARB 2008c, SDAPCD 2008a, and Energy Commission Staff Analysis

Where possible, staff prefers that the recommended background concentrations come from nearby monitoring stations with similar characteristics. For this project the monitoring station is located very close to the project site, in Chula Vista approximately 2.7 miles north of the project site. However, the project site is more industrialized and would likely have more heavy truck traffic than the monitoring location, so some pollutant concentrations may be marginally higher at the project site area on occasion, but use of the three-year high values for background added to the worst-case modeled concentrations regardless of the hour of day and time of year is still considered to be reasonably conservative for worst-case air quality impact determination.

The background concentrations for PM10 and PM2.5 are above the most restrictive existing ambient air quality standards, while the background concentrations for the other pollutants are all well below the most restrictive existing ambient air quality standards.

The pollutant modeling analysis was limited to the pollutants listed above in **AIR QUALITY Table 10**; therefore, recommended background concentrations were not determined for the other criteria pollutants (ozone, lead, visibility, and H2S), as there are no regulatory approved point source modeling techniques for analyzing impacts on ozone and visibility, or the proposed project would not emit emissions of lead or H2S; thus, analysis of those pollutants is not necessary.

PROJECT DESCRIPTION AND EMISSIONS

The applicant has proposed to develop the CVEUP on a 3.8 acre site that currently contains the 44.5-MW MMC Chula Vista Power Plant. The project would consist of two LM6000 gas turbines operating in simple cycle mode. No other separate major facilities or stationary emission sources are proposed as part of the facility. The project site is

located in Chula Vista approximately 850 feet south of the intersection of Main Street and Albany Road. The general area around the site has mixed use with heavy industrial use, light industrial use, commercial use, residences and schools, as well as the Otay Regional Park located just to the south of the project site. The new gas turbines would be installed on a currently inactive portion of the northern end of the project site located just north of the existing switchyard. The existing Chula Vista Power Plant Twinpac™ gas turbines would be removed from the site after the new power facilities were installed and operating.

Other project improvements would include upgrading the existing switchyard. No off-site construction would be necessary for natural gas, water, transmission, or sewer interconnections for this project.

The nearest residence is located approximately 380 feet to the west of the property line, and the nearest school is Otay Elementary located approximately 1,300 feet to the north-northeast of the property line.

CONSTRUCTION

Construction of the CVEUP would consist of the following: 1) clearing, grubbing, and site grading; and 2) building of facility structures. The construction is expected to take a total of eight months, based on a 10-hour workday and a five-day work week. Construction laydown would occur on a 5.0 acre property directly south and west of the project site and/or at a 2.75 acre property currently used for construction laydown at 2000 Heritage Road in Chula Vista approximately 3.1 miles due east of the project site, or 3.4 miles by road. Additionally, after the project reached commercial operation, the existing Chula Vista Power Plant Twinpac™ would have its permit to operate terminated and be removed from the site.

Fugitive dust emissions during the construction of the project would result from dust entrained during site preparation and grading/excavation activities, on-site and off-site travel on paved and unpaved surfaces, and aggregate and soil loading and unloading operations, as well as wind erosion of areas disturbed during construction activities. The largest fugitive dust emissions are often generated during site preparation activities, where work such as clearing, grading, excavation of footings and foundations, and backfilling operations occur. These types of activities require the use of large earth moving equipment, which generates combustion emissions, along with creating fugitive dust emissions. Fugitive dust emissions resulting from on-site soil disturbances, such as dozing and grading, and from on-site and off-site traffic also were estimated.

Combustion emissions during the construction of the project result from exhaust sources, including diesel construction equipment used for site preparation, water trucks used to control dust emissions, cranes, diesel-powered welding machines, electric generators, air compressors, water pumps, diesel trucks used for deliveries, and automobiles and trucks used by workers to commute to and from the construction site.

The applicant estimates for the highest daily emissions during construction, as revised by Energy Commission staff to correct off-road equipment emission factors and revise fugitive dust emission calculations, are shown in **AIR QUALITY Table 11**. Total on-site

and off-site construction equipment exhaust and fugitive dust emissions during the eight-month construction period are summarized in **AIR QUALITY Table 12**.

AIR QUALITY Table 11
Maximum Mitigated Daily Emissions During Construction, lbs/day

Activity	NOx	CO	VOC	SOx	PM10	PM2.5
On-Site						
Combustion Exhaust	115.1	70.3	24.0	0.1	8.5	7.8
Fugitive Dust	---	---	---	---	9.9	2.7
Off-Site						
On-Road Vehicles (including fugitive dust)	12.4	30.8	3.5	0.0	4.6	0.8
Total Maximum Daily Emissions	127.5	101.1	27.5	0.1	23.0	11.3

Source: CH2MHill 2007a, DR 6; and staff calculations.

AIR QUALITY Table 12
Total Mitigated Emissions During Construction, tons

Activity	NOx	CO	VOC	SOx	PM10	PM2.5
On-Site						
Combustion Exhaust	7.0	4.5	1.6	0.0	0.5	0.5
Fugitive Dust	---	---	---	---	0.3	0.1
Off-Site						
On-Road Vehicles (including fugitive dust)	0.4	2.2	0.2	0.0	0.3	0.0
Total Maximum Daily Emissions	7.4	6.7	1.8	0.0	1.1	0.6

Source: CH2MHill 2007a, DR 6; and staff calculations.

The maximum daily PM10 and PM2.5 emissions are likely to be overestimated as the maximum daily fugitive emissions would occur during site grading phase while the maximum daily on-site combustion exhaust and on-road vehicle emissions would occur during the building phase of construction.

INITIAL COMMISSIONING

The initial commissioning of a power plant refers to the time between the completion of construction and the reliable production of electricity for sale on the market. For most power plants, normal operating emission limits usually do not apply during the initial commissioning activities.

Commissioning activities for the CVEUP combustion turbine generators (CTGs) are expected to last a maximum of 440 hours per CTG prior to the initiation of commercial operation. However, only the first 200 hours would have emissions of any pollutant greater than the normal operating controlled emissions. The commissioning tests for each CTG at CVEUP include the following (MMC 2007b, p. 5.1-28,29; MMC 2007c, p. DA-10,11):

1. Initial Load Testing and Engine Checkout
2. Pre-Catalyst Initial Tuning
3. Post-Catalyst Initial Tuning
4. Final Tuning

AIR QUALITY Table 13 presents the applicant's estimated typical initial commissioning activity duration and emissions for each of the CVEUP CTGs. The applicant has indicated that commissioning tests are not expected to be conducted on more than one CTG at a time; however, maximum impacts were determined for both turbines operating with maximum initial commissioning emissions (MMC 2007b, p. 5.1-28,29).

AIR QUALITY Table 13
CVEUP Initial Commissioning Emissions

Commissioning Activities Per CTG	Operation Duration (Max Hours)	Hourly Emissions		
		NOx	CO	VOC
Initial Load Testing and Engine Checkout	8	51	45	4.5
Pre-Catalyst Initial Tuning	72	51	45	4.5
Post-Catalyst Initial Tuning	120	34	6.2	1.2
Final Tuning	240	4.2	6.2	1.2
Total (1 CTG)	440	9,168	5,832	790
Total (2 CTGs)	880	18,336	11,664	1,581

Source: (MMC 2007c).

The PM10 and SO_2 emissions during initial commissioning are not estimated to be higher than during normal full-load operations. Only the first three commissioning activities with a maximum 200 hours per turbine would have emission rates greater than the normal controlled operating emission rates.

AIR QUALITY Table 14 presents the applicant's worst-case short-term initial commissioning emissions.

AIR QUALITY Table 14
CVEUP Worst-Case NOx and CO Short-Term Commissioning Emissions

Pollutant	Lbs/hr
NOx	51
CO	45

Source: (MMC 2007c).

The initial commissioning modeling analysis presented in the "Impacts" subsection uses these worst-case emission values.

OPERATIONAL PHASE

Equipment Description

The equipment for the proposed CVEUP would include the following major components[1] (MMC 2007b; CH2MHill 2007a):

- Two General Electric (GE) LM6000PC Sprint natural gas-fired combustion turbine generators (CTGs) with water injection for NOx control operating in simple cycle

[1] The 851 horsepower "black start" emergency generator originally proposed in the AFC has been deleted from the project description.

mode producing approximately 46 MW (net) of electricity from each CTG, or 92 MW total;

- The CTGs would each be equipped with water injection to the combustors for reducing production of NOx, a selective catalytic reduction (SCR system with 19% aqueous ammonia injection to further reduce NOx emissions, and an oxidation catalyst to reduce CO emissions;
- Inlet air filters and inlet air fogging;
- Fin fan coolers (dry cooling) for lube oil cooling;
- Two exhaust stacks, one for each CTG, with a diameter of 13 feet and height of 70 feet.
- A Continuous Emission Monitoring (CEM) system installed on each stack would record concentrations of NOx, CO, and oxygen in the flue gas;
- Demineralized water storage tank (100,000 gallons);
- Upgrades to the existing switchyard.

The existing Chula Vista Power Plant 12,000 gallon ammonia tank and containment water pond would be used for this project.

Facility Operation

Each LM6000 CTG is being requested to operate up to 4,400 hours per year, as required contractually by SDG&E, which equates to an annual capacity factor of 50% (CH2MHill 2007a, DR 1).

As a peaking facility, the actual facility operation would be to provide maximum electrical output when demand for electricity is highest, typically during hot summer days. Based on staff's review of the Quarterly Fuel and Energy Report (QFER) data, SDAPCD data (Moore 2008), and *2007 Integrated Energy Policy Report* scenario forecast data for simple cycle peaking plants in San Diego Gas & Electric (SDG&E) territory, it is likely that this facility would operate less than 10% of the time annually in a worst-case year and less than 5% of the time on average, or approximately on average 10% or less of the requested 4,000 hour per year maximum capacity.[2]

Emission Controls

The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, would limit the formation of VOC, PM10, and SO_2 emissions. Natural gas contains very little noncombustible gas or solid residues and a small amount of reduced sulfur compounds, including mercaptan. Water injection to the CTG combustors in conjunction with selective catalytic reduction (SCR) would be used to control NOx concentrations in the exhaust gas. Post-combustion NOx control would be provided using an SCR system. The SCR system would use aqueous ammonia to further reduce NOx emissions to 2.5 parts per million by volume, dry (ppmvd) adjusted to 15% oxygen from the gas

[2] Please see staff's analysis of SDG&E territory peaking plant capacity factors in the staff proposed mitigation discussion in the "Operating Impacts and Mitigation" subsection.

turbines/SCR systems. Ammonia slip would be limited to 5 ppmvd at 15% oxygen on a dry basis. An oxidizing catalytic converter would be used to reduce the CO concentration in the exhaust gas emitted to the atmosphere to 6 ppmvd adjusted to 15% oxygen from the CTGs. Particulate emissions would be controlled using natural gas as the sole fuel for the CTG and inlet air filtration (MMC 2007b).

Two 70-foot tall, 13-foot diameter stacks would release the CTGs exhaust gas into the atmosphere. A continuous emission monitoring (CEM) system would be installed on the CTG stack to monitor fuel gas flow rate, NOx and CO concentration levels, and percentage of oxygen in the flue gas to assure adherence with the proposed emission limits. The CEM system would generate reports of emissions data in accordance with permit requirements and send alarm signals to the plant's control room when the level of emissions approaches or exceeds pre-selected limits.

Project Operating Emissions

Air emissions would be generated from operating the two CTGs. The maximum hourly normal operating emission rates (100% load) for the CTGs are provided in **AIR QUALITY Table 15.**

AIR QUALITY Table 15
Maximum Normal Pollutant Emission Rates, lb/hr

Pollutant	ppmvd @ 15% O_2	Each CTG	Two CTGs
NOx	2.5	4.2	8.4
CO	6.0	6.2	12.4
VOC	2.0	1.2 [a]	2.4
PM10/PM2.5	---	3.0	6.0
SO_2 [b]	---	1.0	2.0
Ammonia (NH_3)	5.0	3.2	6.3

Source: AFC and Data Response 1 (MMC 2007b, pg 5.1-9) and staff calculations.
[a] With inlet fogging. Without inlet fogging emission rate is 1.1 lbs/hr.
[b] SO_2 emissions are based on worst-case natural gas sulfur content of 0.75 grains/100 dry standard cubic feet. Actual likely long-term worst-case sulfur content is less than 0.25 grains/100 dry standard cubic feet.

Expected maximum start-up and shut-down event emission rates during start-up and shut-down events are summarized in **AIR QUALITY Table 16**.

AIR QUALITY Table 16
Maximum Short-Term Event Emissions, lbs/hr/turbine

Period	NOx	CO	VOC
Cold Startup	19.3	14.3	1.4
Warm Startup	12.2	10.8	1.4
Hot Startup	8.8	9.2	1.4
Shutdown	7.8	8.9	1.4

Source: AFC (MMC 2007b, pg 5.1-10)

Start-up and shut-down emissions are based on the startup and shutdown taking no longer than 30 minutes and 10 minutes, respectively.

AIR QUALITY Table 17 summarizes the maximum (worst-case) estimated levels of the different criteria pollutants for each averaging time from the CTGs for CVEUP. Maximum hourly operations are based on both turbines operating at the highest start-up/shut-down rate, except for PM10/PM2.5, SO_2, and NH_3, which use full-load operation to determine worst-case emissions. Maximum daily operations for each turbine are based on 1 hour of cold startup and 1 hour of warm startup and 22 hours of full-load operation (two with inlet fogging) for NOx, VOC, and CO, and 24 hours of full-load operation for SOx, PM10/PM2.5, and NH_3 (MMC 2007b, p. 5.1-9). Maximum annual emissions for NOx, VOC, and CO include 400 hours in start-up/shut-down mode (200 cold startup and 200 warm startup) and 4,000 hours operating at full-load with 500 of those hours operating with the evaporative coolers. Maximum annual emissions for PM10, SO_2, and NH_3 are based on full-time, full-load operation for 4,400 hours. (CH2MHill 2007a, DR1).

AIR QUALITY Table 17
CVEUP Worst-Case Hourly, Daily, and Annual Emissions (SDAPCD Permit Basis)

	Pollutant					
Emission Period	**NOx**	**CO**	**VOC**	**SOx**	**PM10/2.5**	**NH_3**
Maximum Hourly Emissions, lb/hr	38.6	28.6	2.8	2.0	6.0	6.3
Maximum Daily Emissions, lb/day	247.8	323.0	54.4	48.0	144.0	151.7
Total Annual Emissions, tons/year	23.1	29.8	5.0	4.4 [a]	13.2	13.9

Source: AFC (MMC 2007b, pg 5.1-9), Data Responses (CH2MHill 2007a, DR1), and staff sulfur balance calculations for two turbines.
[a] SO_2 annual emissions are based on SDG&E tariff basis of 0.75 grains/100 dry standard cubic feet. For the purposes of determining adequate CEQA mitigation, emissions are based on an annual average natural gas sulfur content of 0.25 grains/100 dry standard cubic feet, equivalent to 0.67 lbs/hour for two turbines.

The actual maximum annual operation is expected to be significantly less than that being permitted through SDAPCD. The applicant also acknowledges this fact and has provided an expected maximum operating basis to be used for California Environmental Quality Act (CEQA) mitigation along with the existing annual emissions profile for the existing Chula Vista Power Plant. This expected maximum basis assumes maximum annual operations of 1,000 hours per year (CH2MHill 2008a, DR2 and 3).

AIR QUALITY Table 18 summarizes the applicant's expected estimate for the maximum annual emissions for the CVEUP, the existing MMC Chula Vista Power Plant's Twinpac™ annual emissions baseline, and the expected maximum annual incremental project emission increase.

AIR QUALITY Table 18
Applicant CVEUP Incremental Annual Emissions (CEQA Mitigation Basis)

	Pollutant (tons/year)			
Emission Source	**NOx**	**VOC**	**SOx**	**PM10/2.5**
CVEUP Expected Maximum Annual Emissions, tons/year	5.66	1.12	1.03	3.01
Chula Vista Power Plant Emissions Baseline, tons/year	1.3	0.07	0.2	0.5
Incremental Emissions Increase, tons/year	4.36	1.05	0.83	2.51

Source: CH2MHill 2008a, DR 2 and 3.
[a] SO_2 annual emissions for the purposes of determining adequate CEQA mitigation are based on an annual average natural gas sulfur content of 0.25 grains/100 dry standard cubic feet, rather than the 0.75 grains/100 dry standard cubic feet basis shown in **AIR QUALITY Table 17** for the District's permit emissions basis.

The applicant's total estimated incremental emissions of nonattainment pollutant and precursor emissions are 8.75 tons per year. Staff has found minor issues with the applicant's calculations and has provided revised values in staff's operations mitigation discussion.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff assesses three kinds of impacts: construction, operation, and cumulative effects. As the name implies, construction impacts result from the emissions occurring during the construction of the project. The operation impacts result from the emissions of the proposed project during operation. Cumulative impacts analysis assesses the impacts that result from the proposed project's incremental effect viewed over time, together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Pub. Resources Code § 21083; Cal. Code Regs., tit. 14, §§ 15064[h], 15065[c], 15130, and 15355). Additionally, cumulative impacts are assessed in terms of conformance with the District's attainment or maintenance plans.

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Staff used two main significance criteria in evaluating this project. First, all project emissions of nonattainment criteria pollutants and their precursors (NOx, VOC, PM10, and SO_2) are considered significant and must be mitigated. Second, any AAQS violation or any contribution to any AAQS violation caused by any project emissions is considered to be significant and must be mitigated. For construction emissions, the mitigation that is considered is limited to controlling both construction equipment tailpipe emissions and fugitive dust emissions to the maximum extent feasible. For operating emissions, the mitigation includes both feasible emission controls (BACT) and the use of emission reduction credits to offset emissions of nonattainment criteria pollutants and their precursors.

The ambient air quality standards that staff uses as a basis for determining project significance are health-based standards established by the ARB and U.S. EPA. They are set at levels to adequately protect the health of all members of the public, including those most sensitive to adverse air quality impacts such as the aged, people with existing illnesses, children, and infants, and include a margin of safety.

DIRECT/INDIRECT IMPACTS AND MITIGATION

While the emissions are the actual mass of pollutants emitted from the project, the impacts are the concentration of pollutants from the project that reach the ground level. When emissions are expelled at a high temperature and velocity through the relatively tall stack, the pollutants will be significantly diluted by the time they reach ground level. The emissions from the proposed project are analyzed through the use of air dispersion models to determine the probable impacts at ground level.

Air dispersion models provide a means of predicting the location and ground level magnitude of the impacts of a new emissions source. These models consist of several complex series of mathematical equations, which are repeatedly calculated by a computer for many ambient conditions to provide theoretical maximum off-site pollutant concentrations short term (1-hour, 3-hour, 8-hour, and 24-hour) and annual periods. The model results are generally described as maximum concentrations, often described as a unit of mass per volume of air, such as micrograms per cubic meter ($\mu g/m^3$).

The applicant has used U.S. EPA-approved screening (SCREEN3) and refined (AERMOD version 07026) air dispersion models to estimate the direct impacts of the project's NOx, PM10, CO, and SOx emissions resulting from project construction and operation. Staff revised the construction modeling, using the latest version of AERMOD, due to concerns with the construction emission calculations and modeling input parameters.

Staff added the modeled impacts to the available highest ambient background concentrations as shown in **AIR QUALITY Table 10**. Staff then compared the results with the ambient air quality standards for each respective air contaminant to determine whether the project's emission impacts would cause a new violation of the ambient air quality standards or would contribute to an existing violation.

The inputs for the air dispersion models included stack information (exhaust flow rate, temperature, and stack dimensions), specific turbine emission data, and meteorological data, such as wind speed, atmospheric conditions, and site elevation. For this project, the meteorological data used as inputs to the model included hourly wind speeds and directions measured at the Chula Vista J Street Monitoring Station during 2000 through 2002, which is the closest complete meteorological data source to the project site, and is meteorological data both compiled by and approved for use by the SDAPCD. Additionally, staff obtained hourly ozone and NO_2 ambient data from the J Street Monitoring station for 2000 to 2002 from the District (Brick 2008) that was used in a more refined NO_2 impact modeling analysis using the Plume Volume Molar Ratio Method (PVMRM) option that is available with AERMOD.

Construction Impacts and Mitigation

The following section discusses the project's short-term direct construction ambient air quality impacts, as estimated by the applicant and revised by staff, and provides a discussion of appropriate mitigation. Staff reviewed the construction emissions estimates and air dispersions modeling procedures and revised the estimates and revised the modeling analysis to incorporate additional site preparation activities considered necessary after a visit to the site and review of the geotechnical report.

Construction Impact Analysis

The CVEUP on-site construction emissions that were revised by staff were also remodeled by staff using the AERMOD model (version 07026). The construction equipment engine and construction fugitive dust emissions were modeled as two sets of seven point and volume sources, respectively. The emission sources were placed on the northern portion of the site, where the new facilities would be constructed. The construction equipment assumptions provided by the applicant did not specify equipment use per construction phase. Consequently the worst-case particulate emissions for construction equipment and worst-case fugitive dust emissions were modeled concurrently, although the worst-case fugitive emissions would not occur at the same time as the worst-case equipment emissions and would only occur during the short site preparation phase of construction. The modeling input assumptions used by staff are conservative, likely underestimate the impact of staff's recommended engine and fugitive dust emission controls, and are expected to overestimate the worst-case construction impact potential.

For the determination of one-hour average construction NOx concentrations, the Plume Volume Molar Ratio Method (PVMRM) was used to determine worst-case near field NO_2 impacts. The NOx emissions from internal combustion sources, such as diesel engines or gas turbines, are primarily in the form of NO rather than NO_2. The NO converts into NO_2 in the atmosphere, primarily through the reaction with ambient ozone, but the conversion of all of the NO to NO_2 is not immediate and relies on the amount of available ozone and the dispersion/mixing of the plume with the ambient ozone. The PVMRM method used by staff assumes an initial NO_2/NOx ratio of 0.1 for diesel equipment and a worst-case final NO_2/NOx ratio of 0.9. Actual monitored hourly background ozone concentration data (2000 to 2002 data that corresponds with the meteorological files) were used by this modeling method to calculate maximum potential NO to NO_2 conversion to determine the maximum hourly NO_2 impacts.

To determine the construction impacts on short-term ambient standards (i.e. 1-hour through 24 hours) the worst-case daily on-site construction emission levels shown in **AIR QUALITY Table 11** were modeled. For pollutants with annual average ambient standards, the annual on-site emissions levels as shown in **AIR QUALITY Table 12** were used. For the modeling analysis, it is assumed that all of the equipment would operate from 7:00 a.m. to 5:00 p.m. on weekdays. **AIR QUALITY Table 19** provides the results of this modeling analysis.

AIR QUALITY Table 19
CVEUP Construction Impacts, (µg/m^3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [b]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2 [a]	1 hour	272.6	22.6 [a]	295.2	338	CAAQS	87
	annual	16	32	48	56	CAAQS	86
PM10	24 hour	101	53	154	50	CAAQS	308
	annual	4.76	27	31.8	20	CAAQS	159
PM2.5	24 hour	29	34.3	63.3	35	NAAQS	181
	annual	2.34	12.2	14.5	12	CAAQS	121
CO	1 hour	732	4,485	5,217	23,000	CAAQS	23
	8 hour	197	2,756	2,953	10,000	CAAQS	30
SO_2	1 hour	1.2	110	111.2	655	CAAQS	17
	3 hour	0.48	55	55.5	1,300	NAAQS	4
	24 hour	0.13	42	42.1	105	CAAQS	40
	annual	0.02	8	8	80	NAAQS	10

Source: Staff Modeling Analysis
[a] One-hour and annual NOx values were modeled using PVMRM, where staff adjusted the NO_2 background based on the actual hourly background for the period modeled to determine the worst-case 1-hour total impact.
[b] Background values, other than the 1-hour NO_2 value, have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

As can be seen from the modeling results provided in **AIR QUALITY Table 19**, the construction impacts have the potential to worsen the existing violations of the PM10 and PM2.5 ambient air quality standards and are, therefore, potentially significant. Staff's construction modeling analysis indicates that the maximum NOx, CO, and SO_2 impacts will remain below the CAAQS and NAAQS.

The maximum construction impacts occur at the property line. The maximum residential and school receptor[3] impacts of gaseous air pollutants (NOx, CO, and SOx) are significantly lower (as high as an order of magnitude lower) than the maximum impact levels at the property line shown in **AIR QUALITY Table 19.** The maximum property line impacts are well below the associated ambient air quality standards for these pollutants. The maximum NO_2 project impacts are shown to be much higher than the background concentration in **AIR QUALITY Table 19** because the maximum modeled NO_2 impact, including ozone conversion of NO to NO_2 plus the actual hour NO_2 background, happened to occur during an hour with a low ambient NO_2 concentration. The peak hourly NO_2 impacts at the nearest residence and school were determined to be approximately 48 and 32 µg/m^3, respectively, much lower than the peak properly line impact of 272 µg/m^3.

The particulate impacts at the nearest residential and school receptors are also lower than the maximum property line values shown in **AIR QUALITY Table 19**, but not to the same degree due to the difference in dispersion of the ground level fugitive dust

[3] The nearest potential residential receptors are located approximately 380 feet to the west of the property line. The nearest school, Otay Elementary, is located approximately 1,300 feet to the north-northeast of the property line.

emissions. The maximum modeled residential and school receptor PM10 and PM2.5 concentrations, not including background, were determined to be as follows:

	Residential Receptor	School Receptor
PM10 24-hour	30.6 µg/m^3	10.3 µg/m^3
PM10 annual	1.34 µg/m^3	0.17 µg/m^3
PM2.5 24-hour	8.43 µg/m^3	2.88 µg/m^3
PM2.5 annual	0.59 µg/m^3	0.08 µg/m^3

Staff is recommending all feasible mitigation measures to reduce construction emissions and associated impacts.

Construction Mitigation

Staff recommends that construction emission impacts be mitigated to the greatest feasible extent including all required measures from the District's rules and regulations, as well as other measures considered necessary by staff to fully mitigate the construction emissions. The District is currently in the process of creating a fugitive dust control rule (Rule 55) patterned on the recently promulgated Ventura County Air Pollution Control District fugitive rule, which may be approved and in force prior to the project starting or completing construction activities. However, the District has indicated that the Energy Commission conditions, as reviewed from other similar projects, would require control measures that would be as strict as or stricter than the anticipated requirements of District Rule 55 (Hamilton 2008).

Applicant's Proposed Mitigation

The applicant proposed the following construction emission mitigation measures (MMC 2007b, p 5.1-11,12):

- Construction equipment exhaust emissions will comply with all applicable U.S. EPA and California emissions standards for each equipment type and category.
- Construction equipment will use only California-certified diesel (low sulfur, low aromatic content) and gasoline fuels.
- Each piece of equipment will be included in a preventative maintenance program to ensure correct operation and to minimize exhaust emissions.
- Equipment use scheduling will minimize equipment on-site time as well as idling time once on site.
- Water will be used as the primary fugitive dust suppression control method. Water will be applied to all disturbed portions of the site, including unpaved roads, parking and laydown areas, at a minimum of twice daily.
- Track-out sites will either be sweep or water flushed on a daily basis to remove track-out material from all paved access roads.
- Vehicle speeds will be generally limited to five miles per hour on site.
- Reasonable erosion control strategies will be implemented to prevent soil and silt runoff from the site.
- Disturbed areas will be re-vegetated as soon as practical.

- All trucks entering or leaving the site will cover all loads of soils, sands, and other loose materials, or each truck will provide a minimum freeboard height of two feet.
- Water or chemical surface stabilizers will be used on any storage piles or identified wind erosion areas.

The fugitive dust control factor assumed by the applicant was 91%. The applicant's construction emissions estimates, as revised by staff in **AIR QUALITY Tables 11** to **12,** and staff's construction modeling results in **AIR QUALITY Table 18** assume the use of these emission control measures, but assign fugitive dust control efficiencies dependent on the fugitive dust-causing activity and related control measures.

Adequacy of Proposed Mitigation

The applicant's fugitive dust emission estimate assumes a very aggressive control efficiency factor (91%), which staff believes to be potentially overly optimistic. Staff revised the fugitive dust emission calculations and construction modeling analysis using specific control measures for the various fugitive dust-causing construction activities and modeled the construction emissions in the northern portion of the site where the new equipment will be constructed. Staff's modeling analysis shows that the mitigated construction PM10 and PM2.5 impacts are predicted to be potentially significant beyond the property line. Therefore, staff believes that all reasonable feasible construction emission mitigation measures are needed to mitigate the potentially significant construction PM10 and PM2.5 impacts.

Staff Proposed Mitigation

Staff recommends construction PM10 and NOx emission mitigation measures as articulated in Conditions of Certification **AQ-SC1** through **AQ-SC5** that include the mitigation measures proposed by the applicant and several additional construction PM10 emission mitigation measures and construction equipment mitigation measures to assure maximum feasible fugitive dust control performance, construction equipment exhaust emissions control, and compliance enforcement mechanisms.

Staff recommends **AQ-SC1** to require the applicant to have an on-site construction mitigation manager who will be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the construction mitigation program would be provided in the monthly construction compliance report that is required in staff's recommended Condition of Certification **AQ-SC2**.

Staff incorporated and augmented the applicant's proposed fugitive dust mitigation and recommends that the fugitive dust mitigation measures be formalized in Condition of Certification **AQ-SC3**. **AQ-SC3** includes the following fugitive dust control measures:

- All unpaved roads and disturbed areas in the project and laydown construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of **AQ-SC4**. The frequency of watering may be reduced or eliminated during periods of precipitation.

- No vehicle shall exceed 10 miles per hour on unpaved areas within the project and laydown construction sites.
- The construction site entrances shall be posted with visible speed limit signs.
- All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.
- Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.
- All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.
- All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.
- Construction areas adjacent to any paved roadway shall be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent runoff to roadways.
- All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.
- At least the first 500 feet of any public roadway exiting the construction site shall be swept visually clean, using wet sweepers or air filtered dry vacuum sweepers, at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on the public roadways.
- All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.
- All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least two feet of freeboard.
- Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.
- Disturbed areas will be re-vegetated as soon as practical.

Staff recommends Condition of Certification **AQ-SC4** to limit the potential off-site impacts from visible dust emissions and to respond to situations when the control measures required by **AQ-SC3** are not working effectively to control fugitive dust from leaving the construction site area.

Staff recommends Condition of Certification **AQ-SC5**, integrating the applicant's proposed measures as reasonable, to mitigate the PM and NOx emissions from the

large diesel-fueled construction equipment. Implementation of this mitigation measure will provide additional primary and secondary PM mitigation to supplement the recommended fugitive dust mitigation measures. This condition requires the use of U.S. EPA/ARB Tier 2 engine compliant equipment for equipment over 100 horsepower where available and a good faith effort to find and use available U.S. EPA/ARB Tier 3 engine compliant equipment over 100 horsepower and also includes equipment idle time restrictions and engine maintenance provisions. The Tier 2 standards include engine emission standards for NOx plus non-methane hydrocarbons, CO, and PM emissions, while the Tier 3 standards further reduce the NOx plus non-methane hydrocarbons emissions. The Tier 2 and Tier 3 standards became effective for engine/equipment model years 2001 to 2003 and models years 2006 to 2007, respectively, for engines between 100 and 750 horsepower.

Based on the relatively short-term nature of the worst-case construction impacts, and staff's recommendation of requiring all feasible construction emission mitigation measures, staff believes that the construction air quality impacts will be less than significant with the implementation of the mitigation measures contained in the recommended conditions of certification.

Operation Impacts and Mitigation

The following section discusses the project's direct ambient air quality impacts, as estimated by the applicant and evaluated by staff. Additionally, this section discusses the recommended mitigation measures.

The applicant performed direct impact modeling analyses, including operations, startup and shutdown, and fumigation, and using a ratio of the start-up result performed an initial commissioning impact analysis.

Operational Modeling Analysis

A refined modeling analysis was performed to identify off-site criteria pollutant impacts from operational emissions of the proposed project. Turbine emission rates were first calculated from equipment vendor estimates for nine operating conditions:

- Three load cases: 100% load, 75% load, 50% load.
- Three different ambient conditions: cold ambient (30°F), California Independent System Operator (California ISO) standard ambient (59°F), and summer ambient (93°F).

These conditions were then modeled to determine the worst-case short-term ambient and operating conditions and the assumptions for the stack parameters used in the startup/initial commissioning worst-case short-term impact modeling analysis.

The AERMOD model (Version 07026) was used for the modeling analysis. The applicant's predicted maximum concentrations of the non-reactive pollutants for the CVEUP project under normal operating conditions are summarized in **AIR QUALITY Table 20.**

AIR QUALITY Table 20
CVEUP Operating Impacts, (µg/m^3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2	1 hour	8.2	139	147.2	338	CAAQS	44%
	annual	0.2	32	32.2	56	CAAQS	58%
PM10	24 hour	1.7	53	54.7	50	CAAQS	109%
	annual	0.1	27	27.1	20	CAAQS	136%
PM2.5	24 hour	1.7	34.3	36.0	35	NAAQS	103%
	annual	0.1	12.2	12.3	12	CAAQS	103%
CO	1 hour	12.0	4,485	4,497	23,000	CAAQS	20%
	8 hour	7.2	2,756	2,763	10,000	CAAQS	28%
SO_2 [b]	1 hour	2.8	110	113	655	CAAQS	17%
	3 hour	1.9	55	57	1,300	NAAQS	4%
	24 hour	0.6	42	43	105	CAAQS	41%
	annual	0.04	8	8	80	NAAQS	10%

Source: (CH2MHill 2007a, DR 29)
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.
[b] The SO_2 short-term (1-, 3-, 24-hour) modeling results provided by the applicant were based on the gas turbine fuel having a natural gas fuel sulfur content of 0.75 grains per 100 SCF.

The applicant's modeling results indicate that the project's normal operational impacts would not create violations of NO_2, SO_2, or CO standards, but could further exacerbate violations of the PM10 and PM2.5 standards. In light of the existing PM10 and PM2.5 non-attainment status for the project site area, staff considers the modeled impacts to be significant and, therefore, require mitigation.

Start-Up/Shut-Down Event Modeling Impact Analysis

NOx and CO emissions are usually higher during start-up and shut-down events than during steady state operation, as the gas turbine emissions are higher during the short periods of unsteady state operation for startup and shutdown and the SCR and oxidation catalyst control systems are not functioning at their peak efficiency immediately upon startup or during shutdown. The applicant used the AERMOD model (Version 07026) to determine the maximum short-term NOx and CO emission impacts during start-up/shut-down events, using the start-up and shut-down emissions provided in **AIR QUALITY Table 16**. The applicant's predicted maximum short-term NOx and CO concentrations from start-up/shut-down events are summarized in **AIR QUALITY Table 21.**

AIR QUALITY Table 21
CVEUP Start-Up/Shut-Down Impacts, (µg/m^3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2	1 hour	37.5	139	177	470	CAAQS	38
CO	1 hour	27.8	4,513	4,573	23,000	CAAQS	20
	8 hour	8.8	2,756	2,765	10,000	CAAQS	28

Source: CH2MHill 2007a, DR29
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

The applicant's modeling results indicate that the project's maximum start-up/shut-down emission impacts are well below what would cause new exceedances of the NO_2 or CO standards.

Fumigation Modeling Impact Analysis

There is the potential that higher short-term concentrations may occur during fumigation conditions. During the early morning hours before sunrise, the air is usually very stable. During such stable meteorological conditions, emissions from elevated stacks rise through this stable layer and are dispersed. When the sun first rises, the air at ground level is heated, resulting in a vertical (both rising and sinking air) mixing of air for a few hundred feet or so. Emissions from a stack that enter this vertically mixed layer of air will also be vertically mixed, bringing some of those emissions down to the ground level. Later in the day, as the sun continues to heat the ground, this vertical mixing layer becomes higher and higher, and the emissions plume becomes better dispersed. The early morning pollution event, called fumigation, usually lasts approximately 30 to 90 minutes.

Fumigation conditions are generally only compared to one-hour standards. The applicant analyzed the maximum one-hour air quality impacts under fumigation conditions from the CTGs under normal operating conditions using the SCREEN3 model. The results of the analysis are shown in **AIR QUALITY Table 22.**

AIR QUALITY Table 22
Maximum CVEUP Fumigation Impacts, (µg/m^3)

Pollutant	Averaging Period	Project Impact (µg/m^3)	Background (µg/m^3) [a]	Total Impact (µg/m^3)	Limiting Standard (µg/m^3)	Type of Standard	Percent of Standard
NO_2	1 hour	2.7	139	142	338	CAAQS	42
CO	1 hour	4.0	4,485	4,489	23,000	CAAQS	20
SO_2	1 hour	0.7	110	111	655	CAAQS	17

Source: (MMC 2007b, Modeling File CD).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

Maximum fumigation impacts for the turbines were predicted to occur about 17.9 kilometers from the facility (MMC 2007b, Modeling File CD). The impacts under fumigation conditions were found to be below the maximum concentrations calculated

by AERMOD for normal operations (see **AIR QUALITY TABLE 20**), which is due to the very high stack temperatures which reduce the potential for fumigation.

Initial Commissioning Short-Term Modeling Impact Analysis

The applicant did not model the worst-case initial commission separately, but rather, used the start-up NOx and CO emission modeling results to determine by emission rate ratio the worst-case short-term initial commissioning impacts. The SO_2 and PM10 emissions and ambient air quality impacts are not forecast to be higher during initial commissioning or start-up/shut-down events than they are under normal operation.

The applicant presented several initial commissioning activities that would occur prior to meeting normal emission limits. The worst-case conditions for the short-term NOx and CO impacts occur prior to the installation of the oxidation and SCR catalysts. The emissions for all cases and the worst-case are provided in **AIR QUALITY Tables 13** and **14**. The initial commissioning worst-case analysis assumes both turbines are operating under worst-case initial commissioning conditions. The results of the commissioning emissions impact analysis are shown in **AIR QUALITY Table 23.**

AIR QUALITY Table 23
Maximum CVEUP Initial Commissioning Impacts

Pollutant	Averaging Period	Project Impact ($\mu g/m^3$)	Background ($\mu g/m^3$) [a]	Total Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Type of Standard	Percent of Standard
NO_2	1 hour	99.2	139	238	470	CAAQS	51
CO	1 hour	87.5	4,485	4,573	23,000	CAAQS	20
CO	8 hour	52.5	2,756	2,809	10,000	CAAQS	28

Source: MMC 2007b, p 5.1-29; CH2MHill 2007a, DR29
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

The applicant's impact analysis indicates that the project's maximum initial commissioning emission impacts are well below what would cause new exceedances of the NO_2 or CO standards.

Operations Mitigation

Applicant's Proposed Mitigation

Emission Controls

As discussed in the **Project Description** section, the applicant proposes to employ water injection, SCR with ammonia injection, and CO catalyst and operate exclusively on pipeline-quality natural gas to limit turbine emission levels (MMC 2007b, p. 5.1-3,4). The AFC (MMC 2007b, Table 5.1-5, p. 5.1-9) and the PDOC (SDAPCD 2008b) provide the following BACT emission limits, each for the two CTGs:

- NOx: 2.5 ppmvd at 15% O_2 (one-hour average, excluding startup/shutdown) and 4.2 lb/hr

- CO: 6.0 ppmvd at 15% O_2 (three-hour rolling average, excluding startup/shutdown) and 6.2 lb/hr
- VOC: 2.0 ppmvd at 15% O_2 (one-hour rolling average, excluding startup/shutdown) and 1.1 lb/hr (1.2 lb/hr when using evaporative cooling)
- PM10: 3.0 lb/hr
- SO_2: 1.0 lb/hr with fuel sulfur content of 0.75 grains/100 standard cubic feet (scf)
- NH_3: 5 ppmvd at 15% O_2 and 3.2 lb/hr

Emission Offsets

District Rule 20 requires offsets when NOx or VOC emissions exceed 50 tons per year. The emissions from this project will be permitted at levels well below the District offset threshold.

Energy Commission staff has long held that emission reductions need to be provided for all nonattainment pollutants and their precursors at a minimum 1:1 ratio of annual operating emissions. For this project, the District's regulations would not require any offset mitigation. The applicant has proposed to provide emission reductions through the Carl Moyer Fund. The applicant's proposal includes a determination of the difference between existing site emissions and expected new project emissions based on actual emissions for the existing peaker turbines and the new facility's potential to emit based on a maximum expected operations of 1,000 operating hours per year. The applicant's specific offset proposal is as follows (CH2MHill 2008a):

- Total calculated emission increase of 8.75 tons (total of NOx, VOC, PM, and SOx emissions);
- Fund Carl Moyer program at a rate of $20,000 per ton;
- Fund additional 20% administration fee to direct emission reduction projects in the immediate project area for two years, then the remaining Carl Moyer Funds would be used county-wide as needed.

Using this basis, the total emission reduction funding proposed by the applicant is $210,000.

Adequacy of Proposed Mitigation

Staff concurs with the District's determination that the project's proposed emission controls/emission levels for criteria pollutants and ammonia slip meets BACT requirements and that the proposed emission levels are reduced to the lowest technically feasible levels.

Staff has made a preliminary determination that the applicant's offset proposal approach meets CEQA mitigation requirements. However, staff has minor issues with the specifics of the approach. First, staff believes that the fee for funding the Carl Moyer program should reflect the current draft or final ARB Carl Moyer Program Guidelines (ARB 2008d) cost effectiveness criteria value, which is currently proposed in the latest draft document to be somewhat lower than the applicant's proposed fee ($16,000 per

ton vs. $20,000 per ton). Second, staff has determined a slightly different emission increase basis than was determined by the applicant. Third, staff believes that the potential mitigation method should include the potential for using emission reduction programs other than the Carl Moyer Program that might also allow a localized emission reduction project and/or using existing District emission reductions credits (ERCs). Staff's offset proposal and emissions basis is discussed below in the "Staff Proposed Mitigation" subsection.

Staff's acceptance of this offset package was determined solely based on the merits of this case, consideration of the region's local ambient air quality and expected attainment timelines, the project's expected operation and resulting emission limits, and the specific form of emission reductions proposed and does not in any way provide a precedent or obligation for the acceptance of offset proposals for any other current or future licensing case.

Staff has determined that the proposed emission controls and emission levels, along with the proposed emission offset package, mitigate all project air quality impacts to less than significant.

Staff has considered the minority population surrounding the site (see **Socioeconomics** Figure 1). Since the project's direct air quality impacts have been reduced to less than significant, there is no environmental justice issue for air quality.

Staff Proposed Mitigation

Staff is proposing Condition of Certification **AQ-SC7** to formalize the applicant's NOx, PM10, VOC, and SOx offset proposal. Staff evaluated the applicant's assumption for likely maximum annual operation, 1,000 hours or a capacity factor of 11.4%, and found data to support using a reduced capacity factor in this general range given the historical capacity factors and the worst-case forecast capacity factors for SDG&E peaker facilities. The historical capacity factors, for peaker power plants built after the year 2000, found in a review of the Energy Commission's Quarterly Fuel and Energy Reporting data and available SDAPCD 2005 and 2006 data (Moore 2008) show generation or hour-based capacity factors that have not exceeded 8.4% for any single facility. The historical capacity factor data reviewed is provided in **AIR QUALITY Table 24**.

AIR QUALITY Table 24
Historical Capacity Factors for Comparable SDG&E Service Area Peaker Facilities

	QFER Generation Based Capacity Factor					
Facility Name	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Calpeak Border	7.77%	2.71%	2.28%	1.86%	1.43%	8.39%
Calpeak Enterprise	7.53%	2.18%	2.35%	1.55%	1.24%	5.76%
Larkspur	1.18%	4.01%	4.74%	3.85%	2.89%	6.00%
	SDAPCD Hours of Operation Capacity Factor					
Facility Name	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Calpeak Border	---	---	---	2.29%	1.72%	---
Calpeak Enterprise	---	---	---	1.91%	1.49%	---
Calpeak El Cajon	---	---	---	2.64%	2.26%	---
Miramar Energy Facility	---	---	---	1.69%	1.84%	---
Larkspur	---	---	---	4.41%	3.51%	---

Source: Energy Commission QFER data; Moore 2008

The most comparable facility to the CVEUP is Larkspur as it is also comprised of two LM6000 gas turbines.

Staff also reviewed the worst-case SDG&E peaker capacity factors forecast in the Scenario Analysis of California's Electricity System performed for the *2007 Integrated Energy Policy Report* (CEC 2007). The worst-case generation based capacity factors for the existing and named peakers for 2009 to 2020 range from 5.7 - 10.5%. It is important to note that the generation based capacity factors could be lower than emission based capacity factors due to higher proportional emissions during reduced load conditions and start/shut-down periods. Using these historic and forecast capacity factor data sources and considerations regarding emissions versus generation or hourly operation capacity factors, staff has determined that a 13.7% annual capacity factor, or 1,200 hours of operation, would provide a reasonable safety margin for the determination of CEQA emission mitigation requirements for this project. This is similar to, but somewhat higher than, 1,000 hours proposed by the applicant.

Staff also reviewed the applicant's emission calculations and revised them using staff's recommended capacity factor basis and assumed worst-case conditions that assumed that the maximum annual 1,200 operating hours were comprised of 1,000 hours of normal operations (500 of which use inlet fogging), 100 hours of cold start operation, and 100 hours of warm start operation. Additionally, the long-term worst-case fuel sulfur basis for the Chula Vista Power Plant and the CVEUP were standardized to 0.25 grains/100 scf. Using these assumptions, staff calculated the annual emission rates and incremental emission increase for the project, to be used in Condition of Certification **AQ-SC7,** which are shown in **AIR QUALITY Table 25**.

AIR QUALITY Table 25
Staff's CVEUP Incremental Annual Emissions (CEQA Mitigation Basis)

	Pollutant (tons/year)			
Emission Source	**NOx**	**VOC**	**SOx**	**PM10/2.5**
CVEUP Expected Maximum Annual Emissions, tons/year	7.35	1.43	0.40	3.60
Chula Vista Power Plant Emissions Baseline, tons/year	1.3	0.07	0.05	0.5
Incremental Emissions Increase, tons/year	6.05	1.36	0.35	3.10

Source: Staff calculations and CH2MHill 2008a, DR 2 and 3.

The total incremental emissions value recommended in **AQ-SC7** is 10.86 tons, which is 2.11 tons greater than the applicant's estimate of 8.75 tons (see **AIR QUALITY Table 18**). Staff also believes that the mitigation fee basis should be tied to ARB's latest Carl Moyer Program Guideline[4] cost effectiveness cap value. The draft ARB 2008 cost effectiveness cap value is $16,000 per ton (ARB 2008d). Therefore, with the applicant's proposed 20% administration fee to find local emission reduction projects, the total Carl Moyer Program mitigation fee would total $208,512 to offset the 10.86 tons of incremental emissions, which is slightly less than the $210,000 fee total proposed by the applicant. **AQ-SC7** is written to allow flexibility should the final cost effectiveness cap value change from the draft value. Additionally, **AQ-SC7** has also been designed to allow other public agency administered emission mitigation fee programs or traditional emission reduction credits (ERCs) from the District bank to be used to meet the emission mitigation requirement of the condition.

Staff would like to note that the CEQA mitigation basis includes a rather significant safety factor, namely the difference between the project's actual emissions and its proposed maximum emissions. The actual emissions from a LM6000 gas turbine would be some fraction of the permitted maximum emissions. Some pollutants are emitted near their permitted emission rate, such as NOx, while others tend to be much lower than their permitted emission rate, such as VOC and CO. **AIR QUALITY Table 26** provides a comparison of the actual normal hourly operating emissions for the existing Twinpac™ gas turbine and an expected actual range of emissions and average normal hourly operating emissions for two LM6000 gas turbines based on a compilation of source test results (from four separate sites with LM6000PC Sprint gas turbines), the permitted emission rates for the LM6000 gas turbines, and the expected safety factor for each pollutant.

[4] The ARB Carl Moyer Web page has the following description of the program: "The Carl Moyer Memorial Air Quality Standards Attainment Program provides incentive grants for cleaner-than-required engines, equipment and other sources of pollution providing early or extra emission reductions. Eligible projects include cleaner on-road, off-road, marine, locomotive and stationary agricultural pump engines, as well as forklifts, airport ground support equipment, and auxiliary power units. The program achieves near-term reductions in emissions of oxides of nitrogen (NOx), particulate matter (PM), and reactive organic gas (ROG) which are necessary for California to meet its clean air commitments under the State Implementation Plan.Program funds" (ARB 2008).

AIR QUALITY Table 26
Comparison of Actual and Permitted Emissions for the CVPP and CVEUP

	Pollutant lb/hr normal operations [a] or% as appropriate			
Emission Source	**NOx**	**VOC**	**COx**	**PM10/2.5**
CVEUP LM6000 Permitted Emissions (both Turbines)	8.4	2.4	12.4	6.0
Existing LM6000 Two Turbine Actual Emissions Range [c]	NR	0.11-1.8	0.93-4.5	0.72-4.9
Existing LM6000 Two Turbine Actual Emissions Average [d]	NR	0.72	2.5	2.3
Existing LM6000 Source Tests –% of Permit Level [d]	65%	30%	25%	38%
Expected CVEUP Permitted Emissions Safety Margin [e]	15%	70%	75%	60%
Expected Long-Term CVEUP Normal Operating Emissions	7.1	0.72	3.1	2.4
CVPP Twinpac™ Actual Emissions	7.6	1.1	52.6	4.6 [b]

Sources: CH2MHill 2008a, DR 2 and 3 for CVPP emissions and staff summary and analysis of existing LM6000PC Sprint gas turbine source test data for the Hanford, Henrietta, Los Esteros, and Donald Von Raesfeld facilities.
CVPP – Chula Vista Power Plant.
NR – Not representative. The NOx emission concentration limits for the four projects surveyed are different than the proposed CVEUP project so the mass emission rate is not representative.
a – SOx emissions are strictly a comparison of the heat input rate of the turbines, which for the two LM6000's is approximately 1.4 times that of the existing Twinpac™. The mitigation safety factor is the difference between the natural gas sulfur content used in the emission calculations (0.25 grains/100 scf) and the expected long-term fuel sulfur content, which is expected to be less than half of the assumed value.
b – Estimated value from the applicant; no PM10 source tests were performed on the existing Twinpac™.
c – Lowest and highest source test values from 10 LM6000PC Sprint gas turbines.
d – Average values from source tests from 10 LM6000OPC Sprint gas turbines.
e – Safety factor for NOx is conservatively assumed to be approximately one-half what would occur if the facility were to meet the average percent of permit level found for the four surveyed sources due to the lower concentration limit required for CVEUP.

AIR QUALITY Table 26 shows that the actual emissions from the new LM6000 turbines are expected to be quite a bit lower than the permitted emissions, particularly for CO, VOC, and PM10 emissions, which provides a margin of safety for staff's proposed mitigation level. Additionally, the data shows that the actual normal hourly emissions from the two new LM6000 gas turbines combined are expected to be lower than the normal hourly emissions from the existing Twinpac™ gas turbines. The exceptions are SO_2 emissions, whose emissions are strictly a function of total fuel flow, and potentially PM10/PM2.5 emissions, as the actual Twinpac™ normal operating emission rate is not known.

Staff is proposing Condition of Certification **AQ-SC8** to ensure that the operations of the CVEUP and MMC Chula Vista Power Plant are properly phased and to ensure that the MMC Chula Vista Power Plant is removed as proposed. This recommended condition of certification requires that: 1) there is no concurrent operation of the existing MMC Chula Vista Power Plant while the CVEUP gas turbines are actively operating during the initial commissioning period; 2) the project owner provide confirmation that the air quality permit for the Chula Vista Power Plant has been terminated and that the Twinpac™ has been disconnected from its natural gas fuel source by the time the CVEUP starts commercial operation; and 3) the project owner provide monthly updates on the removal of the MMC Chula Vista Power Plant facilities. Additionally, **AQ-SC8** requires that the construction emission reduction methods in Conditions of Certification **AQ-SC3** through **AQ-SC5** are applied as applicable to the MMC Chula Vista Power Plant removal activities.

Staff is proposing Conditions of Certification **AQ-SC7** and **AQ-SC10** that would ensure that the license is amended as necessary to incorporate changes to the air quality permits and ensure ongoing compliance through the requirement of quarterly reports.

CUMULATIVE IMPACTS

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or . . . compound or increase other environmental impacts" (CEQA Guidelines § 15355). "A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts" (CEQA Guidelines § 15130[a][1]). Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

This analysis is primarily concerned with "criteria" air pollutants. Such pollutants have impacts that are usually (though not always) cumulative by nature. Rarely will a project cause a violation of a federal or state criteria pollutant standard. However, a new source of pollution may contribute to violations of criteria pollutant standards because of the existing background sources or foreseeable future projects. Air districts attempt to attain the criteria pollutant standards by adopting attainment plans, which comprise a multi-faceted programmatic approach to such attainment. Depending on the air district, these plans typically include requirements for air offsets and the use of best available control technology for new sources of emissions and restrictions of emissions from existing sources of air pollution.

Much of the preceding discussion is concerned with cumulative impacts. The "Existing Ambient Air Quality" subsection describes the air quality background in the San Diego Air Basin, including a discussion of historical ambient levels for each of the significant criteria pollutants. The "Construction Impacts and Mitigation" subsection discusses the project's contribution to the local existing background caused by project construction. The "Operation Impacts and Mitigation" subsection discusses the project's contribution to the local existing background caused by project operation. The following subsection includes four additional analyses:

- a summary of projections for criteria pollutants by the air district and the air district's programmatic efforts to abate such pollution;
- an analysis of the project's *localized cumulative impacts*, the project's direct operating emissions combined with other local major emission sources;
- a discussion of chemically reactive pollution impacts, ozone, and PM2.5; and
- a discussion of greenhouse gas reporting.

Summary of Projections

The SDAPCD is the lead agency for managing air quality and coordinating planning efforts for San Diego County and the San Diego Air Basin, so that the federal 8-hour ozone standard is attained in a timely fashion and attainment with CO standards are maintained. The District is responsible for developing those portions of the State Implementation Plan (SIP) and the Air Quality Management Plan (AQMP), that deal with

certain stationary and area source controls and, in cooperation with the transportation planning agencies (TPAs), the development of transportation control measures (TCMs). Additionally, the SDAPCD is responsible for providing plans for attaining the California ozone standard and for reducing particulate (PM10 and PM2.5) emissions in compliance with Senate Bill 656 (Sher, Chapter 738, Statutes of 2003). In this role, the SDAPCD is the agency with principal responsibility for analyzing and addressing cumulative air quality impacts, including the impacts of ambient ozone, particulate matter, and CO. The District has summarized the cumulative impacts of ozone, particulate matter, and CO on the air basin from the broad variety of its sources. Analyses of these cumulative impacts, as well as the measures the District proposes to reduce impacts to air quality and public health, are summarized in six publicly available documents. These adopted air quality plans are summarized below.

- **Eight-Hour Ozone Attainment Plan** (federal 8-hour ozone attainment plan)
  Link: http://www.sdapcd.org/planning/8-Hour-Ozone-Attainment-Plan.pdf
- Air Resources Board's Proposed State Strategy for California's 2007 State Implementation Plan (federal 8-hour ozone attainment plan)
  Link: http://www.arb.ca.gov/planning/sip/2007sip/2007sip.htm
- Ozone Redesignation Request and Maintenance Plan (federal 1-hour ozone maintenance plan)
  Link: http://www.sdapcd.org/planning/RedesigPlan.pdf
- 2004 Revision to the California State Implementation Plan for Carbon Monoxide (federal CO maintenance plan)
  Link: http://www.arb.ca.gov/planning/sip/co/final_2004_co_plan_update.pdf
- 2004 Triennial Revision of the Regional Air Quality Strategy for San Diego County (state ozone attainment plan)
  Link: http://www.sdapcd.org/planning/RAQS-04.pdf
- Measures to Reduce Particulate Matter in San Diego County (Health and Safety Code 39614)
  Link: http://www.sdapcd.org/planning/SB656StaffRpt.pdf

The final 8-hour ozone attainment plan for San Diego County was submitted by the state in the ARB *Proposed State Strategy for California's 2007 State Implementation Plan* document in late 2007. This plan has not been approved by U.S. EPA, so the approved 1-hour plan is the currently approved ozone attainment plan for San Diego County. The 2007 State Implementation Plan, when approved by U.S. EPA, will become the ozone attainment plan for the District.

Eight-Hour Ozone Attainment Plan and Air Resources Board's Proposed State Strategy for California's 2007 State Implementation Plan

The District's Eight-Hour Ozone Attainment plan relies strongly on existing control measures included in District rules and regulations. The ARB's state proposed strategy for the State Implementation Plan relies primary on existing control measures, as well as tightening vehicle emissions (both on- and off-road vehicles) and emissions from other transportation sources, pesticides, and consumer products. No new control strategies that are directly applicable to the project are noted in either of these two

ozone planning documents. Indirectly, the on-road and off-road control measures would regulate some of the delivery vehicles and construction equipment used during the projects construction and operation. U.S. EPA has not yet approved the 8-hour ozone attainment plan for California.

Ozone Redesignation Request and Maintenance Plan

This plan was prepared after the SDAB came into compliance with the federal 1-hour ozone standard in December 2002. U.S. EPA approved this plan and redesignated the San Diego Air Basin as attainment with the 1-hour standard effective July 28, 2003. The specific control measures included in the approved 1-hour ozone maintenance plan are those that were approved for the nonattainment State Implementation Plan (SIP), and no new measures were proposed. The existing measures from the previously approved SIP are included in the District's rule and regulations and ARB vehicle emission regulations. Therefore, compliance with these rules and regulations will ensure that the project conforms to the 1-hour ozone maintenance plan.

While the San Diego area is no longer subject to the revoked federal 1-hour ozone standard, the 8-hour ozone plan has not yet been approved by U.S. EPA, so this plan is the currently approved ozone plan for San Diego County.

2004 Revision to the California State Implementation Plan for Carbon Monoxide

The Carbon Monoxide Maintenance Plan applies to 10 separate areas in California that attained the federal CO standards in the 1990s, including the San Diego area. This plan does not include any further measures or requirements that would specifically relate to the project's direct and indirect emission sources. This plan relies on current motor vehicle programs to ensure that attainment with the federal CO standards are maintained.

The project's construction and operation were not found to cause any new exceedances of the carbon monoxide ambient air quality standards (CO AAQS). The project's generated traffic would be insignificant in comparison with the existing San Diego County traffic, and the project's primary emission sources normally emit CO concentrations out of the stack that are below the federal ambient air quality standards. Therefore, the project would not impact the Carbon Monoxide Maintenance Plan.

2004 Triennial Revision of the Regional Air Quality Strategy for San Diego County

This plan is prepared to determine progress and measures needed to attain California Ambient Air Quality Standards (CAAQS) for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide. San Diego County is in attainment with all of these state standards except ozone. This plan describes the extent of ozone air quality improvement during the previous three years, provides a discussion of actual versus forecasted emission rates, and evaluates the need for further control measures in order to achieve attainment with the state ozone ambient air quality standards. None of the measures determined for further study in this document would apply to the proposed project.

The 2007 triennial plan was scheduled to be completed in late 2007, but it will not be completed until sometime in early to mid-2008. None of the anticipated emission reduction measures that could include a Best Available Retrofit Control Technology

(BARCT) measure for existing older peaker turbines and a control measure for small boilers (less than 5 million Btu/hr heat input), to be included in this document for further study or implementation, would impact the new gas turbines that would be installed as part of this project (Selnick 2008).

Measures to Reduce Particulate Matter in San Diego County

This plan, completed in December 2005, analyzed potential particulate control measures, listed by ARB, as required by Health and Safety Code 39614. The SDAPCD's review indicated that 59 of these ARB measures were already included in existing District rules and regulations, that 25 of these control measures would not significantly reduce particulate emissions in San Diego County, and that 19 of these control measures could have cost effective particulate reductions. The District will evaluate these 19 control measures further and will propose new regulations, or non regulatory programs, for consideration of the District Board, if appropriate. Of these 19 control measures, there are eight fugitive dust control measures that could be applicable to the project's construction activities, including earthmoving, demolition, grading, carryout and trackout, unpaved staging areas, and windblown dust controls. The District has not yet promulgated any regulations for fugitive dust control; however, a fugitive dust rule is planned to be promulgated prior to the end of the project's construction. Staff's proposed fugitive dust control measures (Condition of Certification **AQ-SC3** and **AQ-SC4**) require stringent emission control measures for all of the applicable fugitive dust sources that are identified for further study in this planning document and that are likely to be included in the District's future fugitive dust control rule.

Summary of Conformance with Applicable Air Quality Plans

The applicable air quality plans do not outline any new control measures applicable to the proposed project's operating emission sources. Therefore, compliance with existing District rules and regulations will ensure compliance with those air quality plans.

SDAPCD is evaluating additional fugitive dust control measures that it plans to include in a new fugitive dust control rule that should be promulgated in a new Rule 55 sometime during 2008. Staff's recommended Conditions or Certification **AQ-SC3** and **AQ-SC4** include fugitive dust control measures that should meet or exceed the fugitive dust control requirements that are currently being considered by the District. However, **AQ-SC3** has been revised to include the potential that specific fugitive dust control measures that are required by future District Rule 55 could be more stringent than those currently required in staff's proposed conditions.

Localized Cumulative Impacts

Since the power plant air quality impacts can be reasonably estimated through air dispersion modeling (see the "Operational Modeling Analysis" subsection) the project contributions to localized cumulative impacts can be estimated. To represent *past* and, to an extent, *present projects* that contribute to ambient air quality conditions, the Energy Commission staff recommends the use of ambient air quality monitoring data (see the "Environmental Setting" subsection), referred to as the *background*. The staff

undertakes the following steps to estimate what are additional appropriate "present projects" that are not represented in the background and "reasonably foreseeable projects":

- First, the Energy Commission staff (or the applicant) works with the air district to identify all projects that have submitted, within the last year of monitoring data, new applications for an authority to construct (ATC) or permit to operate (PTO) and applications to modify an existing PTO within six miles of the project site. Based on staff's modeling experience, beyond six miles there is no statistically significant concentration overlap for non-reactive pollutant concentrations between two stationary emission sources.
- Second, the Energy Commission staff (or the applicant) works with the air district and local counties to identify any new area sources within six miles of the project site. As opposed to point sources, area sources include sources like agricultural fields, residential developments or other such sources that do not have a distinct point of emission. New area sources are typically identified through draft or final Environmental Impact Reports (EIRs) that are prepared for those sources. The initiation of the EIR process is a reasonable basis on which to determine what is "reasonably foreseeable" for new area sources.
- The data submitted, or generated from the applications with the air district for point sources or initiating the EIR process for area sources, provides enough information to include these new emission sources in air dispersion modeling. Thus, the next step is to review the available EIR(s) and permit application(s), determine what sources must be modeled and how they must be modeled.
- Sources that are not new, but may not be represented in ambient air quality monitoring are also identified and included in the analysis. These sources include existing sources that are co-located with or adjacent to the proposed source (such as an existing power plant). In most cases, the ambient air quality measurements are not recorded close to the proposed project, thus a local major source might not be well represented by the background air monitoring. When these sources are included, it is typically a result of there being an existing source on the project site and the ambient air quality monitoring station being more than two miles away.
- The modeling results must be carefully interpreted so that they are not skewed towards a single source, in high impact areas near that source's fence line. It is not truly a cumulative impact of the CVEUP project if the high impact area is the result of high fence line concentrations from another stationary source and CVEUP is not providing a substantial contribution to the determined high impact area.

Once the modeling results are interpreted, they are added to the background ambient air quality monitoring data and thus the modeling portion of the cumulative assessment is complete. Due to the use of air dispersion modeling programs in staff's cumulative impacts analysis, the applicant must submit a modeling protocol, based on information requirements for an application, prior to beginning the investigation of the sources to be modeled in the cumulative analysis. The modeling protocol is typically reviewed, commented on, and eventually approved in the Data Adequacy phase of the licensing procedure. Staff typically assists the applicant in finding sources (as described above), characterizing those sources, and interpreting the results of the modeling. However, the

actual modeling runs are usually left to the applicant to complete. There are several reasons for this: modeling analyses take time to perform and require significant expertise, the applicant has already performed a modeling analysis of the project alone (see the "Operational Modeling Analysis" subsection), and the applicant can act on its own to reduce stipulated emission rates and/or increase emission control requirements as the results warrant. Once the cumulative project emission impacts are determined, the necessity to mitigate the project emissions can be evaluated, and the mitigation itself can be proposed by staff and/or the applicant (see the "Mitigation" subsection).

The cumulative assessment for CVEUP includes the two other sources shown in **AIR QUALITY Table 26**.

AIR QUALITY Table 26
Facilities Included in the Cumulative Modeling Analysis

Facility	Source Type
Otay Water District Pump Station	Natural Gas Internal Combustion Cogen Unit
Otay Mesa Power Plant	Combined Cycle Power Plant

The original list of possible new sources from the SDAPCD included 37 sources (CH2MHill 2008a, DR 25). Of the 37 stationary sources identified by SDAPCD:

- Ten were VOC only emission sources (i.e. gasoline stations) and were not appropriate for modeling, since there were no VOC ambient air quality standards to compare to any modeling results.
- Twenty four were emergency engines that would have very limited use and emissions.
- Two were for minor modifications to existing emissions sources, or minor new emission sources that resulted in emission reductions or insignificant increases in criteria pollutant emissions (potential to emit below 5 tons/year for any criteria pollutant).

The Otay Mesa Power Plant that is currently being constructed was not included in the SDAPCD list as it was just beyond the area included in the SDAPCD list, and due to its distance from the project site would normally not be included in the cumulative impact analysis; however, due to its significant emissions potential, it was included in the applicant's cumulative modeling analysis.

The applicant obtained stack and building parameters and emission data from the SDAPCD and the Energy Commission and followed the same modeling procedures used for the CVEUP operating emissions modeling analysis, using the most recent version of AERMOD (Version 07026). The modeled receptors cover the area surrounding the CVEUP for several miles, which also covers the Otay Mesa Water District engine location; however, in order not to report worst-case Otay Mesa Power Plant impacts, which is not the purpose of this analysis and which were evaluated during the licensing of that power plant, the receptors did not extend all the way to the Otay Mesa Power Plant site.

The modeling assumed worst-case short-term emissions for the CVEUP (cold startup) and the Otay Mesa Water District engine and full-load normal operating emissions for the Otay Mesa Power Plant for the short-term impact modeling and permit limited annual average emissions for annual impact modeling. The results of the applicant's cumulative modeling analysis are provided in **AIR QUALITY Table 27**.

AIR QUALITY Table 27
Cumulative Impacts Modeling Results (ug/m^3)

Pollutant	Averaging Period	Project Impact (μg/m^3)	Background (μg/m^3) [a]	Total Impact (μg/m^3)	Limiting Standard (μg/m^3)	Type of Standard	Percent of Standard
NO_2	1 hour	37.5	139	176.5	338	CAAQS	52
	annual	0.2	32	32.2	56	CAAQS	57
PM10	24 hour	2.8	53	55.8	50	CAAQS	112
	annual	0.1	27	27.1	20	CAAQS	136
PM2.5	24 hour	2.8	34.3	37.1	35	NAAQS	106
	annual	0.1	12.2	12.3	12	CAAQS	103
CO	1 hour	214	4,485	4,699	23,000	CAAQS	20
	8 hour	115	2,756	2,871	10,000	CAAQS	29
SO_2 [c]	1 hour	2.9	110	113	655	CAAQS	17
	3 hour	1.9	55	57	1,300	NAAQS	4
	24 hour	0.6	42	43	105	CAAQS	41
	annual	0.05	8	8	80	NAAQS	10

Source: CVEUP Cumulative Assessment (CH2MHill 2008d).
[a] Background values have been adjusted per staff recommended background concentrations shown in **AIR QUALITY Table 10**.

The results of this modeling effort, **AIR QUALITY Table 27**, show that CVEUP, along with the other two modeled facilities, will contribute to existing violations of the PM10 and PM2.5 ambient air quality standards. The results also show that CVEUP, along with the other two modeled facilities, will not contribute to new AAQS violations for any of the other pollutants modeled.

Both the CVEUP and Otay Mesa projects will mitigate their PM10 and particulate precursor pollutant (NOx, SOx, and VOC) emissions through funded emission reductions. These emission reductions will be generated in amounts greater than the expected operating emissions of these two power plants. Therefore, the particulate matter (PM10 and PM2.5) operating impacts after mitigation are considered to be less than significant.

Staff has considered the minority population surrounding the site (see **Socioeconomics** Figure 1). Since the project's cumulative air quality impacts have been mitigated to less than significant, there is no environmental justice issue for air quality.

Chemically Reactive Pollutant Impacts

Ozone Impacts

The project's gaseous emissions of NOx, SO_2, VOC, and ammonia can contribute to the formation of secondary pollutants: ozone and PM10/PM2.5.

There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the modeling to determine ozone impacts. There are no regulatory agency models approved for assessing single source ozone impacts. However, because of the known relationship of NOx and VOC emissions to ozone formation, it can be said that the emissions of NOx and VOC from the CVEUP project do have the potential (if left unmitigated) to contribute to higher ozone levels in the region. These impacts would be cumulatively significant because they would contribute to ongoing violations of the state and federal ozone ambient air quality standards.

PM2.5 Impacts

Secondary PM10 formation, which is assumed to be 100% PM2.5, is the process of conversion from gaseous reactants to particulate products. The process of gas-to-particulate conversion, which occurs downwind from the point of emission, is complex and depends on many factors, including local humidity and the presence of air pollutants. The basic process assumes that the SOx and NOx emissions are converted into sulfuric acid and nitric acid first and then react with ambient ammonia to form sulfate and nitrate. The sulfuric acid reacts with ammonia much faster than nitric acid and converts completely and irreversibly to particulate form. Nitric acid reacts with ammonia to form both a particulate and a gas phase of ammonium nitrate. The particulate phase will tend to fall out; however, the gas phase can revert back to ammonia and nitric acid. Thus, under the right conditions, ammonium nitrate and nitric acid establish a balance of concentrations in the ambient air. There are two conditions that are of interest, described as *ammonia rich* and *ammonia poor*. The term ammonia rich indicates that there is more than enough ammonia to react with all the sulfuric acid and to establish a balance of nitric acid-ammonium nitrate. Further ammonia emissions in this case will not necessarily lead to increases in ambient PM2.5 concentrations. In the case of an ammonia poor environment, there is insufficient ammonia to establish a balance and thus additional ammonia will tend to increase PM2.5 concentrations.

The San Diego Air Basin has not undergone the rigorous secondary particulate studies that have been performed in other areas of California, such as the San Joaquin Valley, that have more serious fine particulate pollution problems. However, the available chemical characterization data shows that the annual ammonium nitrate and ammonium sulfate fine particulate concentrations in El Cajon and San Diego range from approximately 50 and 60% of the state annual ambient standard (ARB 2005). Because of the known relationship of NOx and SOx emissions to PM2.5 formation, it can be said that the emissions of NOx and SOx from the CVEUP do have the potential (if left unmitigated) to contribute to higher PM2.5 levels in the region.

Additionally, there will certainly be some secondary particulate conversion from the ammonia emitted from the CVEUP project; however, there is currently no regulatory

model that can predict the conversion rate. Therefore, it is recommended that ammonia emissions be limited to the extent feasible, while ensuring that the selective catalytic reduction unit maintains NOx emissions below the required controlled concentration limit of 2.5 ppm.

The applicant is proposing to mitigate the project's NOx, VOC, SO_2, and PM10 emissions through the use of BACT and emission reduction strategies and limit the ammonia slip emissions to 5 ppm. The applicant proposes to provide total NOx, VOC, SO_2, and PM10 reductions at a minimum 1:1 ratio, and the ammonia slip concentration level matches the lowest level proposed in California for a peaking power project. With the proposed emission offsets and ammonia slip limit, it is staff's belief that the project will not cause significant secondary pollutant impacts.

Greenhouse Gas Reporting

The generation of electricity can produce air emissions known as greenhouse gases (GHGs) in addition to the criteria air pollutants. GHGs are known to contribute to the warming of the earth's atmosphere. These include primarily carbon dioxide, nitrous oxide (N_2O, not NO or NO_2, which are commonly know as *NOx* or *oxides of nitrogen*), and methane (unburned natural gas). Also included are sulfur hexafluoride (SF_6) from high voltage equipment, and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment.

The greenhouse gas emission estimate for this project, based on the full District permitted operations scenario, is 220,034 metric tons carbon dioxide equivalent (CO_2e) per year (MMC 2007c, p DA-9 Table DA5.1-3, and is corrected from a 5,000 hour-per-year basis to 4,400 hour-per-year basis), or approximately 1,200 pounds CO_2e per megawatt hour (MWh) generated. The pound-per-MWh value will vary depending on the actual operations, as frequent starts and stops will reduce the overall generation efficiency and increase the emission rate per MWh generated. The expected annual GHG emissions will be much lower than the District permit basis, and at the criteria pollutant mitigation operation scenario of 1,200 hours per year, the maximum annual GHG emissions would be approximately 60,000 metric tons CO_2e.

Climate change from rising temperatures represents a risk to California's economy, public health, and environment (CEC 2003). 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 GHG emissions as a condition of state licensing of new electric generating facilities (CEC 2003, p. 42). Such reporting would be done in accordance with reporting protocols currently in place or that will be adopted with the implementation of new laws.

The Intergovernmental Panel on Climate Change (IPCC), an international scientific body, has developed standard reporting protocols and methodologies for governments and agencies to follow in calculating GHG inventories. The IPCC-approved methodology for calculating the GHG emissions in an inventory is particular to the type of fossil fuel burned. In its *Revised 1996 IPCC Guidelines for National Greenhouse Gas*

Inventories: Reference Manual, the IPCC established the factors for oxidation, fuel-based emissions, and global warming potential.

The California Global Warming Solutions Act of 2006 (AB32, Núñez, Chapter 488, Statutes of 2006) requires the ARB to adopt a statewide greenhouse gas emissions limit equivalent to the statewide GHG emissions levels in 1990, to be achieved by 2020. To achieve this, ARB has a mandate to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions.

ARB adopted early action GHG reduction measures in October 2007 and will establish a statewide emissions cap by sectors in 2008. By January 1, 2009, ARB will adopt a plan that will indicate how emission reductions would be achieved from significant sources of GHGs via regulations, market mechanisms, and other actions. Then, during 2009, ARB staff will draft rule language to implement its plan and hold public workshops on each measure including market mechanisms (ARB 2006b). Strategies that the state might pursue for managing GHG emissions in California are identified in the California Climate Action Team's Report to the Governor (CalEPA 2006). Some strategies focus on reducing consumption of petroleum across all areas of the California economy. Improvements in transportation energy efficiency (fuel economy) and land use planning and alternatives to petroleum-based fuels are slated to provide substantial reductions by 2020 (CalEPA 2006).

The Electricity Greenhouse Gas Emission Standards Act (SB 1368, Perata, Chapter 598, Statutes of 2006[5]) was also enacted in 2006, requiring base load generation resources and contracts be subject to a GHG or Environmental Performance Standard of 1,100 pounds (or 0.5 metric tons) CO_2e per megawatt-hour (MWh). The Emissions Performance Standard (EPS) applies to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or more, including contracts with power plants located outside California.[6] However, as a peaking power plant the requirements of SB1368 would not apply to the CVEUP.

The Energy Commission continues to work the California Public Utilities Commission to provide recommendations to the Air Resources Board for how it should reduce emissions in the electricity and natural gas sectors. These recommendations, and potential ARB regulations and/or trading markets to reduce sector and statewide GHG emissions will be more fully described in the Final Staff Assessment. In the interim staff recommends the adoption of Condition of Certification **AQ-SC9**, which requires the project owner to report the quantities of relevant GHGs emitted as a result of electric power production. Staff believes that **AQ-SC9** will enable the project to be consistent with the potential regulations and policies described above. The GHG emissions to be reported in **AQ-SC9** are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs, and PFCs emissions that are directly associated with the production and transmission of electric power. Note that reporting GHG emissions under **AQ-SC9** does

[5] Public Utilities Code § 8340 et seq.

[6] See Rule at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm

not imply that the project, as defined, will comply with the potential reporting and reduction regulations likely under AB32. The project may have to provide additional reports and GHG reductions not discussed here.

COMPLIANCE WITH LORS

The San Diego Air Pollution Control District issued a Preliminary Determination of Compliance (PDOC) for the CVEUP on March 6, 2008 (SDAPCD 2008b). Compliance with all District rules and regulations was demonstrated to the District's satisfaction in the PDOC. The District's PDOC conditions are presented in the Conditions of Certification. Staff has submitted comments on the PDOC, which if not addressed may cause staff to add conditions of certification related to specified emission limits for all criteria pollutants. Additionally, there are minor differences between the applicant and District emission calculations that need to be clarified that may cause some revision to the emission values stated in this section. Any revisions to the PDOC District conditions, as provided in the District's Final Determination of Compliance (FDOC), will be addressed in the FSA.

FEDERAL

The District is responsible for issuing the federal New Source Review (NSR) permit but has not yet been delegated enforcement of the applicable New Source Performance Standard (Subpart KKKK). This project will not require a PSD permit from U.S. EPA prior to initiating construction.

U.S. EPA may provide comments on the District's PDOC and/or this Staff Assessment. Staff will evaluate any comments received from U.S. EPA and address them in the Final Staff Assessment.

STATE

The applicant will demonstrate that the project will comply with Section 41700 of the California State Health and Safety Code, which restricts emissions that would cause nuisance or injury, with the issuance of the District's Final Determination of Compliance and the Energy Commission's affirmative finding for the project.

LOCAL

The applicant provided an air quality permit application to the SDAPCD in 2007 (MMC 2007a). The District has issued a PDOC (SDAPCD 2008b), which states that the proposed project is expected to comply with all applicable District rules and regulations.

The District rules and regulations specify the emissions control and offset requirements for new sources such as the CVEUP. Best Available Control Technology will be implemented, and emission reduction credits (ERCs) are not required by District rules and regulations based on the permitted emission levels for this project. Compliance with the District's new source requirements will ensure that the project would be consistent with the strategies and future emissions anticipated under the District's air quality attainment and maintenance plans.

As part of the Energy Commission's licensing process, in lieu of issuing a construction permit to the applicant for the CVEUP, the District will prepare and present to the Commission a DOC, both a PDOC, and after a public comment period, an FDOC. The PDOC was published on March 6, 2008. The FDOC will be published after completion of a 30-day public review period. The DOC evaluates whether and under what conditions the proposed project will comply with the District's applicable rules and regulations, as described below.

Regulation II – Permits

Rule 20.1 and 20.3 – New Source Review

Rules 20.1 and 20.3 generically apply to all sources subject to permitting under the nonattainment NSR and PSD programs. All portions of Rule 20.1 apply. This includes definitions and instructions for calculating emissions. Applicable components of Rule 20.3 are described below.

Rule 20.3(d)(1) – Best Available Control Technology/Lowest Achievable Emission Rate

This subsection of the rule requires that BACT be installed on a pollutant specific basis if emissions exceed 10 lbs/day for each criteria pollutant (except for CO, for which the PSD BACT threshold is 100 tons per year). This subsection also requires that Lowest Achievable Emission Rate (LAER) be installed on a pollutant specific basis if the emissions exceed 50 tons per year for NOx (oxides of nitrogen) or VOC emissions. Because the District attains the national ambient air quality standards for CO, SO_2, and PM10, LAER does not apply to these particular pollutants (District Rule 20.3[d][1][v]). The CVEUP NOx and VOC emissions are below the trigger for LAER. BACT is required for NOx, VOC, PM10, and SOx.

Rule 20.3(d)(2) – Air Quality Impact Analysis

This portion of the rule requires that an Air Quality Impact Analysis (AQIA) be performed for air contaminants that exceed the trigger levels published in Table 20.3-1 of the District's rules and regulations. For an AQIA of PM10, the rules require that direct emissions and emissions of PM10 precursors be included in the analysis.

The CVEUP has prepared an AQIA for NOx, CO, and PM10 that was evaluated by District staff as part of the PDOC analysis.

Rule 20.3(d)(4) – Public Notice and Comment

This portion of the rule requires the District to publish a notice of the proposed action in at least one newspaper of general circulation in San Diego County and requires sending notices to the U.S. EPA and the ARB. The District must allow at least 30 days for public comment and consider all comments submitted. The District must also make all information regarding the evaluation available for public inspection.

The official public notice and comment period for the CVEUP started after newspaper notice publication on March 10, 2008, and will end on April 9, 2008.

Rule 20.3(d)(5) – Emission Offsets

This portion of the rule requires that emissions of any federal nonattainment criteria pollutant or its precursors, which exceed major source thresholds, be offset with actual emission reductions. The District is a federal nonattainment area only for ozone. Therefore, this rule potentially requires offsets only for NOx and VOC emissions, as ozone precursors. Since the CVEUP would not cause NOx or VOC emissions exceeding the major source levels (50 tons per year), offsets are not required by District rule for this project.

Rule 20.3(e)(1) – Compliance Certification

This rule requires that the applicant certify that all major stationary sources owned or operated by the applicant in California are in compliance, or on an approved schedule for compliance, with all applicable emission limitations and standards under the federal Clean Air Act.

The PDOC did not directly address this regulation; however, the applicant does not appear to currently own any major stationary sources.

Rule 20.5 – Power Plants

This rule requires that the District prepare a decision of Preliminary and Final Determinations of Compliance (PDOC and FDOC), which shall confer the same rights and privileges as an Authority to Construct only after successful completion of the Energy Commission‘s licensing process.

Regulation IV – Prohibitions

Rule 50 – Visible Emissions

This rule prohibits air contaminant emissions into the atmosphere darker than Ringelmann Number 1 (20% opacity) for more than an aggregate of three minutes in any consecutive 60-minute time period.

Rule 51 – Nuisance

This rule prohibits the discharge of air contaminants that cause or have a tendency to cause injury, detriment, and nuisance or annoyance to people and/or the public or damage to any business or property.

Rule 52 – Particulate Matter

This rule is a general limitation for all sources of particulate matter to not exceed 0.10 grains per dry standard cubic foot (0.23 grams per dry standard cubic meter) of exhaust gas. The district calculated the maximum grain loading to be 0.0056 grains per dry standard cubic foot, in compliance with the requirements of this rule.

Rule 53 – Specific Air Contaminants

This rule limits emissions of sulfur compounds (calculated as SO_2) to less than or equal to 0.05%, by volume, on a dry basis. This rule also contains a limitation restricting particulate matter emissions from gaseous fuel combustion to less than or equal to 0.10

grains per dry standard cubic foot of exhaust calculated at 12% CO_2. As shown above, the project's particulate concentration is well below 0.1 grains per dry standard cubic foot, and the use of pipeline-quality natural gas fuel will ensure compliance with the sulfur compound emission limitation of this rule.

Rule 62 – Sulfur Content of Fuels

This rule requires the sulfur content of gaseous fuels to contain no more than 10 grains of sulfur compounds, calculated as hydrogen sulfide, per 100 cubic feet of dry gaseous fuel (0.23 grams of sulfur compounds, calculated as hydrogen sulfide, per cubic meter of dry gaseous fuel), at standard conditions.

The use of pipeline-quality natural gas will ensure compliance with this rule.

Rule 69.3 – Stationary Gas Turbines - Reasonably Available Control Technology

This rule limits NOx emissions from gas turbines greater than 0.3 MW to 42 ppm at 15% oxygen when fired on natural gas. The rule also specifies monitoring and record-keeping requirements. Startups, shutdowns, and fuel changes are defined by the rule and excluded from compliance with these limits.

This rule's emission limits are less stringent than the BACT/LAER requirement of Rule 20.3(d)(1) for normal operation.

Rule 69.3.1 – Stationary Gas Turbines - Best Available Retrofit Control Technology

This rule limits NOx emissions from existing and new gas turbines greater than 10 MW to 15 x (E/25) ppm when operating uncontrolled and 9 x (E/25) ppm at 15% oxygen when operating with controls and averaged over a one-hour period (where E is the percent thermal efficiency of the unit, typically between 30 - 40% for gas turbines). The rule also specifies monitoring and record-keeping requirements. Startups, shutdowns, and fuel changes are defined by the rule and excluded from compliance with these limits. The District has also adopted a policy of 200 hours for initial commissioning when the standards of this rule do not apply.

This rule's emission limits are less stringent than the BACT/LAER requirement of Rule 20.3(d)(1) for normal operation.

Regulation X – Standards of Performance for New Stationary Sources

This regulation adopts federal New Source Performance Standards (NSPS, 40 CFR, Part 60) by reference. The relevant NSPS for the CVEUP, Subpart KKKK – Gas Turbines, has not been formally delegated for enforcement to SDAPCD; however, it is expected to be delegated later this year. This rule's emission limits are less stringent than the BACT/LAER requirement of Rule 20.3(d)(1) for normal operation. At the time of delegation the District will ensure compliance with the record-keeping requirements of this regulation.

Regulation XI – National Emission Standards for Hazardous Air Pollutants

This regulation adopts federal standards for hazardous air pollutants (HAPs) by reference. No such standards presently exist that would apply to the project due to the project's not being a major source of HAPs emissions.

Regulation XII – Toxic Air Contaminants

Rule 1200 – Toxic Air Contaminants, New Source Review

This rule requires a health risk estimate for sources of toxic air contaminants. Toxics Best Available Control Technology (TBACT) must be installed if a Health Risk Assessment shows an incremental cancer risk greater than one in a million, and no source would be allowed to cause an incremental cancer risk exceeding ten in a million. The District found that the project complied with the requirements of this rule.

Regulation XIV – Title V Operating Permits

Rule 1401 – General Provisions

This regulation contains the requirements for federal Title V Operating Permits. The applicant is required to submit for a revised Title V Operating Permit application after successful construction and startup of the project.

Rule 1412 – Federal Acid Rain Program Requirements

This regulation contains the requirements for participation in the federal Acid Rain Program. The applicant is required to submit an Acid Rain Program application to the District prior to commencement of operation.

NOTEWORTHY PUBLIC BENEFITS

No air quality-related noteworthy public benefits have been identified.

CONCLUSIONS

The CVEUP would likely comply with all laws, ordinances, regulations, and standards and would result in a less than significant impact under CEQA if CVEUP complies with all staff-recommended and District-required conditions of certification and provides the emission offsets, in quantities recommended by staff in Condition of Certification **AQ-SC6**.

Staff has considered the minority population surrounding the site (see **Socioeconomics Figure 1**). Since the project's direct and cumulative air quality impacts have been reduced to less than significant, there is no environmental justice issue for air quality.

Staff has proposed a number of permit conditions that are in addition to the permit conditions that the SDAPCD has proposed. In most cases the staff-proposed permit conditions deal with air quality issues that the SDAPCD is not required to address. The

staff-proposed conditions of certification are summarized as follows. Conditions of Certification **AQ-SC1** through **AQ-SC5** are construction-related permit conditions. **AQ-SC6** formalizes and revises the applicant's proposal to provide emission reductions for the project's emission increase on a 1:1 ratio for nonattainment pollutants and their precursors. **AQ-SC7** provides the administrative procedure requirements for project modifications. **AQ-SC8** limits concurrent operation of the existing Chula Vista Power Plant and CVEUP during initial commissioning and formalizes the emission mitigation and documentation requirements for the removal of the existing Chula Vista Power Plant Twinpac™ facilities. **AQ-SC9** is the Energy Commission greenhouse gas reporting requirement. **AQ-SC10** is a quarterly compliance report requirement.

Conditions of Certification **AQ-1** through **AQ-40** are the SDAPCD permit conditions with staff proposed verification language.

PROPOSED CONDITIONS OF CERTIFICATION

Staff recommends the following conditions of certification to address the impacts associated with the construction and operation of the CVEUP project. These conditions include the SDAPCD proposed conditions from the PDOC, with appropriate staff-proposed verification language for each condition, as well as Energy Commission staff-proposed conditions.

Staff has provided comments on the PDOC to the District. If the District does not incorporate staff's comments in a satisfactory manner, staff may determine the need to include additional staff conditions in the FSA. These conditions would include mass emission rate limits for all pollutants on a maximum hourly, daily, and annual basis, including conditions related to the separate maximum allowable emission requirements for both initial commission and start-up/shut-down operations. Mass emission rate conditions have typically been provided in the DOC documents from other local air districts for peaker projects, so such conditions would be consistent with similar Energy Commission licensing cases. Additionally, the incorporation of the mass emission limit conditions would ensure that staff's CEQA analysis is valid in its assumptions of impacts on air quality standards.

Revisions to the conditions provided in the District's FDOC, will be incorporated in the Energy Commission's FSA.

STAFF CONDITIONS

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with conditions AQ-SC3, AQ-SC4, and AQ-SC5 for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The

AQCMM shall not be terminated without written consent of the Compliance Project Manager (CPM).

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval, the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM Delegates. The AQCMM and all Delegates must be approved by the CPM before the start of ground disturbance.

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP): The project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with conditions AQ-SC3, AQ-SC4, and AQ-SC5.

Verification: At least 60 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The CPM will notify the project owner of any necessary modifications to the plan within 30 days from the date of receipt. The AQCMP must be approved by the CPM before the start of ground disturbance.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report (MCR) that demonstrates compliance with the following mitigation measures for the purposes of preventing all fugitive dust plumes from leaving the project site and linear facility routes. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

1. All unpaved roads and disturbed areas in the project and laydown construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of AQ-SC4. The frequency of watering may be reduced or eliminated during periods of precipitation.

2. No vehicle shall exceed 10 miles per hour on unpaved areas within the project and laydown construction sites.

3. The construction site entrances shall be posted with visible speed limit signs.

4. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned and free of dirt prior to entering paved roadways.

5. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

6. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.

7. All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.

8. Construction areas adjacent to any paved roadway shall be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent runoff to roadways.

9. All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

10. At least the first 500 feet of any public roadway exiting the construction site shall be swept visually clean, using wet sweepers or air filtered dry vacuum sweepers, at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on the public roadways.

11. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered or shall be treated with appropriate dust suppressant compounds.

12. All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions shall be provided with a cover or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least two feet of freeboard.

13. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

14. Disturbed areas will be re-vegetated as soon as practical.

The fugitive dust requirements listed in this condition may be replaced with as stringent or more stringent methods as required by SDAPCD Rule 55 if that rule becomes effective prior to the completion of the project's construction activities.

Verification: The project owner shall include in the MCR (1) a summary of all actions taken to maintain compliance with this condition, (2) copies of any complaints filed with the air district in relation to project construction, and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (1) off the project site or (2) 200 feet beyond the centerline of the construction of linear facilities, or (3) within 100 feet upwind of any regularly occupied structures not owned

by the project owner indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:

Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1 specified above fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2 specified above fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shut-down source. The owner/operator may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, provided that the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMP shall include a section detailing how the additional mitigation measures will be accomplished within the time limits specified.

AQ-SC5 Diesel-Fueled Engines Control: The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the following mitigation measures for the purposes of controlling diesel construction-related emissions. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

1. All diesel-fueled engines used in the construction of the facility shall be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.

2. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.

3. A good faith effort shall be made to find and use off-road construction diesel equipment that has a rating of 100 hp to 750 hp and that meets the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines as specified in Title 13, California Code of Regulations section 2423(b)(1). This good faith effort shall be documented with signed written correspondence by the appropriate construction contractors along with documented correspondence with at least two construction equipment rental firms.

4. All construction diesel engines, which have a rating of 50 hp or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in Title 13, California Code of Regulations section 2423(b)(1). The following exceptions for specific construction equipment items may be made on a case-by-case basis.

   (A) Tier 1 equipment will be allowed on a case-by-case basis only when the project owner has documented that no Tier 2 equipment is available for a particular equipment type that must be used to complete the project's construction. This shall be documented with signed written correspondence by the appropriate construction contractors along with documented correspondence with at least two construction equipment rental firms.

   (B) The construction equipment item is intended to be on site for five days or less.

   (C) Equipment owned by specialty subcontractors may be granted an exemption, for single equipment items on a case-by-case basis, if it can be demonstrated that extreme financial hardship would occur if the specialty subcontractor had to rent replacement equipment, or if it can be demonstrated that a specialized equipment item is not available by rental.

5. All heavy earthmoving equipment and heavy duty construction-related trucks with engines meeting the requirements of (c) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

6. All diesel heavy construction equipment shall not remain running at idle for more than five minutes, to the extent practical.

7. Construction equipment will employ electric motors when feasible.

Verification: The project owner shall include in the MCR (1) a summary of all actions taken to maintain compliance with this condition, (2) copies of all diesel fuel purchase records, (3) a list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained, and (4) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC6 The project owner shall provide emission reduction mitigation to offset the project's NOx, PM10, SOx, and VOC emission increases at a ratio of 1:1. These emission reductions are based on the following maximum annual emissions for the facility (tons/yr):

Emission Reduction Credits/Pollutant	Tons/yr
NOx	7.35
PM10	3.60
SOx	0.40
VOC	1.43
Total Tons	10.86

Emission reductions can be provided in any one of the following methods:

1. The project owner can fund emission reductions through the Carl Moyer Fund in the amount of $16,000/ton, or final 2008 ARB Carl Moyer Program Guideline cost effectiveness cap value, for the total ton quantity listed in the above table, minus any tons offset using Emission Reduction Credits (ERCs) listed in the SDAPCD ERC Bank, with an additional 20% administration fee to fund the City of Chula Vista and/or the SDAPCD to be used to find and fund local emission reduction projects to the extent feasible.

2. The project owner can fund other existing public agency regulated stationary or mobile source emission reduction programs or create a project specific fund to be administered through the SDAPCD or other local agency, which would provide surplus emission reductions. This funding shall include appropriate administrative fees as determined by the administering agency to obtain local emission reductions to the extent feasible. The project owner shall be responsible for demonstrating that the amount of such funding meets the emission reduction requirements of this condition.

3. ERC certificates from emission reductions occurring in the San Diego Air Basin can be used to offset each pollutant on a 1:1 offset ratio basis. ERCs can be used on an interpollutant basis for SOx for PM10, NOx for VOC, and VOC for NOx, where the project owner will provide a letter from the SDAPCD that indicates the District's allowed interpollutant offset ratio, or PM10 for SOx ERCs can be used on a 1:1 basis.

Carl Moyer or other emission reduction funding shall be provided to the responsible agencies prior to the initiation of on-site construction activities. The project owner shall work with the appropriate agencies to target emission reduction projects in the project area to the extent feasible. Unused administrative fees shall be used for additional emission reduction program funding. ERC certificates, if used, will be surrendered prior to first turbine fire.

Verification: The project owner shall submit to the CPM confirmation that the appropriate quantity of Carl Moyer Project or other emission reduction program funding and/or ERCs have been provided prior to initiation of on-site construction activities for emission reduction program funding and at least 30 days prior turbine first fire for ERCs. The project owner shall provide confirmation that the level of emission reduction program funding will meet the emission reduction requirements of this condition.

AQ-SC7 The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the District or U.S. EPA, and any revised permit issued by the District or U.S. EPA, for the project.

Verification: The project owner shall submit any proposed air permit modification to the CPM within five working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-SC8 The project owner shall not operate the Chula Vista Power Plant concurrently with the CVEUP at any time including during initial commissioning, and the project owner shall terminate the Chula Vista Power Plant's permit with SDAPCD upon the start of commercial operation of CVEUP. Construction emission mitigation measures in Conditions of Certification **AQ-SC3** through **AQ-SC5** are to be followed as applicable during the removal of the existing power plant facilities.

Verification: The project owner, following the beginning of commercial operation of the CVEUP, shall submit to the CPM the notification of the Chula Vista Power Plant's SDAPCD permit termination and shall provide a Monthly Status Report regarding the status of the removal of the Chula Vista Power Plant, including compliance with Conditions of Certification **AQ-SC3** through **AQ-SC5**, until the removal activities are complete.

AQ-SC9 Until the California Global Warming Solutions Act of 2006 (AB 32) is implemented, the project owner shall either participate in a greenhouse gas (GHG) registry approved by the CPM, or report on a annual basis to the CPM the quantity of greenhouse gases emitted as a direct result of facility electricity production.

The project owner shall maintain a record of fuel types and carbon content used on site for the purpose of power production. These fuels shall include but are not limited to each fuel type burned: (1) in combustion turbines, (2) heat recovery steam generators, or HRSGs, (if applicable) or auxiliary boiler (if applicable), (3) internal combustion engines, (4) flares, and/or (5) for the purpose of startup, shutdown, operation, or emission controls.

The project owner may perform annual source tests of CO_2 and CH_4 emissions from the exhaust stacks while firing the facility's primary fuel, using the following test methods or other test methods as approved by the CPM. The project owner shall produce fuel-based emission factors in units of lbs

CO_2 equivalent per MMBtu of fuel burned from the annual source tests. If a secondary fuel is approved for the facility, the project owner may also perform these source tests while firing the secondary fuel.

Pollutant	Test Method
CO_2	U.S. EPA Method 3A
CH_4	Protocol: U.S. EPA Method 18 (VOC measured as CH_4)

As an alternative to performing annual source tests, the project owner may use the Intergovernmental Panel on Climate Change (IPCC) Methodologies for Estimating Greenhouse Gas Emissions (MEGGE). If MEGGE is chosen, the project owner shall calculate the CO_2, CH_4, and N_2O emissions using the appropriate fuel-based carbon content coefficient (for CO_2) and the appropriate fuel-based emission factors (for CH_4 and N_2O).

The project owner shall convert the N_2O and CH_4 emissions into CO_2 equivalent emissions using the current IPCC Global Warming Potentials (GWP). The project owner shall maintain a record of all SF_6 that is used for replenishing on-site transformers. At the end of each reporting period, the project owner shall total the mass of sulfur hexafluoride (SF_6) used and convert that to a CO_2 equivalent emission using the IPCC GWP for SF_6. The project owner shall maintain a record of all PFCs and HFCs that are used for replenishing on-site refrigeration and chillers directly related to electricity production. At the end of each reporting period, the project owner shall total the mass of PFCs and HFCs used and convert that to a CO_2 equivalent emission using the IPCC GWP.

On an annual basis, the project owner shall report the CO_2 and CO_2 equivalent emissions from the described emissions of CO_2, N_2O, CH_4, SF_6, PFCs, and HFCs.

Verification: The project annual greenhouse gas emissions shall be reported, as a CO_2 equivalent, by the project owner to a climate action registry approved by the CPM, or to the CPM as part of the fourth quarterly or the annual Air Quality Report, until such time that GHG reporting requirements are adopted and in force for the project as part of the California Global Warming Solutions Act of 2006.

AQ-SC10 The project owner shall submit to the CPM Quarterly Operation Reports, following the end of each calendar quarter that include operational and emissions information as necessary to demonstrate compliance with the conditions of certification herein. The Quarterly Operation Report will specifically note or highlight incidences of noncompliance.

Verification: The project owner shall submit the Quarterly Operation Reports to the CPM and air pollution control officer (APCO) no later than 30 days following the end of each calendar quarter.

DISTRICT PRELIMINARY DETERMINATION OF COMPLIANCE CONDITIONS (SDAPCD 2008B)

985092

Gas Turbine Engine Generator #1: General Electric, Model LM-6000, 46.5 MW capacity, 468.8 MMBtu/hr heat input, natural gas fired, simple cycle, S/N TBD, with water injection; a selective catalytic reduction (SCR) system including an automatic ammonia injection control system; an oxidation catalyst; a Continuous Emission Monitoring System (CEMS) for NOx, CO, and O_2; and a data acquisition and recording system (DAS).

985093

Gas Turbine Engine Generator #2: General Electric, Model LM-6000, 46.5 MW capacity, 468.8 MMBtu/hr heat input, natural gas fired, simple cycle, S/N TBD, with water injection; a selective catalytic reduction (SCR) system including an automatic ammonia injection control system; an oxidation catalyst; a Continuous Emission Monitoring System (CEMS) for NOx, CO and O_2; and a data acquisition and recording system (DAS).

AQ-1 This equipment shall be properly maintained and kept in good operating condition at all times.

Verification: The project owner shall submit maintenance records for all equipment to the CPM in the Quarterly Operation Report (**AQ-SC10**).

AQ-2 This equipment shall be fired on Public Utility Commission (PUC) quality natural gas only.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-3 The project owner shall submit a complete Acid Rain Permit application prior to commencement of operation in accordance with Title 40 Code of Federal Regulations Part 72 to the District and submit a copy to U.S. EPA, Region IX.

Verification: The project owner shall submit to the CPM copies of the Title IV permit application at least 15 days prior to the initial firing of the combustion turbine generators (CTGs).

AQ-4 For this equipment, the project owner shall hold allowances in accordance with Title 40 Code of Federal Regulations 72.9(c)(1).

Verification: The project owner shall submit to the CPM proof that necessary Title IV SO_2 emission allotments have been acquired as necessary for compliance with Title IV requirements annually in the first Quarterly Compliance Report (**AQ-SC10**) that is due after the annual SO_2 allotment due date.

AQ-5 This equipment shall not be operated more than 4,400 hours per calendar year.

Verification: The project owner shall submit to the CPM and APCO the CTG operating data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Report (**AQ-SC10**).

AQ-6 Operation of this equipment under cold start-up conditions shall not exceed 200 hours per calendar year.

Verification: The project owner shall submit to the CPM and APCO the CTG cold start-up operating data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Report (**AQ-SC10**).

AQ-7 Operation of this equipment under hot or warm start-up conditions shall not exceed 200 hours per calendar year.

Verification: The project owner shall submit to the CPM and APCO the CTG hot and warm start-up operating data demonstrating compliance with this condition as part of the fourth quarter's Quarterly Operation Report (**AQ-SC10**).

AQ-8 For the purposes of this Authority to Construct, the commissioning period shall be defined as the time beginning from first fuel firing and ending when the emission controls are installed and fully functional, and the project owner has provided the District with a Construction Completion Notice, whichever is sooner. The duration of this commissioning period shall not exceed 200 hours. A log of the dates, times, and cumulative unit operating hours when fuel is being combusted during the commissioning period shall be maintained by the project owner and made available to District personnel upon request. Prior to first fuel firing, the project owner shall submit a completed First Fuel Fire Notice form to the District.

Verification: The project owner shall submit a copy of the First Fuel Fire Notice Form to the CPM prior at least five days prior to first turbine fire. The project owner shall submit, commencing one month from the time of gas turbine first fire, a monthly commissioning status report throughout the duration of the commissioning phase that demonstrates compliance with the requirements listed in this condition. The monthly commissioning status report shall be submitted to the CPM by the 10th of each month for the previous month, for all months with turbine commissioning activities following the turbine first fire date. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-9 For the purposes of this Authority to Construct, start-up conditions shall be defined as the time when fuel flow begins until the time that the unit complies with the emission limits specified in this Authority to Construct but in no case exceeding 30 minutes per occurrence. Shut-down conditions shall be defined as the time preceding the moment at which fuel flow ceases and during which the unit does not comply with the emission limits specified in this Authority to Construct but in no case exceeding 30 minutes per occurrence. The Data Acquisition and Recording System, as required by Title 40 Code of Federal Regulations Part 75, shall record these events. This condition may be modified by the District based on field performance of the equipment.

Verification: The project owner shall submit to the CPM the CTG start-up and shut-down event duration data demonstrating compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10**).

AQ-10 Except during the commissioning period, startups, and shutdowns, the water injection system, the SCR system and oxidation catalyst control system, including the automatic ammonia injection system serving the turbine, shall be in full operation at all times when the turbine is in operation.

Verification: The project owner shall submit to the CPM the CTG operating data demonstrating compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10**).

AQ-11 In the event of a breakdown in an automatic ammonia injection control system, a trained operator shall operate the system manually and the breakdown shall be reported to the District Compliance Division pursuant to Rule 98(b)(1) and 98(e).

Verification: The project owner shall report breakdowns in the automatic ammonia injection control system to the District and the CPM as required under District Rule 98 and shall include a summary of these breakdowns as part of the Quarterly Operation Report (**AQ-SC10**).

AQ-12 Total combined oxides of nitrogen emissions from the turbines described in Application Nos. 985092 and 985093 shall not exceed the major source threshold of 50 tons per calendar year. The daily NOx mass emissions from each turbine shall be recorded daily. The aggregate NOx mass emissions from all turbines for each calendar month, and for each rolling 12-month period, shall be calculated and recorded monthly. In the event that an annual major stationary source threshold is projected to be triggered, the project owner shall submit a complete application to modify this permit at least six months prior to the projected date of exceedance demonstrating how compliance with all applicable requirements will be achieved.

Verification: The project owner shall provide emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10**).

AQ-13 Emissions of oxides of nitrogen (NOx), calculated as nitrogen dioxide, from the turbine exhaust stack shall not exceed 2.5 parts per million volume on a dry basis (ppmvd) corrected to 15% oxygen and averaged over each one-hour period. Compliance with this limit shall be demonstrated at the time of the initial compliance test and continuously thereafter. This limit shall not apply during the commissioning period or during start-up and shut-down conditions.

Verification: The project owner shall provide emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10**).

AQ-14 Total combined carbon monoxide (CO) emissions from the turbines described in Application Nos. 985092 and 985093 shall not exceed the Prevention of Significant Deterioration (PSD) threshold of 250 tons per calendar year. The

daily CO mass emissions from each unit shall be recorded daily. The aggregate CO mass emissions from all turbines for each calendar month, and for each rolling 12-month period, shall be calculated and recorded monthly. In the event that an annual PSD stationary source threshold is projected to be triggered, the project owner shall submit a complete application to modify this permit at least six months prior to the projected date of exceedance demonstrating how compliance with all applicable requirements will be achieved.

Verification: The project owner shall provide emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10)**.

AQ-15 Emissions of carbon monoxide (CO) from the turbine exhaust stack shall not exceed 6.0 parts per million volume on a dry basis (ppmvd) corrected to 15% oxygen and averaged over each three-hour period. Compliance with this limit shall be demonstrated at the time of the initial compliance test and continuously thereafter. This limit shall not apply during the commissioning period or during start-up and shut-down conditions.

Verification: The project owner shall provide emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10)**.

AQ-16 Total combined volatile organic compound (VOC) emissions from the turbines described in Application Nos. 985092 and 985093 shall not exceed the major source threshold of 50 tons per calendar year. The daily VOC emissions from each unit shall be recorded daily. The aggregate VOC mass emissions from all turbines for each calendar month, and for each rolling 12-month period, shall be calculated and recorded monthly. All emission calculations shall be based on fuel usage and emission factors approved by the District. In the event that an annual major stationary source threshold is projected to be triggered, the project owner shall submit a complete application to modify this permit at least six months prior to the projected date of exceedance demonstrating how compliance with all applicable requirements will be achieved.

Verification: The project owner shall provide emissions data to demonstrate compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10**).

AQ-17 Emissions of VOCs, calculated as methane, from the turbine exhaust stack shall not exceed 2.0 parts per million volume on a dry basis (ppmvd) corrected to 15% oxygen and averaged over each one-hour period. Compliance with this limit shall be demonstrated at the time of the initial compliance test and at least annually thereafter. This limit shall not apply during the commissioning period or during start-up and shut-down conditions.

Verification: The project owner shall provide the annual source test data to demonstrate compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10**), due in the quarter after the each year's source test report is completed.

AQ-18 Emissions of particulate matter less than 10 microns (PM10) shall not exceed 3.0 pounds per hour. Compliance with this limit shall be demonstrated at the initial compliance test and at least annually thereafter.

Verification: The project owner shall provide the annual source test data to demonstrate compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10**), due in the quarter after the each year's source test report is completed.

AQ-19 Ammonia emissions from the gas turbine shall not exceed 5 ppmvd at 15% oxygen (average of three subtests). Compliance with this limit shall be demonstrated at the initial compliance test and at least annually thereafter.

Verification: The project owner shall provide the annual source test data to demonstrate compliance with this condition as part of the Quarterly Operation Report (**AQ-SC10**), due in the quarter after the each year's source test report is completed.

AQ-20 An operating log or Data Acquisition System (DAS) records shall be maintained on site to record actual times and durations of all startups, shutdowns, quantity of each fuel used, hours of daily operation, and total cumulative hours of operation during each calendar year.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-21 A Continuous Emission Monitoring System (CEMS) shall be installed and calibrated to measure and record the concentration and hourly mass emission rate of oxides of nitrogen (NOx), the hourly average concentration and daily mass emission rate of carbon monoxide (CO), and the percent oxygen (O_2) in the exhaust gas. The CEMS shall be installed and operational prior to first fuel firing.

Verification: The project owner shall provide notification to the District and the CPM of the anticipated dates for installation, calibration, and testing for the CEMS at least 10 days prior to installation. The project owner shall provide a report to the District and CPM for approval demonstrating compliance with CEMS calibration requirements prior to turbine first fire.

AQ-22 The CEMS shall be installed, certified, and maintained in accordance with applicable federal regulations including the requirements of sections 75.10 and 75.12 of Title 40, Code of Federal Regulations Part 75 (40 CFR 75), the performance specifications of Appendix A of Title 40, Code of Federal Regulations Part 75, the quality assurance procedures of Appendix B of Title 40, Code of Federal Regulations Part 75, and a CEMS protocol approved by the District. At least 60 days prior to the operation the CEMS, the project owner shall submit a CEMS operating protocol to the District for written approval.

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS operating protocol at least 60 days prior to the operation the CEMS.

AQ-23 The District shall be notified in writing at least two weeks prior to any changes made in the CEMS software that affect the measurement, calculation, or correction of data displayed and/or recorded by the CEMS.

Verification: The project owner shall notify the CPM and APCO in writing at least two weeks prior to any changes made in the CEMS software that affect the measurement, calculation, or correction of data displayed and/or recorded by the CEMS.

AQ-24 On and after initial startup, this equipment shall be equipped with continuous parametric monitors to measure (or calculate) and to record the following operational characteristics:

1. hours of operation (hours),
2. natural gas flow rate (scfh),
3. exhaust gas temperature (˚F),
4. SCR average temperature (˚F),
5. ammonia injection rate (lbs/hr),
6. water injection rate (lbs/hr) for NOx control,
7. power output (MW).

These monitors shall be installed, calibrated, and maintained in accordance with the manufacturer's recommended procedures and a protocol approved by the District. Such protocol shall be submitted to the District for written approval at least 60 days prior to initial startup. This protocol shall include, at a minimum, a description of the equipment used for direct measurement of operating characteristics and the methodology used to calculate the remaining operating characteristics. All monitors shall be in full operation at all times when each respective turbine is in operation

Verification: The project owner shall submit to the CPM for review and the District for approval a parametric monitoring protocol in compliance with this condition at least 60 days prior to the initial startup.

AQ-25 Non-resettable totalizing meters with an accuracy of at least +/-5% shall be installed in the natural gas fuel line to measure volumetric flow rate corrected for temperature and pressure of natural gas.

Verification: The project owner shall submit to the CPM the natural gas usage data from the totalizing meters as part of the Quarterly Operation Report (**AQ-SC10**).

AQ-26 Monthly and annual records of fuel usage shall be maintained and made available to the District upon request.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-27 Monthly and annual records shall indicate actual times and duration of all startups, shutdowns, and quantity of fuel used.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-28 The ammonia injection flow rate shall be continuously monitored, recorded, and controlled. Records of ammonia injection rate and flow rate device calibration shall be maintained and made available to the District upon request.

Verification: The project owner shall submit to the CPM the hourly ammonia usage data from the ammonia flow rate monitor as part of the Quarterly Operation Report (**AQ-SC10**).

AQ-29 A monitoring plan in conformance with Title 40, Code of Federal Regulations 75.53 shall be submitted to U.S. EPA Region 9 and the District at least 45 days prior to the initial source test, as required in Title 40, Code of Federal Regulations 75.62.

Verification: The project owner shall submit to the CPM for review and the District for approval the initial source test monitoring plan in compliance with this condition at least 45 days prior to the initial source test.

AQ-30 The exhaust stack shall be equipped with source test ports and platforms to allow for the measurement and collection of stack gas samples consistent with all approved test protocols. The ports and platforms shall be constructed in accordance with San Diego Air Pollution Control District Method 3A, Appendix Figure 2, and approved by the District.

Verification: The project owner shall submit to the CPM for review and District for approval a stack test port and platform plan at least 60 days before the installation of the stack ports and platform.

AQ-31 No later than 90 days after commencement of commercial operation (40CFR70.4[b][2]), a Relative Accuracy Test Audit (RATA) and all other required certification tests shall be performed and completed on the permanent CEMS in accordance with Title 40, Code of Federal Regulations Part 75 Appendix A performance specifications. At least 45 days prior to the test date, the project owner shall submit a test protocol to the District for approval. Additionally, the District shall be notified a minimum of 45 days prior to the test so that observers may be present. Within 30 days of completion of this test, a written test report shall be submitted to the District for approval.

Verification: The project owner shall submit to the CPM for review and the District for approval the RATA test protocol at least 45 days prior to the RATA test and shall submit to the CPM for review and the District for approval a copy of the written test report within 30 days after test completion.

AQ-32 Within 60 days after the initial startup, an initial source test shall be conducted by an independent, ARB-approved tester or the District, at the project owner's expense, to determine initial compliance with the emission standards of this

Authority to Construct. A source test protocol shall be submitted to the District for approval at least 30 days prior to the initial source test. The source test protocol shall comply with the following requirements:

1. Measurements of outlet oxides of nitrogen (NOx), carbon monoxide (CO), and stack gas oxygen content (O_2 percent) shall be conducted in accordance with the District Source Test Method 100, or the Air Resources Board Test Method 100 as approved by the U.S. Environmental Protection Agency.

2. Measurements of outlet non-methane hydrocarbon (NMHC) emissions shall be conducted in accordance with the San Diego Air Pollution Control District Methods 25A and/or 18.

3. Measurements of particulate matter less than 10 microns (PM10) shall be conducted in accordance with the U.S. Environmental Protection Agency Test Methods 201A and 202.

4. Measurements of outlet ammonia shall be conducted in accordance with Bay Area Air Quality Management District (BAAQMD) Test Method ST-1B.

5. Source testing shall be performed at no less than 80% of the turbine rated load.

Verification: The project owner shall submit to the CPM for review and the District for approval the initial source test protocol in compliance with requirements of this condition at least 30 days prior to the initial source test.

AQ-33 Within 30 days after completion of the initial source test, a final test report shall be submitted to the District for review and approval. The testing contractor shall include as part of the test report a certification that to the best of its knowledge the report is a true and accurate representation of the test conducted and the results.

Verification: The project owner will submit the initial source test report to the CPM for review and the District for approval within 30 days of the completion of the initial source test. The source test report will document compliance with the 60 day after initial start-up test deadline required in **AQ-32**.

AQ-34 In the event the initial source test results do not demonstrate compliance with District rules and regulations and emissions standards specified herein, to the satisfaction of the District, the project owner shall take corrective action to meet these standards. Any proposed corrective action that would result in a modification to the equipment shall require an application for a District Authority to Construct for such modification.

Verification: The project owner shall submit an amendment request to the Energy Commission and Authority to Construct application to the District for approval to make any equipment modifications required to comply with the Conditions of Certification.

AQ-35 Source testing shall be performed on this equipment to demonstrate compliance with the NOx, CO, VOC, PM_{10}, and ammonia emission standards using District approved test methods. Source testing and the CO RATA test shall be conducted once every four consecutive AQ operating quarters (as defined by 40 CFR 72.2, at least 168 operating hours). No more than eight successive calendar quarters shall elapse following the quarter in which a test was last performed, without a subsequent test having been conducted. If a test has not been completed by the end of the eighth calendar quarter since the quarter of the last test, then the test must be completed within a 30-calendar day grace period. The grace period shall begin with the first calendar day following the end of the eight successive elapsed calendar quarters. A test completed within a period of 30 calendar days after the end of a fourth successive operating quarter or eighth successive calendar quarter in which a test is required shall be considered to have occurred in that quarter.

Verification: The results and field data collected during source tests required by this condition shall be submitted to the CPM for review and the District for approval within 60 days of testing.

AQ-36 Based on source testing, additional monitoring parameters may be established to ensure compliance. Operating characteristics monitored by continuous parametric monitors may also be restricted to specified ranges or limits, as determined by the District, based upon manufacturer's recommended operating procedures and initial compliance source test results.

Verification: Additional monitoring parameter restrictions to specified ranges or limits as determined by the District, beyond those specified in these conditions, will be recorded and reported as part of the Quarterly Operation Report (**AQ-SC10**).

AQ-37 All records required by this permit shall be maintained for a minimum of five years and made available to District personnel upon request.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-38 Access, facilities, utilities, and any necessary safety equipment for source testing and inspections shall be provided upon request of the Air Pollution Control District.

Verification: The project owner shall provide facilities, utilities, and safety equipment for source testing and inspections upon request of the District, ARB, and the Energy Commission.

AQ-39 The project owner shall, upon determination of applicability and written notification by the District, comply with all applicable requirements of the Air Toxic "Hot Spots" Information and Assessment Act (California Health and Safety Code section 2230 et. seq.).

Verification: The project owner shall provide copies of all Air Toxic "Hot Spots" Information and Assessment Act related correspondence to the CPM within 15 days of their receipt or submittal.

AQ-40 This Air Pollution Control District Authority to Construct does not relieve the project owner from obtaining permit or authorizations required by other governmental agencies.

Verification: The project owner shall provide copies of all permits and authorizations required by other governmental agencies to the CPM within 15 days of their receipt.

ACRONYMS

AERMOD	ARMS/U.S. EPA Regulatory Model
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
APCO	Air Pollution Control Officer (SDAPCD)
BACT	Best Available Control Technology
ARB	California Air Resources Board
California ISO	California Independent System Operator
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CEM	Continuous Emission Monitor
CO	Carbon Monoxide
CPM	(CEC) Compliance Project Manager
CTG	Combustion Turbine Generator
CVEUP	Chula Vista Energy Upgrade Project
ERC	Emission Reduction Credit
FDOC	Final Determination Of Compliance
GHG	Greenhouse Gas
gr	Grains (1 gr $\cong$ 0.0648 grams, 7000 gr = 1 pound)
GTE	Gas Turbine Engine
HRSG	Heat Recovery Steam Generator
MMBtu	Million British thermal units
MW	Megawatts (1,000,000 Watts)
NH_3	Ammonia
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen *or* Nitrogen Oxides
NSR	New Source Review
OLM	Ozone Limiting Method (NO_2 dispersion modeling method)
PDOC	Preliminary Determination Of Compliance
PM10	Particulate Mater less than 10 microns in diameter
PM2.5	Particulate Mater less than 2.5 microns in diameter
ppm	Parts Per Million
ppmv	Parts Per Million by Volume
ppmvd	Parts Per Million by Volume, Dry
PSA	Preliminary Staff Assessment (this document)
PSD	Prevention of Significant Deterioration
PVMRM	Plume Volume Molar Ratio Method (NO_2 dispersion modeling method)
scf	Standard Cubic Feet
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SDAPCD	San Diego Air Pollution Control District (also District)
SO_2	Sulfur Dioxide
SO_3	Sulfate
SOx	Oxides of Sulfur
U.S. EPA	United States Environmental Protection Agency
$\mu g/m^3$	Microgram per cubic meter
VOC	Volatile Organic Compounds

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BIOLOGICAL RESOURCES

Susan Sanders

SUMMARY OF CONCLUSIONS

The Chula Vista Energy Upgrade Project is located in southwestern San Diego County in the City of Chula Vista. The proposed project area is the existing Chula Vista Power Plant site, a highly disturbed area with no sensitive biological resources immediately adjacent to the Otay River Valley. The proposed laydown areas and linear facilities are similarly developed or barren. Direct impacts to biological resources at the project site are unlikely because of the developed nature of the area. However, construction activities in such close proximity of the Otay River Preserve, a Multiple Species Conservation Program open space and natural preserve area, pose potential indirect impacts to a number of special status species covered under the program. Implementation of mitigation measures proposed by the applicant, resource agencies, and California Energy Commission staff's proposed conditions of certification is necessary to avoid or minimize potential indirect impacts to biological resources. The project will not result in take[1] of listed species, and no permits will be needed from the U.S. Fish and Wildlife Service or the California Department of Fish and Game. No wetlands or other waters of the United States will be directly impacted by the project and no permits from the U.S. Army Corps of Engineers will be required. The construction and operation of the project would comply with all federal, state, and local laws, ordinances, regulations, and standards relating to biological resources if staff's conditions of certification are adopted and implemented.

INTRODUCTION

This section provides the California Energy Commission (Energy Commission) staff's Preliminary Staff Assessment of potential impacts to biological resources from the construction and operation of the Chula Vista Energy Upgrade Project (CVEUP). This analysis addresses potential impacts to state and federally listed species and other areas of critical biological concern and discusses the biological resources of the project site and off-site construction laydown areas. This assessment describes the need for mitigation, the adequacy of mitigation proposed by the applicant, and where necessary, specifies additional mitigation measures to reduce identified impacts to less than significant levels. It also determines the compliance of the applicant, MMC Energy Incorporated (MMC), with applicable laws, ordinances, regulations, and standards (LORS) and recommends conditions of certification.

This analysis is based, in part, upon information provided in the Chula Vista Energy Upgrade Project Application for Certification (MMC 2007b); site visits on September 24 and November 29, 2007; workshops; staff data requests and applicant responses; and communications with the CDFG and the USFWS.

[1] "Take" is defined by the California Department of Fish and Game (Fish and Game Code §86) as: "To hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture, or kill."

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

BIOLOGICAL RESOURCES Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

FEDERAL	
Clean Water Act (CWA) of 1977	Title 33, United States Code, Sections 1251-1376, and Code of Federal Regulations, Part 30, Section 330.5(a)(26), prohibit the discharge of dredged or fill material into the waters of the United States without a permit. The administering agency is the U.S. Army Corps of Engineers (USACE).
Endangered Species Act (ESA) of 1973	Title 16, United States Code, Section 1531 et seq., and Title 50, Code of Federal Regulations, Part 17.1 et seq., designate and provide for the protection of threatened and endangered plant and animal species and their critical habitat. The administering agency is the U.S. Fish and Wildlife Service (USFWS).
Migratory Bird Treaty Act	Title 16, United States Code, Sections 703 through 712, prohibit the taking of migratory birds, including nests with viable eggs. The administering agency is the USFWS.
Fish and Game Coordination Act	Title 16, United States Code, section 661 et seq. requires federal agencies to coordinate federal actions with the U.S. Fish and Wildlife Service (USFWS) to conserve fish and wildlife resources.
STATE	The administering agency for the following state LORS is the California Department of Fish and Game (CDFG), except for the CWA Section 401 certification, which is administered by the Regional Water Quality Control Board.
California Endangered Species Act (CESA) of 1984	Fish and Game Code Sections 2050 through 2098 protect California's rare, threatened, and endangered species.
California Code of Regulations	California Code of Regulations Title 14, Division 1, Subdivision 3, Chapter 3, Sections 670.2 and 670.5, list plants and animals of California that are designated as rare, threatened, or endangered.
Fully Protected Species	Fish and Game Code Sections 3511, 4700, 5050, and 5515 prohibit the taking of animals that are classified as fully protected in California.
Nest or Eggs – Take, Possess, or Destroy	Fish and Game Code Section 3503 protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.
Birds of Prey – Take, Possess, or Destroy	Fish and Game Code Section 3503.5 specifically protects California's birds of prey in the orders Falconiformes and Strigiformes by making it unlawful to take, possess, or destroy any such birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

Migratory Birds – Take or Possession	Fish and Game Code Section 3513 protects California's migratory non-game birds by making it unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act, or any part of such migratory non-game bird.
Natural Community Conservation Plan (NCCP) Act of 1991	This act includes provisions for protection and management of state-listed threatened or endangered plants and animals and their designated habitats.
Native Plant Protection Act of 1977	Fish and Game Code Sections 1900 et seq. designate rare, threatened, and endangered plants in the State of California.
Streambed Alteration Agreement	Fish and Game Code section 1600 et seq. requires the CDFG to review project impacts to waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances.
Regional Water Quality Control Board	By federal law, every applicant for a federal permit or license for an activity which may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity will not violate state and federal water quality standards.
LOCAL	
San Diego Multiple Species Conservation Program (MSCP)	The MSCP is a comprehensive, long-term habitat conservation plan developed to address the needs of multiple species and the preservation of natural vegetation communities in San Diego County. The MSCP Subregional Plan was adopted by the City of San Diego and San Diego County in 1997. The City of Chula Vista (City) adopted the MSCP Subarea Plan as part of its General Plan in 2003. The Subarea Plan is a policy document through which the MSCP Subregional Plan is implemented within the City's jurisdiction; it provides a blueprint for habitat preservation and forms the basis for federal and state incidental take permits for 86 plant and animal species within the City. Habitat conservation land within the City is mapped as either 100 percent or 75 to 99 percent Conservation Areas in accordance with the MSCP Subregional Plan, which seeks to protect large, interconnected blocks of habitat. The 100 percent Conservation Areas are delineated by hard-line boundaries, while the 75 to 99 percent Conservation Areas are defined by a quantitative and a qualitative target for habitat conservation where final boundaries are not yet determined. Development or impact within the 75 to 99 percent Conservation Areas is limited to 25 percent or less of the mapped area, with the remainder managed for its biological resources.
City of Chula Vista General Plan and Habitat	The overall goal of the Environmental Element of the Chula Vista General Plan is to improve sustainability through the

Ordinances	responsible stewardship of Chula Vista's natural and cultural resources; promote environmental health; and protect persons and property from environmental hazards and the undesirable consequences of noise (City of Chula Vista 2005). Implementation of the Chula Vista MSCP Subarea Plan is the primary means of achieving the General Plan's objective of conserving Chula Vista's sensitive biological resources. The City has also adopted a habitat loss and incidental take ordinance (Chula Vista Municipal Code, Chapter 17.35.010). The purpose and intent of this ordinance is to protect and conserve native habitat within the City of Chula Vista and the viability of the species supported by those habitats. These regulations are intended to implement the City of Chula Vista MSCP Subarea Plan by placing priority on the preservation of biological resources within the planned and protected preserve.

SETTING

REGIONAL DESCRIPTION

The CVEUP is located in southwestern San Diego County, four miles north of the United States/Mexico international boundary. The site is approximately 60 feet above mean sea level (U.S. Geological Survey Imperial Beach, California 7.5-minute series topographic quadrangle, Township 18 South, Range 2 West, Section 22). The 3.8-acre project site is located within the City of Chula Vista (City) immediately north of the Otay River, a major east-west riparian corridor of regional biological significance. The Otay River Valley is a broad floodplain supporting riparian and wetland habitats. It extends approximately 13 miles from the southeastern edge of lower San Diego Bay east to the Otay Lakes Reservoir.

The CVEUP is within the City of Chula Vista Preserve Management Area as identified in MSCP Subarea Plans for the City. The following table identifies the sensitive species that have been seen or have potential to occur in the project vicinity.

Biological Resources Table 2.
Special Status Species Potentially Occurring in the Project Area

PLANTS		
Scientific Name	**Common Name**	**Status[*] (Federal, State, CNPS, MSCP)**
Acanthomintha ilicifolia	San Diego thorn-mint	FT, CE CNPS 1B.1, MSCP
Adolphia californica	California adolphia	CNPS 2.1
Ambrosia chenopodiifolia	San Diego bur-sage	CNPS 2.1
Ambrosia pumila	San Diego ambrosia	FE, CNPS 1B.1, MSCP
Astragalus deanei	Dean's milk-vetch	CNPS 1B.1
Atriplex pacifica	South Coast saltscale	CNPS 1B.2
Bergerocactus emoryi	golden-spined cereus	CNPS 2.2
Brodiaea orcuttii	Orcutt's brodiaea	CNPS 1B.1, MSCP
California macrophyllum	round-leaved filaree	CNPS 1B.1
Ceanothus verrucosus	wart-stemmed ceanothus	CNPS 2.2
Chorizanthe orcuttiana	Orcutt's spineflower	FE, CE,CNPS 1B.1
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	CNPS 1B.2
Comarostaphylis diversifolia ssp*. diversifolia*	summer holly	CNPS 1B.2
Cordylanthus orcuttianus:	Orcutt's bird's-beak	CNPS 2.1, MSCP
Corethrogyne filaginifolia var. *incana*	San Diego sand aster	CNPS 1B.1
Cupressus forbesii	Tecate cypress	CNPS 1B.1, MSCP
Deinandra conjugens	Otay tarplant	FT, CE, CNPS 1B.1, MSCP
Dudleya attenuate ssp*. orcuttii*	Orcutt's dudleya	CNPS 2.1
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	CNPS 1B.1
Dudleya variegata	variegated dudleya	CNPS 1B.2, MSCP
Dudleya viscida	sticky dudleya	CNPS 1B.2, MSCP
Ericameria palmeri ssp. *palmeri*	Palmer's goldenbush	CNPS 2.2, MSCP
Eryngium aristulatum var*. parishii*	San Diego button-celery	FE, CE, CNPS 1B.1, MSCP
Euphorbia misera	cliff spurge	CNPS 2.2,
Ferocactus viridescens	San Diego barrel cactus	CNPS 2.1, MSCP
Geothallus tuberosus	Campbell's liverwort	CNPS 1B.1
Isocoma menziesii var. *decumbens*	Decumbent goldenbush	CNPS 1B.2
Iva hayesiana	San Diego marsh-elder	CNPS 2.2
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	CNPS 1B.1
Lepidium virginicum var. *robinsonii*	Robinson's pepper-grass	CNPS 1B.2
Monardella stoneana	Jennifer's monardella	CNPS 1B.2
Muilla clevelandii	San Diego goldenstar	CNPS 1B.1, MSCP
Navarretia fossalis	spreading navarretia	FT, CNPS 1B.1, MSCP
Navarretia prostrata	prostrate navarretia	CNPS 1B.1
Opuntia californica var. *californica*	snake cholla	CNPS 1B.1, MSCP
Orcuttia californica	California Orcutt grass	FE, CE, CNPS 1B.1,MSCP
Ornithostaphylos oppositifolia	Baja California birdbush	CE, CNPS 2.1
Pogogyne nudiuscula	Otay Mesa mint	FE, CE,CNPS 1B.1,MSCP
Ribes viburnifolium	Santa Catalina Island currant	CNPS 1B.2
Salvia munzii	Munz' sage	CNPS 2.2
Satureja chandleri	San Miguel savory	CNPS 1B.2, MSCP
Sphaerocarpos drewei	bottle liverwort	CNPS 1B.1
Stemodia durantifolia	purple stemodia	CNPS 2.1
Stylocline citroleum	oil neststraw	CNPS 1B.1
Tetracoccus dioicus	Parry's tetracoccus	CNPS 1B.2, MSCP
ANIMALS		
Common Name	**Scientific Name**	**Status (Federal, State, MSCP)**
Invertebrates		
Quino checkerspot butterfly	*Euphydryas editha quino*	FE, MSCP
Riverside fairy shrimp	*Streptocephalus woottoni*	FE, MSCP
San Diego fairy shrimp	*Branchinecta sandiegonensis*	FE, MSCP
Amphibians		
Arroyo toad	*Bufo californicus*	FE, CSC, MSCP
Western spadefoot	*Spea hammondii*	CSC
Reptiles		
Coast (San Diego) horned lizard	*Phrynosoma coronatum*	CSC, MSCP
Coast patch-nosed snake	*Salvadora hexalepis virgultea*	CSC
Coronado skink	*Eumeces skiltonianus interparietalis*	CSC

Orange-throated whiptail	*Aspidoscelis hyperythra*	CSC, MSCP
Northern red-diamond rattlesnake	*Crotalus rubber rubber*	CSC
Silvery legless lizard	*Anniella pulchra pulchra*	CSC
Two-striped garter snake	*Thamnophis hammondii*	CSC
Birds		
Burrowing owl	*Oteo cunicularia*	CSC, MSCP
California black rail	*Laterallus jamaicensis coturniculus*	CT
California horned lark	*Eremophila alpestris actia*	CSC
Coastal cactus wren	*Campylorhynchus brunneicapillus sandiegensis*	CSC, MSCP
Coastal California gnatcatcher	*Polioptila californica californica*	FT, CSC, MSCP
Cooper's hawk	*Accipiter cooperii*	CSC, MSCP
Double-crested cormorant	*Phalacrocorax auritus*	CSC
Least Bell's vireo	*Vireo bellii pusillus*	FE, CE, MSCP
Northern harrier	*Circus cyaneus*	CSC, MSCP
Osprey	*Pandion haliaetus*	CSC
Southern California rufous-crowned sparrow	*Aimophila ruficeps canescens*	CSC,MSCP
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE, CE, MSCP
Yellow-breasted chat	*Icteria virens*	CSC, MSCP
Yellow warbler	*Dendroica petechia brewsteri*	CSC
Mammals		
American badger	*Taxidea taxus*	CSC, MSCP
Big free-tailed bat	*Nyctinomops macrotis*	CSC
Mexican long-tongued bat	*Choeronycteris mexicana*	CSC
Pallid bat	*Antrozous pallidus*	CSC
San Diego blacktailed jackrabbit	*Lepus californicus bennettii*	CSC
San Diego desert woodrat	*Neotoma lepida intermedia*	CSC
Western mastiff bat	*Eumops perotis californicus*	CSC

***Status Codes:**

Federal: FE = federally listed as endangered; FT = federally listed as threatened

State: CE = state listed as endangered; CT = state listed as threatened; CSC = state species of concern (Source: CDFG 2007 – Special Animals List)

CNPS = California Native Plant Society's Inventory of Rare and Endangered Plants of California: CNPS 1A = plants presumed extinct in California; CNPS 1B = plants rare, threatened, or endangered in California, but more common elsewhere; CNPS 2 = plants rare, threatened, or endangered in California, but more common elsewhere (source: CNPS 2007).

MSCP = Covered by Multiple Species Conservation Plan (City of Chula Vista 2003)

Sources: MMC 2007; City of Chula Vista 2003; CDFG 2007

SITE DESCRIPTIONS

Power Plant Site and Access Road

The southern portion of the 3.8-acre project site is already developed with the 44.5-megawatt peaking-power plant that includes the simple cycle combustion turbine and operational equipment, a control room, and an ammonia storage and delivery system. The northern portion of the site, where the proposed new plant will be constructed, consists of graded fill dominated by ruderal vegetation. Non-native ornamental trees and shrubs have been planted at the perimeter of the fenced site as a visual screen. The site is set back from the south side of Main Street approximately 835 feet, with access provided via a private easement located on the adjacent property to the east and along the eastern edge of the CVEUP site. An automobile salvage yard borders the site to the north, the new Chula Vista Commerce Center to the east, and large-lot commercial/warehouse businesses to the west. Immediately south of the project site is the Otay River Preserve, an MSCP open space and natural preserve area.

The section of the Otay River valley south of the project site is characterized by a 700- to 800-foot wide swath of vegetation dominated by willow riparian woodland intermixed with patches of freshwater marsh, braided channels, and sandbars. Species such as mule fat (*Baccharis salicifolia*), broom baccharis (*Baccharis sarothroides*), poison oak

(*Toxicodendron diversilobum*), sandbar willow (*Salix exigua*), Mexican elderberry (*Sambucus exicana*), and Mediterranean tamarisk (*Tamarix ramosissima)* form a dense understory layer, with an occasional Gooding's or red willow (*Salix gooddingi* and *S. laevigata*) or Fremont cottonwood (*Populus fremontii*) emerging from this layer. The Otay River riparian habitat near the project area could potentially support many special status species covered by the MSCP.

On the northern border of the Otay River floodplain, the terrain slopes gently up to the elevation of the project site, but on the south, the topography is steep, with a 70-foot rise to a terrace overlooking the river valley. The banks of this terrace are vegetated with Diegan coastal sage scrub, a habitat type that supports many special status plants and animals covered by the MSCP.

Laydown Areas

Two alternative laydown areas have been proposed, only one of which will be used during construction. The on-site laydown area is a 1.47-acre former pallet yard located adjacent to the project site to the southeast. This area is a graded lot with scattered debris piles, essentially devoid of vegetation. Like the project site, the pallet yard laydown area is surrounded by industrial and commercial uses to the east, west, and north. The laydown area is outside the boundary of the Chula Vista Subarea Plan Boundary, but within the MSCP 75 – 99 percent Conservation Area – Habitat Preserve.

The second proposed laydown area is located approximately 3.4 miles to the east, near the intersection of Main Street and Heritage Road. This 2.7-acre area is currently in use as a storage yard for gravel, concrete highway dividers, pylons, and heavy equipment. Similar to the on-site laydown area, the off-site area is a graded, barren lot. This laydown area was created by placing at least 25 feet of imported fill within the floodplain of the Otay River, and is therefore surrounded by the willow riparian-tamarisk scrub habitat to the north, west, and east. Heritage Road forms the immediate eastern boundary of the laydown area, but riparian habitat extends beyond that road and upstream to the east. The Coors Amphitheatre and water sport park have been developed to the south. The graded, unpaved parking area for this facility immediately borders the proposed laydown area. The off-site laydown area is outside the boundary of the Chula Vista Subarea Plan Boundary, but within the MSCP 75 – 99 percent Conservation Area – Habitat Preserve.

The Otay River floodplain is approximately 1,000 feet wide in the section near the off-site laydown area. At the northern floodplain boundary, the terrain rises steeply and supports a broad strip of Diegan coastal sage scrub habitat, as well as disturbed and developed areas. South of the Otay River annual grassland and disturbed/developed areas are dominant.

Linear Facilities

The CVEUP will use existing electrical transmission, natural gas, water service, and sanitary sewer pipelines, all of which are along paved alignments (MMC 2007b). All linear facility connections to the CVEUP will be made on the existing site using the existing facilities (MMC 2007b).

Special Status Species

Bird species covered by the MSCP that could nest within 500 feet of the CVEUP project site include Cooper's hawk (*Accipiter cooperii*), yellow warbler (*Dendroica petechia brewsteri*), yellow-breasted chat (*Icteria virens*), southwestern willow flycatcher (*Empidonax traillii extimus*), and least Bell's vireo (*Vireo bellii pusillus*). The southwestern willow flycatcher and the least Bell's vireo are listed as federal and state endangered.

Three MSCP-covered species were detected during field surveys, including one observation of a coastal California gnatcatcher, a federal threatened species. During the reconnaissance surveys conducted for this project on July 6, 2007, biologists from CH2MHill detected a female gnatcatcher approximately 0.8 miles south of the project site. The gnatcatcher was found in Diegan sage scrub habitat located along the southern border of the Otay River. The observers could not determine during the survey if this gnatcatcher was paired with a territorial male and nesting in the area or if it was a single individual. Energy Commission staff also observed a Cooper's hawk and northern harrier in the Otay River Valley north of the off-site laydown area on September 24, 2007.

ANALYSIS OF IMPACTS

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The California Environmental Quality Act (CEQA) guidelines define direct impacts as those that result from the project and occur at the same time and place. Indirect impacts are caused by the project, but can occur later in time or farther removed in distance, but are still reasonably foreseeable. The potential impacts discussed below are those most likely to be associated with the construction and operation of the CVEUP project.

CONSTRUCTION IMPACTS AND MITIGATION

Direct Impacts

The CVEUP plant site will permanently occupy approximately 2.1 acres within the northern portion of the existing site (MMC 2007b). Grading and construction of the new CVUEP plant would impact 1.3 acres of disturbed land (ruderal vegetation and non-native landscaping) and 0.8 acres of developed or paved areas. The two proposed laydown areas and the tie-ins for all linear facilities (natural gas pipelines, potable water supply line, and 69-kV transmission line) will all occur on paved or highly disturbed areas (MMC 2007b). As soon as the new plant is constructed, the existing plant will be dismantled and removed. Some project features from the old plant will be retained, including the fencing, sound attenuation wall, warehouse, and control room (MMC 2007b).

Construction of the CVEUP will result in loss of approximately 1.3 acres of disturbed habitat that currently occupies the northern portion of the site. No special status species are likely to use this area for nesting, foraging, or cover, and the site provides only marginal value to common wildlife species. The loss of 1.3 acres of ruderal habitat is

therefore considered less than significant. Dismantling of the existing plant will affect 0.8 acres of a paved area and will have no direct impacts to special status species or wildlife resources.

Some of the landscaping trees lining the boundary fence at the existing power plant are sufficiently large to support nesting activities by disturbance-tolerant species such as northern mockingbird (*Mimus polyglottus*), western scrub jay (*Aphelocoma californica*), and house finch (*Carpodacus mexicanus*). Construction activities or tree removal could impact nesting activity, possibly resulting in loss of eggs or the young of birds protected by the Migratory Bird Treaty Act. To avoid potential impacts to nesting birds on the CVEUP site, staff recommends pre-construction surveys as described in staff's proposed Condition of Certification **BIO–6.**

Construction Impacts - Noise

Project construction is anticipated to last eight months, from the third quarter of 2008 to the second quarter of 2009 (MMC 2007b), and therefore will overlap with the nesting season for many of the species inhabiting the nearby Otay River Preserve (Preserve). Construction activities at the project site and at either of the two laydown areas will occur immediately adjacent to riparian habitat that could support nesting least Bell's vireo, southwestern willow flycatcher, yellow-breasted chat, yellow warbler, Cooper's hawk, and many other resident and migratory bird species. March 1st through September 15th encompasses the breeding season for listed bird species potentially nesting in the Otay River Preserve.

Construction noise can adversely affect nesting activities because birds communicate primarily through vocalizations and auditory cues, and therefore increased noise levels can interfere with normal communication. Background noise can interfere with maintenance of contact between mated birds, warning and distress calls that signify predators and other threats, and feeding behavior and protection of the young. In addition, high noise levels may discourage birds from nesting in areas that are otherwise suitable.

The Chula Vista Subarea MSCP prohibits noise levels above 60 A-weighted decibels (dBA) in MSCP preserve areas and states that uses in or adjacent to the Preserve should be designed to minimize noise impacts (City of Chula Vista, 2003). Demolition and construction activities may, at times, exceed the 60-dBA threshold (MMC 2007). The applicant has therefore proposed several mitigation measures to comply with this prohibition and avoid noise-related impacts to nesting birds in the Otay River Preserve (MMC 2007 p. 5.12–16). These measures include avoiding excessively noisy demolition and construction activities during the nesting season (March 15th through September 15th). If demolition and construction cannot avoid the nesting season, the applicant recommends preconstruction surveys of potential nesting habitat within 500 feet from the project boundary and implementing noise avoidance measures if nesting species are detected.

Staff generally concurs with these mitigation measures, but has modified the applicant's proposed measures to make them consistent with USFWS recommendations (McGary pers. comm. 2008) and with the Chula Vista MSCP Subarea Plan specifications. These

modifications include avoiding construction and demolition activities March 1st through September 15th. If such avoidance is not feasible, then pre-construction nest surveys will be conducted in all potential nesting habitat within 500 feet of the project area boundaries. If nesting least Bell's vireo, southwestern willow flycatcher, or coastal California gnatcatcher are found within 300 feet of construction activities, such construction shall cease until nesting is complete. Measures to protect special status species nesting in the Otay River Preserve are described in more detail in staff's proposed Condition of Certification **BIO-6**.

Construction Effects on Water Quality and Aquatic Organisms

No wetlands or waters of the United States occur within the proposed project area or laydown areas, but the site slopes gently to the south so that stormwater runoff from the project site discharges directly to the floodplain of the Otay River Preserve. Construction activities will disturb approximately 3.8 acres of land, increasing potential for sedimentation and erosion to the adjacent Otay River Preserve via these discharge points. Increased sedimentation could adversely affect fish, amphibians, and other aquatic organisms in the adjacent Otay River, as could the accidental introduction of washwater, solvents, oil, chemical wastes, cement, or other pollutants from construction equipment and materials. The applicant has proposed avoiding and minimizing these potential impacts to water quality and aquatic organisms with implementation of an erosion and sedimentation plan (MMC 2007b). CDFG has also proposed Best Management Practices for water quality protection, including a requirement that equipment maintenance, staging, and dispensing of fuel and oil take place in paved areas at least 100 feet from Preserve boundaries and beyond its immediate watershed (Pert 2007). Staff concurs with the applicant's and CDFG's recommendations to protect water quality in the Otay River Preserve. The Best Management Practices contained in Conditions of Certification **BIO-7** and **Soil & Water-1, -2, and -3** incorporate these recommendations, and their implementation will avoid impacts to water quality and aquatic biota.

Introduction of Predators

The presence of a construction crew, either by bringing dogs to the work site that could prey on wildlife or by bringing food items that might attract predators (coyotes, ravens, raccoons), could indirectly affect sensitive species in the Otay River Preserve. Staff recommends implementation of the Best Management Practices described in Condition of Certification **BIO-7,** which includes guidelines for construction personnel to keep food-related trash in sealed containers and keep pets at home to avoid these potential impacts.

OPERATIONS IMPACTS

Operational Noise

The CVEUP site is surrounded by industrial and commercial land uses that generate existing ambient noise levels of approximately 40 to 55 dBA, including noise generated by the existing power plant. Therefore, existing conditions already include some noise associated with existing industrial uses and highway traffic. Normal operation of the CVEUP will not exceed the 60-dBA wildlife threshold due to the incorporation of various design features (MMC 2007b). These features include the existing 18-foot-high noise

wall, which was constructed specifically to attenuate construction noise, improved silencers on the turbine air inlet and selective catalytic reduction stack discharge, a local barrier wall for the fin fan cooler, and if warranted, extension of the perimeter noise attenuation wall to cover the entire perimeter. In addition to these design features, the proposed project will be located on the northern half of the site which will be farther away from the Preserve than the current plant. Based on these site characteristics and on installation of these additional design features, staff has concluded that operational noise from the CVEUP will have no significant impacts to special status wildlife and other species inhabiting the Otay River Preserve.

Criteria Pollutants and Toxic Air Pollutants

Operation of the CVEUP would result in emissions of criteria pollutants and toxic air pollutants, primarily particulate matter, carbon monoxide (CO), oxides of sulfur (SO_x), nitrogen oxides (NO_x), and precursor organic compounds (POC). Toxic air pollutant emissions include toxic gases and toxic particulate matter species (MMC 2007). Elevated levels of CO, SO_x, NO_x, and particulate matter have the potential to adversely impact biological resources. The periods during which wildlife would be exposed to toxic air pollutant emissions from the CVEUP would be relatively limited because MMC expects to operate this facility primarily as a peaker unit (MMC 2007b). Although the facility will be licensed and permitted to operate up to 4,000 hours per year (46 percent of the time) the CVEUP is more likely to operate about 5 to 10 percent of the available hours (MMC 2007b).

To minimize air pollutant emissions, the project would employ best-available control technology and would comply with air quality standards that are designed to protect human health, vegetation, and wildlife (MMC 2007b). An analysis of toxic air pollutants indicates that the facility impacts will not result in violations of existing air quality standards, nor cause an exacerbation of existing violations (Walters pers. comm. 2008). Staff analyzed the potential for direct impacts of CO, SO_x, NO_x, and airborne particulates on vegetation and determined that the emission levels of these pollutants from the CVEUP are not likely to have significant impacts to special status plants, animals, or other biological resources in the Otay River Preserve.

Impacts of Lighting on Wildlife

Lighting at the CVEUP could adversely affect wildlife, including special status species in the Otay River Preserve, by disrupting normal foraging and nesting activities. Lights can also attract nocturnal migrants to tall structures such as exhaust stacks, putting them at risk of collision. Outdoor lighting at the existing power plant is limited to minimal security lighting in the form of pole-mounted fixtures around the southern end of the site. Operational lighting at the CVEUP is anticipated to remain at approximately the same level with the potential addition of pole-mounted light fixtures in the northern end of the site (MMC 2007b). Any additional lighting in the northern portion of the site will be located farther from the Otay River Preserve, and the existing 18-foot-high wall along the southern property line will remain and will help reduce the potential for light pollution to the south. To minimize the potential for adverse effects to wildlife resulting from lighting at the CVEUP, staff recommends the proposed Conditions of Certification **VIS-2** be implemented. Suggested measures call for lighting to be restricted to areas required

for safety, security, and operation; exterior lights will be hooded and directed on site. With implementation of this condition of certification, staff concludes that CVEUP lighting will have no significant impacts to nearby sensitive wildlife and their habitat.

Bird Collisions with CVEUP Structures

Bird fatalities due to collisions with man-made structures such as lighthouses, smokestacks, communication towers, windows, buildings, and power lines have been well documented in the avian literature (Kerlinger 2000, Erickson et al. 2001). In general, the risk of bird collisions increases as the height of the structure increases (Manville 2001), with structures over 500 feet high generally presenting a greater risk to migratory songbirds than shorter structures (Kerlinger 2000). Lighting on tall structures and guy wires also increase the risk of collision, particularly for nocturnal migrants flying in inclement weather or low visibility conditions (Erickson et al. 2001).

The two 70-foot-tall exhaust stacks to be constructed at the northern portion of the project site could potentially pose a collision risk to birds, including special status species inhabiting the Otay River Preserve. The potential for collision with the exhaust stacks is considered relatively low, however, because the disturbed and developed project area and surroundings provide no habitat to attract resident birds northward from the Otay River. Furthermore, the site offers no topographic or habitat features that would draw nocturnal migrants or funnel them in a north-south direction through the project area.

Lighting at the CVEUP shall be restricted to areas required for safety, security, and operation (MMC 2007b). Exterior lights will be hooded, and lights shall be directed on site so that significant light or glare shall be minimized. Low-pressure sodium lamps and fixtures of a non-glare type shall be specified. For areas where lighting is not required for normal operation, safety, or security, switched lighting circuits shall be provided (MMC 2007b). The 70-foot exhaust stacks, the tallest structures on the site, should have the minimal amount of lighting needed to satisfy safety and security concerns. To minimize any potential risk to nocturnal migrants, staff proposes Condition of Certification **VIS-2** to make sure that the lighting design, including lighting on the exhaust stacks, will minimize impacts to migratory birds. With the implementation of this proposed condition of certification, the potential impacts to birds from collisions with the CVEUP exhaust stacks are considered less than significant.

Bird collisions with window glass in CVEUP buildings are another potential risk to special status bird species inhabiting the Otay River Preserve. CDFG recommends that all new construction use non-reflective glass on windows exposed to avian flight path (Pert 2007). The only window at the CVEUP will be the small (approximately 2- x 3-foot) window on the door of the existing control room. This window faces north, away from the Otay River Preserve, and does not present a collision threat to birds.

Introduction of Non-Native Species

When construction is complete at the CVEUP site, the perimeter will be planted with trees and shrubs as a visual screen (MMC 2007b) in accordance with Condition of Certification **VIS-3**. Inappropriate landscaping choices could harm plant communities at the Otay River Preserve if non-native, invasive species are included in the plant palette

for the landscaping plan. In addition, runoff from irrigation of trees and shrubs with high water needs, or planting species that require intensive fertilizers or pesticides, could adversely affect water quality in the Preserve. To avoid these potential impacts, CDFG (Pert 2007) and the Chula Vista MSCP Subarea Plan recommend that the landscaping plans do not include exotic, invasive plant species or those that require intensive irrigation or fertilizing. Staff supports this recommendation and provides additional information on CDFG's planting recommendations, including avoidance of exotic species in the landscaping plan, in staff's Condition of Certification **VIS-3**.

CUMULATIVE IMPACTS

Cumulative impacts refer to a proposed project's incremental effect viewed over time, together with other closely related past, present, and reasonably foreseeable future projects (Public Resources Code § 21083; California Code of Regulations, Title 14, §§ 15064[h], 15065[c], 15130, and 15355). Cumulative impacts can occur when individually minor but collectively significant projects take place over time.

Direct, indirect, and cumulative impacts to sensitive species and the loss of habitat are critical issues in the San Diego County region, an area supporting an extraordinarily high number of sensitive species. Consequently, state, federal, and local agencies have developed regional and subregional strategies to help minimize sensitive species impacts. Compliance with the Chula Vista MSCP Subarea Plan is the primary means of conserving San Diego's sensitive biological resources and special status species and minimizing direct, indirect, and cumulative impacts of future development of both public and private lands within the MHCP area. Staff concludes that with implementation of mitigation measures and compliance with staff's conditions of certification, all of which are consistent with the Chula Vista MSCP Subarea Plan, the CVEUP will not result in cumulative impacts to special status species or other sensitive biological resources.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The proposed project must comply with various state, federal, and county laws, ordinances, regulations, and standards that address state and federally listed species, as well as other sensitive species, and their habitats. The CVEUP will build and operate the facility in accordance with requirements of the Chula Vista MSCP Subarea Plan, which incorporates the habitat and species conservation goals and requirements in the San Diego MSCP Subregional Plan.

Both proposed laydown areas fall within the MSCP 75 to 99 percent Conservation Area-Habitat Preserve. The on-site laydown area was used for that purpose during recent construction of the Chula Vista Commerce Center, and the off-site laydown area is currently being used for equipment and vehicle storage. The past, current, and proposed future uses of the sites as laydown areas are all inconsistent with the MSCP 75 to 99 percent Conservation Area-Habitat Preserve designation.

Aerial photographs docketed with the Energy Commission in 2001 for the Chula Vista Peaker Power Project (RAMCO 2001, Appendix G) indicate that the on-site laydown area was already disturbed and developed prior to the adoption of the Chula Vista

Subarea Plan in 2003. The inclusion of the on-site laydown area within the area designated as 75 to 99 percent Conservation Area-Habitat Preserve of the Chula Vista Subarea Plan was therefore apparently a mapping error. Section 5.4 of the Subarea Plan outlines the process for making boundary adjustments due to mapping conflicts or errors. The USFWS recommends that the City initiate a boundary adjustment process to correct this error and resolve the inconsistency (McGary pers. comm. 2008).

The project will not result in take of listed species, and no permit will be needed from the USFWS or the CDFG. No wetlands or other waters of the United States will be directly impacted by the project and no permits from the U.S. Army Corps of Engineers will be required. Staff has communicated with personnel from the CDFG and USFWS regarding recommended measures to protect sensitive biological resources and has incorporated those recommendations into the conditions of certification. With the exception of the proposed use of existing laydown areas, the construction and operation of the project would therefore be in compliance with all federal, state, and local LORS related to biological resources if staff's conditions of certification are adopted and implemented.

CONCLUSIONS

Direct impacts to biological resources would be largely avoided because the proposed CVEUP site and laydown areas are disturbed and barren, with few biological resources. Potential direct impacts to special status species in the nearby Otay River Preserve can be avoided with implementation of pre-construction nesting surveys, Best Management Practices, and other impact minimization and avoidance measures. The only biological resource issue that remains a concern is the inconsistency in the proposed use of the laydown areas with the MSCP designation. Staff recommends that the City of Chula Vista work with the USFWS to resolve the inconsistency in the designation of the proposed laydown areas, and adoption of the proposed biological resources conditions of certification to mitigate potential impacts to biological resources to less than significant levels.

CONDITIONS OF CERTIFICATION

The following Biological Resources conditions of certification are proposed by staff.

DESIGNATED BIOLOGIST SELECTION

BIO-1 The project owner shall submit the resume, including contact information, of the proposed Designated Biologist to the Compliance Project Manager (CPM) for approval. The Designated Biologist must meet the following minimum qualifications:

1. A Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;

2. At least 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.

Verification

1. The project owner shall submit the specified information at least 60 days before the start of any site (or related facilities) mobilization. Site and related facility activities shall not begin until an approved designated biologist is available on site.

2. If the CPM considers the proposed Designated Biologist 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 disturbance will be allowed in any designated sensitive areas until the CPM approves a new Designated Biologist and the new biologist is on site.

DESIGNATED BIOLOGIST DUTIES

BIO-2 The CPM-approved Designated Biologist shall perform the following during project construction and operation:

1. Advise the project owner's Construction Manager on the implementation of the Biological Resource 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 special status species nesting areas; and

3. Notify the project owner and the CPM of non-compliance with any Biological Resources condition of certification.

Verification

During project construction, 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 Manager shall act on the advice of the Designated Biologist to ensure conformance with all Biological Resources conditions of certification. The project owner's Construction Manager shall halt, if necessary, all construction 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 Manager when to resume construction, and

2. Advise the project owner and the CPM if any corrective actions are needed or have been instituted.

Verification

Within two (2) working days of a Designated Biologist notification of non-compliance with a Biological Resources condition of certification or a halt of construction, 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 (5) 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, as well as employees of contractors and subcontractors who work on the project site or related facilities during construction and operation are informed about the sensitive biological resources associated with the project area. The Worker Environmental Awareness Program must:

1. Be developed by 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 in the Otay River Preserve, the meaning of various temporary and permanent habitat protection measures, Best Management Practices described in BIO 7, and the reasons for protecting these resources; and

3. 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 60 days prior to the start of rough grading, the project owner shall provide copies of the Worker Environmental Awareness Program and all supporting written materials 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 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 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 (6) months after the start of commercial operation. During project operation, signed statements for active project operational personnel shall be kept on file for the duration of their employment and for six (6) months after their termination.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-5 The project owner shall submit to the CPM for review and approval a copy of the final Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and shall implement the measures identified in the plan. Any changes made to the adopted BRMIMP must be made in consultation with the Energy Commission as well as with the USFWS, CDFG, and the City of Chula Vista. The final BRMIMP shall identify:

1. All biological resources mitigation, monitoring, and compliance conditions included in the Energy Commission's Final Decision;

2. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;

3. All relevant mitigation measures provided in the Chula Vista MSCP Subarea Plan;

4. All required mitigation measures/avoidance strategies for each sensitive biological resource;

5. All locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction;

6. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

7. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;

8. All performance standards and remedial measures to be implemented if performance standards are not met;

9. A discussion of biological resource-related facility closure measures; and

10. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval.

Verification

At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM with the final version of the BRMIMP, and the CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved BRMIMP must be made only after consultation with the Energy Commission, USFWS, CDFG, and the City of Chula Vista. The project owner shall notify the CPM five (5) working days before implementing any CPM-approved modifications to the BRMIMP.

Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval, a written report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which mitigation and monitoring plan items are still outstanding.

PRE-CONSTRUCTION NEST SURVEYS

BIO-6 Pre-construction nest surveys shall be conducted if construction activities will occur March 1 through September 15. The Designated Biologist shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat within 500 feet of the boundaries of the CVEUP project site and laydown area;

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys needs to be conducted within the 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation;

3. If active nests of non-listed species are detected during the survey, a buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) and monitoring plan shall be developed. Nest locations shall be mapped and submitted, along with a report stating the survey results, to the CPM;

4. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made; and

5. If active nests of listed species, including least Bell's vireo, southwestern willow flycatcher, or coastal California gnatcatcher, are detected within 300 feet of construction activities, such construction shall cease until the Designated Biologist determines that the nestlings have fledged and dispersed.

Verification

At least one week prior to the commencement of construction activities, the project owner shall provide the CPM a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor (s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the no-disturbance buffer zone around the nest.

BEST MANAGEMENT PRACTICES

BIO-7 Construction workers should exercise Best Management Practices during all construction activities. Employees at the CVEUP project site and laydown areas shall:

1. Confine their activities and storage of vehicles, equipment, and construction materials to the fenced project footprint;

2. Enclose all food related trash items in sealed containers and remove them regularly from the project site to avoid attracting predators of sensitive wildlife;

3. Refrain from bringing dogs or other pets to the project site;

4. Avoid disposal or temporary placement of excess fill, brush, or other debris should within the Otay River Preserve;

5. Conduct all equipment maintenance; staging; and dispensing of fuel, oil, coolant, or any other such activities within the fenced project limits. Areas for equipment maintenance should be designated only in previously compacted and disturbed sites and shown on construction plans. Equipment maintenance sites should not drain to the Preserve;

6. Fuel equipment within existing paved areas greater than 100 feet from Preserve boundaries. Designate "no fueling zones" on construction plans; and

7. Check equipment for leaks prior to operation and repair as necessary.

Verification

All Best Management Practices and their implementation methods shall be included in the BRMIMP. Implementation of the measures will be described in the Monthly Compliance Reports and provided to the CPM. Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how BMPs have been completed.

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CULTURAL RESOURCES

Jill K. Gardner

SUMMARY OF CONCLUSIONS

Staff has determined that the Chula Vista Energy Upgrade Project would not have a significant impact on known significant archaeological resources, historic structures, or ethnographic resources. With the adoption and implementation of the proposed Conditions of Certification, **CUL-1** through **CUL-7**, the Chula Vista Energy Upgrade Project would not have a significant impact on potentially significant archaeological resources that may be discovered during construction.

INTRODUCTION

This cultural resources assessment identifies the potential impacts of the proposed Chula Vista Energy Upgrade Project (CVEUP) to cultural resources. Cultural resources are defined under state law as buildings, sites, structures, objects, and historic districts. Three kinds of cultural resources are considered in this assessment: prehistoric, historic, and ethnographic.

Prehistoric archaeological resources are those materials relating to prehistoric human occupation and use of an area. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. In California, the prehistoric period began over 11,500 years ago and extended through the eighteenth century until 1769, the time when the first Spaniards settled in what is now the State of California.

Historic period resources are those materials, archaeological and architectural, usually associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, buildings and structures, travel routes, artifacts, or other evidence of human activity. Under federal and state requirements, historical cultural resources must be more than 50 years old to be considered of potential historical importance. A resource less than 50 years of age may be historically important if the resource is of exceptional significance.

Ethnographic resources are those materials important to the heritage of a particular ethnic or cultural group, such as African Americans, Mexican Americans, or Native Americans, or European, Asian, or Latino immigrants and their descendants. They may include traditional resource-collecting areas, ceremonial sites, topographic features, cemeteries, shrines, or ethnic neighborhoods and structures.

For the proposed CVEUP, staff provides an overview of the environmental setting and cultural history of the project area, an inventory of the cultural resources identified in the project vicinity, a consideration of the significance of those cultural resources, and an analysis of the effects of possible project impacts on those cultural resources, using significance criteria from the California Environmental Quality Act (CEQA). Where impacts to significant cultural resources, both known and not yet discovered, cannot be avoided, measures to mitigate the adverse effects on or loss of the resources are

proposed. The primary concerns are to ensure that all potential impacts to cultural resources are identified and that conditions are imposed on the project that ensure that any significant impacts are reduced to a less than significant level.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Projects licensed by the California Energy Commission (Energy Commission) are reviewed to ensure compliance with all applicable laws, ordinances, regulations, and standards (LORS). For this project, in which there is no federal involvement with respect to cultural resources,[1] the applicable laws are primarily state laws, in particular, CEQA. Although the Energy Commission has pre-emptive authority over local laws, it typically ensures compliance with local laws, ordinances, regulations, standards, plans, and policies.

CULTURAL RESOURCES Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
State	
Public Resources Code, section 21083.2	The lead agency may require reasonable steps to preserve a unique archaeological resource in place. Otherwise, the project applicant is required to fund mitigation measures to the extent prescribed in this section. This section also allows a lead agency to make provisions for archaeological resources unexpectedly encountered during construction, which may require the project applicant to fund mitigation and delay construction in the area of the find (CEQA).
California Code of Regulations, Title 14, section 15064.5, subsections (d), (e), and (f)	Subsection (d) allows the project applicant to develop an agreement with Native Americans on a plan for the disposition of remains from known Native American burials impacted by the project. Subsection (e) requires the landowner [possibly the project applicant] to rebury Native American remains elsewhere on the property if other disposition cannot be negotiated within 24 hours of accidental discovery and required construction stoppage. Subsection (f) directs the lead agency to make provisions for historical or unique archaeological resources that are accidentally discovered during construction, which may require the project applicant to fund mitigation and delay construction in the area of the find (CEQA Guidelines).

[1] Cultural resources are indirectly protected under provisions of the federal Antiquities Act of 1906 (Title 16, United States Code, Section 431 et seq.) and subsequent related legislation, policies, and enacting responsibilities, e.g., federal agency regulations and guidelines for implementation of the Antiquities Act.

California Code of Regulations, Title 14, section 15126.4(b)	This section describes options for the lead agency and for the project applicant to arrive at appropriate, reasonable, enforceable mitigation measures for minimizing significant adverse impacts from a project. It prescribes the manner of maintenance, repair, stabilization, restoration, conservation, or reconstruction as mitigation of a project's impact on a historical resource; discusses documentation as a mitigation measure; and advises mitigation through avoidance of damaging effects on any historical resource of an archaeological nature, preferably by preservation in place, or by data recovery through excavation if avoidance or preservation in place is not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan (CEQA Guidelines).
Public Resources Code 5024.1	The California Register of Historical Resources (CRHR) is established and includes: properties determined eligible for the National Register of Historic Places (NRHP) under four criteria (A. events; B. important persons; C. distinctive construction; and D. data); State Historic Landmark No. 770 and subsequent numbered landmarks; points of historical interest recommended for listing by the State Historical Resources Commission; and historical resources, historic districts, and landmarks designated or listed by a city or county under a local ordinance. CRHR eligibility criteria are: (1) events, (2) important persons, (3) distinctive construction, and (4) data.
Public Resources Code 5020.1(h)	"Historic district" means a definable unified geographic entity that possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.
California Health and Safety Code, Section 7050.5	This code makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Local	
City of Chula Vista, General Plan	Section 3.1.9 of the City of Chula Vista's General Plan, Environmental Element Chapter 9 asserts that the history of a community is important to the community and warrants the protection of the City (City of Chula Vista 2007).

SETTING

REGIONAL SETTING

The CVEUP project area is located in southwest San Diego County in the City of Chula Vista (City). The project area has been heavily disturbed by the construction and operation of the existing power plant, and areas that have not been developed have been graded and landscaped. The region is within the geomorphic province of the Peninsular Ranges, which extend into Baja California and are bounded on the east by the Colorado Desert. The specific project area is located on a Pleistocene terrace on

the north side of the Otay River. Immediately prior to modern development, the project area would have been within the Diegan coastal sage scrub vegetation community, which includes various native plants such as sagebrush, sage, encelia, deerweed, goldenbush, and needlegrass (Fulton 2006, p. 3).

PROJECT, SITE, AND VICINITY DESCRIPTION

The proposed CVEUP will be a nominal 100-megawatt (MW) peaking facility consisting of two General Electric (GE) LM6000PC SPRINT natural gas-fired turbine generators and associated equipment. The facility will be located in Chula Vista, San Diego County, California, on a 3.8-acre parcel. The project site is located in the City of Chula Vista's Main Street Industrial Corridor and within the City's Light Industrial zoning district. Access to the site is via an access easement and lane that runs south from Main Street within an adjacent property (MMC 2007b, p. 2-1).

The site is currently occupied by MMC Energy Inc.'s (MMC) Chula Vista Power Plant, a 44.5-MW simple cycle, natural gas-fired peaking power plant. As part of the CVEUP, the existing power plant and pollution control equipment will be removed from the southern portion of the project parcel. The new plant will be constructed on vacant land in the northern portion of the parcel. Some of the facilities that serve the existing plant will be reused for the new power plant. These facilities include the existing transmission connection; natural gas, water, and sanitary sewer pipelines; fencing and sound attenuation wall; utility/control building; storm water runoff retention basin; and the 12,000-gallon aqueous ammonia storage tank and tank refilling station. Once the new plant is constructed, the existing plant will be dismantled and removed. The CVEUP will replace the existing older and less efficient technology with newer, more efficient, and cleaner technology (MMC 2007b, p. 2-1).

Because the CVEUP will reuse the existing electrical transmission, natural gas, water service, and sanitary sewer pipelines, the new project will have no off-site linear appurtenances. All connections of the CVEUP to linear facilities will be made on the existing site using the existing facilities. The existing plant connects with San Diego Gas and Electric's (SDG&E's) electrical transmission system at the Otay Substation, which is approximately 1,020 feet north of the project site. The plant currently connects with the Sweetwater Authority's water supply system through a 4-inch-diameter on-site pipe. Project water uses will include turbine washes and process makeup, site landscape irrigation, and domestic and sanitary uses. The existing pipeline extends south from Main Street within an existing utility easement that runs in the access lane and connects the parcel with Main Street immediately to the east (MMC 2007b, pp. 2-1–2-2).

The project has also proposed two alternative laydown and worker parking areas. The first is a 5.0 acre former pallet storage yard located immediately south and west of the project site. The second alternative is a 2.75 acre site located 3.4 miles east of the CVEUP site at 20000 Heritage Road. The second alternative is currently used for construction laydown (MMC 2007b, p. 2-28).

Prehistoric Setting

Regional Climatic and Environmental History

The proposed CVEUP is located in the extreme southwest corner of San Diego County, which is adjacent to the Pacific Ocean. Generally speaking, the shores of the county are separated from the mountains by low hills and terraces. The vegetation of this region consists primarily of chaparral (Moratto 1984, p. 116). The landscape along the coast is comprised of bays, lagoons, and sandy beaches ending in rocky points. Within and around these bodies of water are mollusks, fish, and waterfowl. The climate of San Diego County is categorized as Mediterranean, which is characterized by relatively hot, dry summers and mild, semiarid winters, with the greatest precipitation occurring in the winter (Felton 1965). Due to the abundance of resources along the coast of San Diego County, prehistoric human populations tended to congregate near its shores (Moratto 1984, p. 117).

Human Occupation in San Diego County

The chronological sequences for California prehistory have been varied and sometimes confusing and are typically regional in nature. For the purposes of this assessment, the chronological sequence for the Southern Bight provided by Byrd and Raab (2007) is employed. The Southern Bight encompasses much of San Diego, Orange, and Santa Barbara counties, as well as western Riverside County and the Channel Islands (Byrd and Raab 2007, p. 215). The sequence in Byrd and Raab (2007, p. 217) is broken down into the Early Holocene (~9,600 cal[2] B.C. to 5,600 cal B.C.), Middle Holocene (~5,600 cal B.C. to 1,650 cal B.C.), and Late Holocene (~1,650 cal B.C. to A.D. cal 1769). It should be noted that the time frame of the Early Holocene as outlined by Byrd and Raab (2007) also subsumes what has traditionally been regarded as the late (or terminal) Pleistocene, sometimes referred to as the Paleoindian period. To avoid confusion, the designation of "cal B.C." in Byrd and Raab (2007) is converted to "B.P." (before present, or years ago) in the following discussion.

Early Holocene (~11,600 to 7,600 B.P.)

Models of California prehistory have traditionally viewed the first inhabitants as Paleoindian big-game hunters who traveled across North America during the terminal phase of the last Ice Age (e.g., Fagan 2003; Moratto 1984; Wallace 1978). Evidence for such an early occupation of southern California is lacking, however, particularly along the coastal areas. There continues to be debate regarding the origins of California's initial coastal populations, some claiming that they came from the interior of western North America and others arguing for a coastal route originating from northeast Asia (e.g., Byrd and Raab 2007; Chatters 2001). The characteristic artifact of this time period is the fluted projectile point form known as the Clovis point.

In the desert regions of southern California during this time, cultures responded to the diminishing lacustrine (lake) environments induced by climate change by exploiting a wider array of plants and animals and by moving to more favorable areas, such as the southern California coast (Byrd and Raab 2007, pp. 217–218; also see Gallegos 1991). Similar developments appear to have taken place in San Diego County, such as that

[2] The abbreviation "cal" stands for calibrated radio carbon date.

seen at the C. W. Harris site, the type site for the San Dieguito Complex (Warren 1968, 1984). Marker artifacts from this complex include leaf-shaped and large-stemmed projectile points (such as Silver Lake and Lake Mojave types), scrapers, engraving tools, crescents, and various other stone tools (Moratto 1984, pp. 97–98).

The San Dieguito Complex is comprised of interior and coastal expressions distributed throughout much of southern California (e.g., Moratto 1984; Wallace 1978; Warren 1967). Sites of this complex have been purported to date between about 11,000 and 8,000 B.P., although few have been securely dated and most are made up of isolated finds or lithic scatters. Moratto (1984, pp.108–109) classified the coastal San Dieguito Complex as belonging to a "Paleo-Coastal Tradition" characterized by an absence of milling equipment and a generalized subsistence economy (Erlandson 1994, pp. 44–45).

Subsequent to initial settlement, coastal groups began to focus on marine foods (e.g., shellfish and fish), nuts, and grasses. This later adaptation has been referred to as the Archaic, also known as the La Jolla Complex along coastal San Diego and the Pauma Complex at inland San Diego County sites (e.g., Gallegos 1992; Moratto 1984; True 1958, 1980). Settlements along the San Diego coast during this time consisted of relatively large and semisedentary populations residing near bays and estuaries (see Byrd and Raab 2007, pp. 218–219). Artifacts from these two complexes are similar and include a variety of milling tools, cobble tools, Pinto-like projectile points, and perforated stones (Moratto 1984, p. 147).

Middle Holocene (7,600 to 3,650 B.P.)

The Middle Holocene has been viewed as a time of cultural transition, which is thought to have been largely influenced by environmental factors. Cultural adaptation during this time appears to have been focused on small plant seeds, marine shellfish, and medium to small game. In addition, kelp-bed and nearshore rocky-reef fishing was common (Byrd and Raab 2007, p. 220; Master and Gallegos 1997, pp. 11–12). Lagoonal resources were important as well, but populations also traversed the river valleys to obtain a variety of inland and coastal resources (e.g., Gallegos 2002; Masters and Gallegos 1997). It has been argued that boats must have been used to fish among the kelp beds, although the only evidence for the use of watercraft is the presence of cobble mortars within the kelp beds, which would have required the use of boats to transport them (Masters and Gallegos 1997, p. 20).

Numerous important Middle Holocene sites along the San Diego coastline have been documented in inland and littoral (ocean coast or river bank) settings (e.g., Byrd and Reddy 2002). Many areas demonstrate occupational continuity from the Middle to the Late Holocene, such as San Diego Bay, Mission Bay, Sorrento Valley, San Elijo Lagoon, Las Flores Creek, and San Mateo Creek (Byrd and Raab 2007, p. 220). Archaeological assemblages from Middle Holocene sites of San Diego have contained doughnut stones, discoidals, choppers, Elko projectile points and knives, hammerstones, scrapers, cores, worked bone, and a variety of beads (Masters and Gallegos 1997, p. 12).

Within the Middle Holocene was a time known as the Millingstone Horizon, so named because of the abundance of milling implements (especially manos and metates) and the absence of other types of artifacts. Many radiocarbon dates from Millingstone Horizon archaeological components suggest a time span between about 8,000 and 2,000 B.P., although most sites date between about 7,000 and 5,000 B.P., particularly along the coast. There has been some suggestion that the Millingstone Horizon is more ancient on the coast, but that has yet to be verified. In some areas, it appears to have persisted late in time, including San Diego County (Warren 1964, 1968).

Late Holocene (3,650 B.P. to A.D. 1769)

During the Late Holocene, smaller shellfish became the subsistence focus, and settlement patterns suggest widespread shifts in land use. A key aspect of that shift was the development of relatively large residential camps associated with numerous satellite sites concentrated on specialized tasks. Site types during this time included major residential bases, short-term residential camps, and limited activity sites (Byrd and Raab 2007, pp. 223–224). The change in land use patterns over the last 500 years has been viewed as “evidence of a long-term trend toward hunter-gatherer intensification” (Byrd and Reddy 1999, p. 33).

Late Holocene cultural adaptations included maritime activities, residential sedentism, and large-scale trade networks. Greater variation is evident in sociopolitical complexity all along the coast during this time, such as that of the Kumeyaay of southern San Diego County (Byrd and Raab 2007, pp. 225–226). Moreover, archaeological evidence from sites along the coastal regions of Los Angeles, Orange, and San Diego Counties during the Late Holocene have demonstrated evidence for a diffusion of elements (such as pottery and cremations), as well as movement of linguistic groups. These changes may have been result of the migration of interior Shoshonean groups to the coast post-1,500 B.P. (Erlandson 1994, p. 43).

Ethnographic Setting

The project area was occupied ethnographically by the Kumeyaay (Kroeber 1976). The Spanish referred to the native peoples that were associated with the presidio and mission of San Diego de Alcalá as Diegueño. This term was subsequently replaced with Kumeyaay, which has two divisions: Ipai, which denotes the northern Kumeyaay; and Tipai, which denotes the southern Kumeyaay (Luomala 1978, p. 592; also see Kroeber 1976, p. 710). The Ipai division of the Kumeyaay is the specific group within the project area.

Kumeyaay is part of the Yuman language family of the Hokan stock. Based on early historical accounts and mission records, the Kumeyaay population in 1769 was estimated to have been between about 10,000 and 25,000 scattered among perhaps 85 villages (Kroeber 1976; Shipek 1993). The estimate provided by Shipek (1993, p. 386) of 23,000 to 26,000 (in 1769) translates to roughly six people per square mile north of the border.

North of Baja California, Kumeyaay territorial boundary is near the border between San Diego and Riverside Counties to the north, the San Luis Rey River and San Felipe Creek and southern end of the Salton Sea to the south, somewhere between the New

River and the Colorado River to the east, and the Pacific Ocean to the west. Their neighbors to the northwest were the Luiseño, to the northeast were the Cahuilla, and to the east were the Quechan (Luomala 1978, p. 593).

Kumeyaay environmental zones cross coastal, mountain, and desert habitats, providing a wide array of resources. Some of the botanical resources important to the prehistoric and ethnohistoric inhabitants included chamise, acorns, agave, yucca, elderberry, wild lilac, and a variety of grasses and seeds (Luomala 1978, pp. 593–594). Major faunal resources for the Kumeyaay included rabbits and hares, deer, fish, mollusks, and shellfish, among others (Luomala 1978, p. 600–601). The Kumeyaay often managed their resources by burning in order to return nutrients to the soil, prevent wild fires, destroy plant diseases and insects, and eliminate parasites (such as mistletoe). After burning an area, plant seeds were broadcast over the ashes to enhance the food crop of the following season (Shipek 1993, p. 382). Due to the wide array of wild resources in Kumeyaay territory, agriculture was never practiced.

Cremation was a common method of disposal of the dead among the Kumeyaay, after which the ashes were retrieved, placed in a pottery jar, and then buried or hidden under rocks. The clothing of the deceased was retained for the clothes-burning ceremony (Kroeber 1976, p. 716).

The material culture of the Kumeyaay included bedrock mortars to grind various resources (such as seeds) and various forms of pottery and basketry. For their pottery, reddish clay was mixed with finely crushed rocks. It was then coiled, shaped with a stone and wooden paddle, and fired. Cooking pots and water jars were some of the common forms of pottery. Basketry was of a type seen in other parts of southern California and included carrying nets and sacks. Tule balsas were used in the San Diego Bay (Kroeber 1976, p. 722–723).

Historic Setting

Although there was contact with Spanish explorers as early as 1542, the historic period for San Diego County is generally accepted to begin in 1769, with the introduction of the Spanish mission known as San Diego de Alcalá, which was originally located on a hill overlooking the San Diego Bay. The mission later moved east, into Mission Valley, to the site of a large Kumeyaay village known as Nipaguay. The Presidio associated with the mission remained at the original location, which was later dubbed Old Town (Luomala 1978). The establishment of the mission system was the beginning of the Spanish period (1769 to 1822) and the forced acculturation of native peoples in this area. A number of family ranchos were established during this period, although there are few remnants of these early settlements. It is also possible that elements of Spanish period sites and structures were incorporated into later building efforts (Luomala 1978). Ultimately, however, the entry of Spanish missionaries into the coastal region resulted in large-scale destruction of native lifeways.

Subsequent to the secularization of the missions in 1821, the native people—many of whom had spent their entire lives as “Mission Indians”—were essentially abandoned. Some who survived the disease and violence of mission existence returned to their former ways of life. This became increasingly difficult as Kumeyaay land began to be

taken away and granted to immigrants from Mexico. Many of the marshes and tideflats important to the Kumeyaay who had lived on the margins of San Diego Bay were filled and used for waterfront businesses. This situation forced many of the Kumeyaay to move away from the coast (Luomala 1978).

The Mexican period (1822 to 1848) followed the Spanish period as Mexico gained its independence from Spain (Castillo 1978). It was during this time that land began to be granted to private citizens and the missions became secularized. A number of ranchos between the coast and the mountains of San Diego County held vast landholdings upon which cattle and sheep were grazed. Natural valleys and slopes were used as open range for livestock well into the subsequent American period. Political responsibility for the region was transferred to the United States with the signing of the Treaty of Guadalupe Hidalgo on February 2, 1848 (Castillo 1978, pp. 104–107). Despite these changes, the economic and demographic makeup of the San Diego area remained virtually unchanged until sometime after California became a state on September 9, 1850.

During the subsequent American period, which began in 1848, a growing number of farms appeared along with the cattle and sheep ranches (Castillo 1978). As a result, a rural community pattern emerged that continued until about 1930. This pattern consisted of communities made up of population aggregates that lived within well-defined geographic boundaries. The population lived on farmsteads, tied together by a common school district, church, post office, and country store. These farmsteads and dispersed farming communities gave way to horse ranches, dairies, and nurseries, which in turn were replaced by the establishment of the roadside service complex, which was linked by state and federal roadways.

The area later to be known as Chula Vista was used during the mission and Mexican eras as grazing land for cattle and horses belonging to the mission, and later as private ranches. There was little development of these lands until 1886, when Chula Vista began to expand. By 1888, there were more than 100 houses erected in Chula Vista, and population was booming (Menzel 1942). At about that time, the National City and Otay Railroad built a line through Chula Vista, which probably crossed the project area. Most of the Kumeyaay had left the vicinity by the 1920s. By 2003, the population of Chula Vista had reached 200,000, making it the second largest city in San Diego County.

Resources Inventory

Methods: Records Search, Background Research, and Native American Contacts

In October 2006, LSA Associates, Inc., of Irvine, California, conducted archival and background research and a surface pedestrian survey of the CVEUP site and associated laydown areas (Fulton 2006). Because initial surveys indicated a lack of buildings and structures older than 50 years on parcels within or adjoining the project site, a specific architectural resources survey was not conducted.

On October 3, 2006, the staff at the California Historical Resources Information System (CHRIS) South Coastal Information Center at San Diego State University conducted a

file search for a one-mile buffer zone around the project site and associated laydown areas. According to information available in the CHRIS files, there have been 57 previous cultural resource studies conducted within the project area and proposed laydown areas. Five previous cultural resource surveys covered the same areas as the proposed project area and laydown areas. Despite the previous surveys of the proposed project site and laydown areas dating back to 1980, and a total of 62 previously recorded properties within approximately one-mile radius, no cultural resources have been identified within the proposed CVEUP project area or laydown areas (MMC 2007b, p. 5.3–8).

Four structures more than 45 years in age were identified within a one-mile radius of the project site. Many modern structures exist between the proposed project site and the varied locations of the structures (MMC 2007b, p.5.3–11). In addition, a historic map provided by the CHRIS included the location of historic roads and trails. It appears from the "Historic Roads and Trails: 1769-1885" map that the stages owned by the Butterfield stage line ran approximately 0.5 mile north of the Otay River from 1858 to 1861 (MMC 2007b, Confidential Filing).

The applicant contacted the Native American Heritage Commission (NAHC) by letter on June 19, 2007, to request information about location important to Native American heritage in and around the project area. The NAHC responded on June 21, 2007, with a list of Native Americans interested in consulting on development projects. Each of these individuals/groups was contacted by letter on June 22, 2007 (MMC 2007b, p 5.3–12 to 5.3–13).

Staff also requested a list of Native Americans in the proposed project area from the NAHC. Letters from staff were sent to Native American groups and individuals on December 17, 2007, asking for information regarding Native American concerns in the proposed project area. As of January 28, 2008, no responses had been received.

Methods: Field Survey

A cultural resources survey of the existing Chula Vista Power Plant conducted by LSA on October 10, 2006, did not locate any cultural resources (Fulton 2006). The revised Energy Commission *Rules of Practice and Procedure & Power Plant Site Certification Regulations* required survey of a 200-foot-wide buffer around the project site, so additional surveys of this buffer zone and the two laydown areas were completed by Clint Helton of CH2MHill (Helton 2007) on July 10, 2007. Neither of these surveys reported the existence of prehistoric or historic cultural materials (MMC 2007b, p. 5.3–11).

The applicant noted that given the amount of previous ground disturbance in the area for the existing plant site, as well as the large amounts of fill material that had been brought in, it seems likely that any potentially preexisting cultural resources within the project area would have been greatly disturbed or destroyed. The laydown area adjacent to the proposed plant site appears covered in fill. The laydown area located three miles away from the site had also been covered with fill material (MMC 2007b, p. 5.3–12).

In addition, the applicant examined the CVEUP site in order to assess potential impacts to the historic built environment. The assessment included no less than one parcel's distance from the proposed plant boundaries. The existing plant was constructed in 2000, and has no structures over 45 years old. The parcels to the east and west possess new business parks that were constructed within the past five years. The parcel to the south includes the Otay Valley Regional Park and has no nearby structures. The parcel to the north contains an auto salvage and storage yard with no structures over 45 years old. Similarly, the two temporary laydown areas do not contain structures over 45 years old either within or abutting them (MMC 2007b, p. 5.3–12). Since it did not appear that there were any structures more than 45 years of age that might be affected by the project, no architectural survey was required for the project.

Findings: Prehistoric and Historic Archaeological Resources Identified and Evaluated for Historical Significance

The applicant's CHRIS records search sought information on any previously identified prehistoric and historic period archaeological sites, historic architectural properties, and Native American sacred sites within a one-mile radius of the 3.8-acre proposed CVEUP parcel. As noted above, according to data available in the CHRIS files, there were 58 previously recorded archaeological sites identified within one mile of the project site (MMC 2007b, p. 5.3–9 to 5.3–11). However, no cultural resources have been identified within the proposed CVEUP project area (Fulton 2006; Helton 2007).

The applicant's recent archaeological survey of the 3.8-acre proposed CVEUP parcel identified no archaeological resources. On the other hand, recent geotechnical investigations indicate that the entire property is underlain by about 25 feet of artificial fill (Ninyo and Moore 2006), which could obscure any subsurface archaeological deposits. As such, despite the negative findings of the applicant's archaeological survey, there remains the possibility of encountering buried archaeological materials if excavation for the project extends below 25 feet, considering the presence of known prehistoric occupation sites in the general area. There is also a potential for finding artifacts associated with the historic Butterfield Stage Line.

Findings: Historic Structures Identified and Evaluated for Historical Significance

The applicant identified no standing historic structures within the project area from either the records search or the field survey. Furthermore, no standing structures either on or near the proposed CVEUP power plant have been recommended as eligible for the California Register Historic Resources (CRHR) (MMC 2007b, p.5.3–8). The CHRIS identified four potential cultural resources more that 45 years of age. There is no information from the CHRIS regarding the resources at 1427 Hermosa Avenue and 339 Orange Avenue, except the addresses. Both the Hermosa Avenue and Orange Avenue addresses are located approximately one mile north of project site. The resource at 35 Tamarindo Way, built in 1949, is located approximately 0.5 miles northwest from the project site and is characterized as a single-family ranch style home. The fourth resource is California Historic Landmark Number 711, called the Montgomery Memorial. It is located at 3060 Coronado Avenue in Montgomery-Walker Park and is approximately one mile northwest of the CVEUP. The Montgomery Memorial is the location where John Joseph Montgomery made the first flight of a heavier-than-air craft

in 1883, 20 years before the Wright Brothers (CH2MHill 2007b, p. 44). Since there is a considerable amount of modern development between the proposed project and these resources, the project would not impact them.

Findings: Ethnographic Resources Identified and Evaluated for Historical Significance

As noted above, the applicant contacted the NAHC by letter on June 19, 2007, to request information about traditional cultural properties or sacred lands in and around the project area. The NAHC responded on June 21, 2007, indicating that there were no such properties within the project area. The records search conducted at the CHRIS also did not indicate the presence of Native American traditional cultural properties.

On June 22, 2007, the applicant sent out letters (with a map of the project area) to 14 Native American individuals that the NAHC had identified as having concerns about development projects in San Diego County. No responses had been received as of July 20, 2007. Staff also requested a list of Native Americans in the proposed project area from the NAHC. Letters from staff were sent to Native American groups and individuals on December 17, 2007, asking for information regarding Native American concerns in the proposed project area. As of January 28, 2008, no responses had been received. Unless further communications with local Native Americans disclose sites of ethnographic concern, at this time no significant ethnographic sites have been identified.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Various laws apply to the evaluation and treatment of cultural resources. CEQA requires the Energy Commission to evaluate resources by determining whether they meet several sets of specified criteria. These evaluations then influence the analysis of potential impacts to the resources and the mitigation that may be required to ameliorate any such impacts.

The CEQA Guidelines provide a definition of a historical resource as a “resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR,” or “a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1 (g) of the Public Resources Code,” or “any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency’s determination is supported by substantial evidence in light of the whole record” (California Code of Regulations, Title 14, § 15064.5 [a]). Historical resources that are automatically listed in the CRHR include California historical resources listed in or formally determined as eligible for the National Register of Historic Places (NRHP) and California Registered Historical Landmarks from No. 770 onward (Public Resources Code, § 5024.1[d]).

Under the CEQA Guidelines, a resource is generally considered to be historically significant if it meets the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old,[3] a resource must meet at least one of the following four criteria: is associated with events that have made a significant contribution to the broad patterns of our history (Criterion 1); or, is associated with the lives of persons significant in our past (Criterion 2); or, that embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values (Criterion 3); or, that has yielded, or may be likely to yield, information important to history or prehistory (Criterion 4) (Public Resources Code § 5024.1). In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (California Code of Regulations, Title 14, § 4852[c]).

Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows the lead agency to make a determination as to whether the resource is a historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1. Whether a proposed project would cause a substantial adverse change in the significance of historical resources is the issue that staff analyzes to determine if the project may have a significant effect on the environment.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Direct impacts to cultural resources are those associated with project development, construction, and coexistence. Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historic standing structures when those structures must be removed to make way for new structures or when the vibrations of construction impair the stability of historic structures nearby. New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with their neighbors and the setting, and when the new structures produce something harmful to the materials or structural integrity of the historic structures, such as emissions or vibrations.

Generally speaking, indirect impacts to archaeological resources are those that may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility. Similarly, historic structures can suffer indirect impacts when project construction creates improved accessibility, and vandalism and/or greater weather exposure become possible.

Ground disturbance accompanying construction at the proposed plant site and along the associated linear facilities has the potential to directly impact archaeological resources, unidentified at this time. The potential direct, physical impacts of the

[3] The Office of Historic Preservation's Instructions for Recording Historical Resources (1995) endorses recording and evaluating resources over 45 years of age to accommodate a five-year lag in the planning process.

proposed construction on unknown archaeological resources are commensurate with the extent of ground disturbance entailed in the particular mode of construction. This varies with each component of the proposed project. Placing the proposed plant into this particular setting could have a direct impact on the integrity of association, setting, and feeling of nearby standing historic structures.

Construction Impacts and Mitigation

Direct Impacts on Previously Unknown Archaeological Resources and Proposed Mitigation

Staff agrees with the applicant that no archaeological resources have been identified in the area where the proposed project would be built. Consequently, no project-related construction impacts from the CVEUP to known archaeological resources have been identified, and no mitigation would be required for known archaeological resources.

Because the proposed project development and construction generally would require subsurface disturbance in the project area, which is likely to have been utilized during prehistoric and historic times, staff must consider the possibility that the proposed CVEUP has the potential to adversely affect as-yet unknown archaeological resources if excavation exceeds the depth of the fill (Ninyo and Moore 2006).

There would also be some subsurface disturbance at the proposed laydown areas, and although staff agrees with the applicant that it is likely that there is fill over most of the surface of both laydown areas, there is not information available concerning the depth of that fill. Some subsurface work will occur at laydown areas (CH2MHill 2007b, p. 44), and the alternative laydown area is a particularly sensitive location for archaeological resources if native soil is encountered. Procedures for identifying, evaluating, and mitigating impacts to new discoveries are specified in staff's proposed Conditions of Certification **CUL-1** through **CUL-7**.

As noted above, it is possible that prehistoric and historic archaeological deposits could be encountered during construction. If any newly found resources are eligible for the CRHR, the direct impacts from construction could materially impair the resources. Appropriate mitigation measures, such as avoidance or assessment and data recovery, must be implemented to reduce that impact to less than significant. In recognition of this possibility, CEQA directs a lead agency to make provisions for archaeological resources unexpectedly encountered during construction (Public Resources Code, section 21083.2; California Code of Regulations, Title 14, sections 15064.5[f] and 15126.4[b]).

Many of the applicant's proposed treatment procedures for newly discovered archaeological resources have been incorporated into staff's proposed measures for identifying, evaluating, and possibly mitigating impacts to previously unknown archaeological resources discovered during construction (see Proposed Conditions of Certification **CUL-1** through **CUL-7** below).

Data response Number 32 provided information that additional fill material may be obtained by the project for use in the laydown areas. It is likely that if fill material is needed at either the project site or laydown areas, it would be obtained from a commercial source. However, excavated material from the project site would need to be

discarded (CH2MHill 2008e). Disposal and borrow locations where excavated material would be discarded or fill material would be obtained are considered part of the project and need to be considered for potential impacts to cultural resources. The use of commercial sites is encouraged by staff because commercial borrow or disposal sites have already been subject to environmental assessments. Because the project has not selected a commercial location, staff has added Condition of Certification **CUL-7** to apply in a situation where the project is not able to obtain or discard soil at commercial locations. **CUL-7** would ensure that if a commercial site is not selected, borrow or disposal sites would be assessed for impacts to cultural resources prior to being used by the project.

The applicant has recommended that a Cultural Resources Specialist be available to oversee cultural resources activities, if native soil is identified. Staff proposes having an archaeologist monitor all construction activities entailing ground disturbance that may extend into native soil, and, in addition, for a Native American to join the archaeologist in monitoring construction activities where any prehistoric cultural resources have been discovered. Staff's cultural resources conditions of certification have provisions for limiting or discontinuing monitoring if circumstances change.

The applicant has also recommended that worker training is not necessary because much of the project would be built on fill. Based on the geotechnical report prepared for the project (Ninyo and Moore 2006), staff agrees that the project site would be located on fill, and while the two laydown areas appear to have fill covering them, there is no information available regarding the depth of the fill. Worker training is not necessary because the areas of ground disturbance where cultural resources may be discovered are very limited; however, staff recommends monitoring in locations where native soil may be encountered at the project site and full-time monitoring during the limited ground disturbance at the laydown areas.

Staff believes that providing archaeological monitoring is warranted for locations where ground disturbance may extend into native soil because the area has a long history of human utilization, including both prehistoric and historic period occupations. The past ecology of the area would have made it attractive to Native Americans, and the geology would have contributed to the burial of prehistoric deposits.

Staff also contends that at a minimum a modified Cultural Resources Monitoring and Mitigation Plan is essential to have the necessary theoretical framework ready, to address an unexpected discovery without causing undue delay to the project.

The applicant proposes to mitigate any impacts from the inadvertent discovery of Native American human remains by following state law (MMC 2007b, p. 5.3–16). Staff agrees with this recommendation.

Direct Impacts on Historic Structures and Proposed Mitigation

No significant standing historic structures were identified in the area within a mile of the proposed project. There were four structures, older than 45 years, identified within one mile of the project site that had not been formally evaluated. Since there is a considerable amount of modern development between these structures and the project

location, no impact to the integrity of setting, the integrity of association, or the integrity of feeling of any such resources in the area surrounding the proposed CVEUP would result from the proposed project.

Direct Impacts on Ethnographic Resources and Proposed Mitigation

No ethnographic resources, either previously recorded or newly disclosed in the communications with Native Americans initiated by the applicant or by the Energy Commission for the proposed project, were identified in the vicinity of the project.

Indirect Impacts

Neither the applicant nor staff identified any indirect impacts to cultural resources in the impact area of the proposed project; thus, no mitigation of indirect CVEUP impacts would be required for any class of cultural resources.

Operation Impacts and Mitigation

During operation of the proposed CVEUP, if a leak should develop in the gas or water pipelines supplying the plant, repair of the buried utility could require the excavation of a large hole. Such repairs could impact previously unknown subsurface archaeological resources in areas unaffected by the original trench excavation. The measures proposed for mitigating impacts to previously unknown archaeological resources during the construction of the plant and linear facilities (below) would also serve to mitigate impacts from repairs occurring during operation of the plant.

Cumulative Impacts and Mitigation

A cumulative impact refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Public Resources Code § 21083; California Code of Regulations, Title 14, §§ 15064[h], 15065[c], 15130, and 15355). The construction of other projects in the same vicinity as the proposed project could affect unknown subsurface archaeological deposits (both prehistoric and historic). Applications for three proposed projects within one mile of the project have been filed in the City of Chula Vista in the last 18 months (MMC 2007b, p. 5.6–14 to 5.6–15). Proponents for future projects in the CVEUP area can mitigate impacts to as-yet-undiscovered subsurface archaeological deposits to less than significant by implementing mitigation measures requiring construction monitoring, evaluation of resources discovered during monitoring, and avoidance or data recovery for resources evaluated as significant (eligible for the CRHR or NRHP). Staff's proposed conditions of certification will ensure that the proposed project's incremental effect is not cumulatively considerable.

COMPLIANCE WITH APPLICABLE LORS

If the conditions of certification, below, are properly implemented, the proposed CVEUP would result in a less-than-significant impact on newly found cultural resources or on any known resources that may be impacted in a previously unanticipated manner. The project would therefore be in compliance with CEQA and the other applicable state and local laws, ordinances, regulations, and standards.

Staff's conditions of certification require specific actions not just to promote, but to effect historic preservation and mitigate impacts to all cultural resources to ensure CEQA compliance. Consequently, if the proposed CVEUP implements these conditions, its actions would be consistent with the cultural resources preservation policies of San Diego County.

CONCLUSIONS AND RECOMMENDATIONS

Staff has determined that the CVEUP would not have a significant impact on known significant archaeological resources, historic structures, or ethnographic resources. With the adoption and implementation of the proposed Conditions of Certification **CUL-1** through **CUL-7** the CVEUP would not have a significant impact on potentially significant archaeological resources that may be discovered during construction.

Staff recommends that the Energy Commission adopt the following proposed cultural resources Conditions of Certification, **CUL-1** through **CUL-7**. These conditions are intended to facilitate the identification and assessment of previously unknown archaeological resources encountered during construction and to mitigate any significant project impacts on any newly found resources assessed as significant and on any known resources that may be affected by the project in an unanticipated manner. To accomplish this, the conditions provide for:

- the hiring of a Cultural Resources Specialist, Cultural Resources Monitors, and Cultural Resources Technical Specialists;
- the archaeological and Native American (if needed) monitoring of ground-disturbing activities;
- the recovery of significant data from discovered archaeological deposits;
- the writing of a technical archaeological report on monitoring activities and findings; and
- the curation of recovered artifacts and associated notes, records, and reports.

When properly implemented, staff believes that these conditions of certification would mitigate any impacts to unknown significant archaeological resources newly discovered in the project impact areas to a less than significant level.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 Prior to the start of ground disturbance,[4] the project owner shall obtain the services of a Cultural Resources Specialist (CRS), and one or more alternates, if alternates are needed. The CRS shall manage all monitoring, mitigation, curation, and reporting activities required in accordance with the Conditions of Certification (Conditions). The CRS may elect to obtain the services of Cultural Resources Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation

[4] "Ground disturbance" includes "preconstruction site mobilization"; "construction ground disturbance"; and "construction grading, boring and trenching," as defined in the General Conditions for this project.

activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner (discovery). No ground disturbance shall occur prior to CPM approval of the CRS, unless specifically approved by the CPM. Approval of a CRS may be denied or revoked for non-compliance on this project.

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in the Code of Federal Regulations, 36 CFR Part 61. In addition, the CRS shall have the following qualifications:

1. The CRS's qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field; and

2. At least three years of archaeological or historic, as appropriate, resources mitigation and field experience in California.

3. At least one year of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

   The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS has the appropriate education and experience to accomplish the cultural resource tasks that must be addressed during ground disturbance

CULTURAL RESOURCES MONITORS

CRMs shall have the following qualifications:

1. a BS or BA degree in anthropology, archaeology, historical archaeology or a related field and one year's experience monitoring in California; or

2. an AS or AA degree in anthropology, archaeology, historical archaeology, or a related field, and four years experience monitoring in California; or

3. enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and two years of monitoring experience in California.

CULTURAL RESOURCES TECHNICAL SPECIALISTS

The resume(s) of any additional technical specialists, e.g., historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the CPM for approval.

Verification:

1. At least 45 days prior to the start of ground disturbance, the project owner shall submit the resume for the CRS, and alternate(s) if desired, to the CPM for review and approval.

2. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the approved new CRS the AFC and all cultural documents, field notes, photographs, and other cultural materials generated by the project.

3. At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition. If additional CRMs are obtained during the project, the CRS shall provide additional letters to the CPM identifying the CRMs and attesting to the qualifications of the CRMs, at least five days prior to the CRMs beginning on-site duties.

4. 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.

5. 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 on-site work and is prepared to implement the Cultural Resources Conditions.

CUL-2 Prior to the start of ground disturbance, if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the AFC, data responses, and confidential cultural resources reports for the project. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprint of the power plant and all linear facilities. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings, not previously provided, shall be submitted prior to the start of each phase. Written notification identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

At a minimum, the CRS shall consult weekly with the project construction manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

Verification:

1. At least 40 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, and confidential cultural resources documents to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

2. If there are changes to any project-related footprint, revised maps and drawings shall be provided at least 15 days prior to start of ground disturbance for those changes.

3. If project construction is phased, if not previously provided, the project owner shall submit the subject maps and drawings 15 days prior to each phase.

4. On a weekly basis during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, email, or fax.

5. Within five days of identifying changes, the project owner shall provide written notice of any changes to scheduling of construction phase.

CUL-3 Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, to the CPM for review and approval. The CRMMP shall be provided in the Archaeological Resource Management Report (ARMR) format, and, per ARMR guidelines, the author's name shall appear on the title page of the CRMMP. The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each monitor, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless specifically approved by the CPM.

The CRMMP shall include, but not be limited to, the following elements and measures:

1. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. A prescriptive treatment plan may be included in the CRMMP for limited resource types. A refined research design will be prepared for any resource where data recovery is required.

2. The following statement included in the Introduction: “Any discussion, summary, or paraphrasing of the Conditions in this CRMMP is intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The Conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the Conditions in the CRMMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A.”

3. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.

4. A description of the manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their role and responsibilities.

5. A statement that all cultural resources encountered shall be recorded on a DPR form 523 and mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission’s *Guidelines for the Curation of Archaeological Collections*, into a retrievable storage collection in a public repository or museum.

6. A statement that the project owner will pay all curation fees and a copy of an agreement with, or other written commitment from, a curation facility to accept artifacts from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

7. A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resources materials that are encountered during construction and cannot be treated prescriptively.

8. A description of the contents and format of the Cultural Resources Report (CRR), which shall be prepared according to ARMR guidelines.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall submit the subject CRMMP to the CPM for review and approval. Ground disturbance may not commence until the CRMMP is approved, unless specifically approved by the CPM.

2. At least 30 days prior to the start of ground disturbance, a letter shall be provided to the CPM indicating that the project owner agrees to pay curation fees for any materials collected as a result of the archaeological investigations (survey, testing, data recovery).

CUL-4 The project owner shall submit the Cultural Resources Report (CRR) to the CPM for approval. The CRR shall be written by or under the direction of the

CRS and shall be provided in the ARMR format. The CRR shall report on all field activities including dates, times and locations, findings, samplings, and analyses. All survey reports, Department of Parks and Recreation (DPR) 523 forms, and additional research reports not previously submitted to the California Historical Resources Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as an appendix to the CRR.

If the project owner requests a suspension of construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

2. Within 10 days after CPM approval, the project owner shall provide documentation to the CPM confirming that copies of the CRR have been provided to the SHPO, the CHRIS, and the curating institution, if archaeological materials were collected.

3. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

CUL-5 The project owner shall ensure that the CRS, alternate CRS, or CRMs shall monitor ground disturbance full time at the project site and linear facilities, and ground disturbance full time at laydown areas or other ancillary areas, to ensure there are no impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner (discovery). Specifically, the CRS, alternate CRS, or CRMs shall monitor the ground disturbance that reaches to within three feet of native soil below the fill and all ground disturbance in native soil.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of all earth-moving activities on the project site and laydown areas for as long as the activities are ongoing. Full-time archaeological monitoring shall require at least one monitor per excavation area where machines are actively removing native soils. If an excavation area is too large for one monitor to effectively observe the soil removal, one or more additional monitors shall be retained to observe the area.

In the event that the CRS determines that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification

for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of non-compliance with the Conditions and/or applicable LORS. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the Monthly Compliance Report (MCR). If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts are 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 shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log. While monitoring is ongoing, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS.

2. Daily, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the CPM as an e-mail, or in some other form acceptable to the CPM. If the CRS concludes that daily reporting is no longer necessary, a letter or e-mail providing a detailed justification for the decision to reduce or end daily reporting shall be provided to the CPM for review and approval at least 24 hours prior to reducing or ending daily reporting. At least 24 hours prior to implementing a proposed change in monitoring level, documentation justifying the change shall be submitted to the CPM for review and approval.

3. At least 24 hours prior to implementing a proposed change in monitoring level, documentation justifying the change shall be submitted to the CPM for review and approval.

CUL-6 The project owner shall grant authority to halt construction to the CRS, alternate CRS, and the CRMs in the event of a Discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event cultural resources over 50 years of age or considered exceptionally significant are found, or impacts to such resources can be anticipated, construction shall be halted or redirected in the immediate vicinity of the Discovery sufficient to ensure that the resource is protected from further impacts. The halting or redirection of construction shall remain in effect until the CRS has visited the Discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the Discovery, or by Monday morning if the cultural resources Discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the Discovery (or changes in character or attributes), the action taken (i.e. work stoppage or redirection), a recommendation of eligibility, and recommendations for mitigation of any cultural resources Discoveries, whether or not a determination of significance has been made.

2. The CRS has completed field notes, measurements, and photography for a DPR 523 primary form. The "Description" entry of the 523 form shall include a recommendation on the significance of the find. The project owner shall submit completed forms to the CPM.

3. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the Discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt construction activities in the vicinity of a cultural

resources Discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a Discovery, or by Monday morning if the cultural resources Discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

2. Completed DPR form 523s shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever is more appropriate for the subject cultural resource, as determined by the CRS.

CUL-7 If commercial borrow or disposal sites are not used, as soon as a borrow site and a disposal site for removed plant-site or laydown area soils are selected, and prior to the start of ground disturbance, the CRS shall undertake or supervise the surface survey of the disposal and barrow site for archaeological deposits. If no archaeological deposits are identified, soil disposal and soil acquisition at the selected site may proceed with no restrictions. If any archaeological deposits are discovered, the CRS shall undertake or supervise the recording of all discovered archaeological resources on DPR 523 "Primary" forms, provide recommendations regarding their eligibility for the CRHR in the "Description" fields of the forms, and provide a letter report of the survey's personnel, methods, and findings, along with the completed forms, to the CPM. If any cultural resources are identified at the chosen soil borrow and disposal sites, no soil removal or disposal activities shall begin at the selected sites before CPM approval of the letter report and any accompanying forms, unless such activities are specifically approved by the CPM.

Verification: At least 30 days prior to the start of ground disturbance, if a commercial site is used, the project shall provide a letter identifying the commercial location and specifying whether it will be used as either a disposal or a borrow site. If a commercial site is not selected, after the identification of the removed-soils disposal site or the borrow site, and **at least 30 days prior** to the start of preconstruction site mobilization, the project owner shall ensure that the CRS submits to the CPM a letter report of the conduct and results of the archaeological survey of that site, along with any completed DPR 523 forms with recommendations regarding the eligibility of the recorded resources.

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HAZARDOUS MATERIALS MANAGEMENT

Alvin J. Greenberg, Ph.D. and Rick Tyler

SUMMARY OF CONCLUSIONS

Staff's evaluation of the proposed Chula Vista Energy Upgrade Project, along with staff's proposed mitigation measures, indicates that hazardous materials use at the site would not present a significant impact to the public. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable laws, ordinances, regulations, and standards. In response to Health and Safety Code, section 25531 et seq., MMC Energy Inc. (the applicant) would be required to develop a risk management plan. To ensure the adequacy of this plan, staff's proposed conditions of certification require that the risk management plan be submitted for concurrent review by the San Diego County Department of Environmental Health and Energy Commission staff. In addition, staff's proposed conditions of certification require that both the San Diego Department of Environmental Health and staff review and approve the risk management plan prior to delivery of any hazardous materials to the CVEUP project site. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia.

INTRODUCTION

The purpose of this hazardous materials management analysis is to determine if the proposed Chula Vista Energy Upgrade Project (CVEUP) project has the potential to cause significant impacts on the public as a result of the use, handling, storage, or transportation of hazardous materials at the proposed site. If significant adverse impacts on the public are identified, Energy Commission staff must also evaluate the potential for facility design alternatives and additional mitigation measures to reduce those impacts to the extent feasible.

This analysis does not address the potential exposure of workers to hazardous materials used at the proposed facility. Employers must inform employees of hazards associated with their work and provide them with special protective equipment and training to reduce the potential for health impacts associated with the handling of hazardous materials. The **Worker Safety and Fire Protection** section of this document describes applicable requirements for the protection of workers from these risks.

Aqueous ammonia (19 percent ammonia in aqueous solution) is the only acutely hazardous material proposed to be either used or stored at the CVEUP project in quantities exceeding the reportable amounts defined in the California Health and Safety Code, section 25532 (j) (MMC 2007b, Table 5.5-1). Aqueous ammonia will be used to control oxides of nitrogen (NO_x) emissions through selective catalytic reduction. The use of aqueous ammonia significantly reduces the risk that would otherwise be associated with the use of the more hazardous anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the anhydrous form, which is stored as a liquefied gas at high pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release, which can rapidly introduce large quantities of the material to the ambient air and result in high

down-wind concentrations. Spills associated with the aqueous form are much easier to contain than those associated with anhydrous ammonia, and emissions from such spills are limited by the slow mass transfer from the surface of the spilled material.

Other hazardous materials, such as mineral and lubricating oils, cleaning detergents, and welding gasses will be present at the proposed CVEUP project. Hazardous materials used during construction would include gasoline, diesel fuel, motor oil, hydraulic fluid, welding gases, lubricants, solvents, paint, and paint thinner. No acutely toxic hazardous materials will be used on site during construction. None of these materials pose significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, their physical state, and/or their environmental mobility. Handling of hazardous materials during construction would follow Best Management Practices (BMPs) to minimize environmental effects (MMC 2007b, Sections 5.5.1.2.1 and 5.5.2.3.1).

Although no natural gas is stored, the project will also involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. The proposed CVEUP would connect on site to an existing natural gas pipeline and would not require the installation of any off-site piping (MMC 2007b, Section 2.0). The CVEUP project would also require the transportation of aqueous ammonia to the facility. This document addresses all potential impacts associated with the use and handling of hazardous materials.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws and policies apply to the protection of public health and hazardous materials management. Staff's analysis examines the project's compliance with these requirements.

HAZARDOUS MATERIALS MANAGEMENT Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on risk management plans (42 USC §112(r)	Requires states to implement a comprehensive system informing local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.

49 CFR 172.800	The U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
Title 49, Code of Federal Regulations, Part 190	Outlines gas pipeline safety program procedures.
Title 49, Code of Federal Regulations, Part 191	Addresses transportation of natural and other gas by pipeline: annual reports, incident reports, and safety-related condition reports. Requires operators of pipeline systems to notify the DOT of any reportable incident by telephone and then submit a written report within 30 days.
Title 49, Code of Federal Regulations, Part 192	Addresses transportation of natural and other gas by pipeline and minimum federal safety standards, specifies minimum safety requirements for pipelines including material selection, design requirements, and corrosion protection. The safety requirements for pipeline construction vary according to the population density and land use that characterize the surrounding land. This part also contains regulations governing pipeline construction (which must be followed for Class 2 and Class 3 pipelines) and the requirements for preparing a pipeline integrity management program.
Federal Register (6 CFR Part 27) interim final rule	A regulation of the U.S. Department of Homeland Security that requires facilities that use or store certain hazardous materials to submit information to the department so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
Title 8, California Code of Regulations, section 5189	Requires facility owners to develop and implement effective safety management plans that ensure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the Risk Management Plan (RMP) process.
Title 8, California Code of Regulations, section 458 and sections 500 to	Sets forth requirements for the design, construction, and operation of vessels and equipment used to store and transfer ammonia. These sections generally codify the requirements of several industry codes, including the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, the American

515	National Standards Institute (ANSI) K61.1 and the National Boiler and Pressure Vessel Inspection Code. These codes apply to anhydrous ammonia but are also used to design storage facilities for aqueous ammonia.
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (CalARP) requires the preparation of a Risk Management Plan (RMP) and off-site consequence analysis (OCA) and submittal to the local Certified Unified Program Agency for approval.
California Health and Safety Code, section 41700	Requires that "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
California Public Utilities Commission General Order 112-E and 58-A	Contains standards for gas piping construction and service.
Local	
City of Chula Vista Municipal Code chapter 8.34	Adopts the San Diego County hazardous materials disclosure ordinance requiring all facilities that handle hazardous materials to prepare a Hazardous Materials Business Plan. This is then enforced by San Diego County Hazardous Materials Division which is the Certified Unified Program Agency

The Certified Unified Program Agency (CUPA) with the responsibility to review Risk Management Plans (RMPs) and Hazardous Materials Business Plans (HMBPs) is the San Diego County Department of Environmental Health (DEH), Hazardous Materials Division (HMD). With regard to seismic safety issues, the site is located in Seismic Risk Zone 4. Construction and design of buildings and vessels storing hazardous materials will meet the seismic requirements of CCR Title 24 and 2001 California Building Code (MMC 2007b Section 2.2.1.1.1).

SETTING

Several factors associated with the area in which a project is to be located affect the potential for an accidental release of a hazardous material that could cause public health impacts. These include:

- local meteorology;
- terrain characteristics; and

- location of population centers and sensitive receptors relative to the project.

METEOROLOGICAL CONDITIONS

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as their associated health risks. When wind speeds are low and the atmosphere stable, dispersion is severely reduced but can lead to increased localized public exposure.

Recorded wind speeds and directions are described in the **Air Quality** section (5.1) and **Appendix 5.1B** of the Application for Certification (AFC) (MMC 2007b). Staff agrees with the applicant that use of F stability (stagnated air, very little mixing), wind speed of 1.5 meters per second, and a temperature of 108°F are appropriate for conducting the off-site consequence analysis (MMC 2007b, Section 5.5.2.4.2).

TERRAIN CHARACTERISTICS

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume resulting from an accidental release may impact high elevations before impacting lower elevations. The site topography is predominantly flat (about 58 feet above sea level), and the surrounding area is at a similar elevation in all directions (MMC 2007b, Section 5.1.2.2).

LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a major bearing on health risk. Sensitive receptors in the project vicinity are listed in **Appendix 5.1D** and shown in **Figure 5.1-D2** (MMC 2007b). There are a total of about 240 sensitive receptors within a 6-mile radius of the proposed CVEUP. The nearest sensitive receptor is Otay Elementary School, located about 0.25 miles (1,300 feet) north of the proposed site (MMC 2007b, Section 5.5.1.1). Work places, pedestrian sidewalks, streets, and residences are located just beyond the facility fence line.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Staff reviewed and assessed the potential for the transportation, handling, and use of hazardous materials to impact the surrounding community. All chemicals and natural gas were evaluated. Staff's analysis addresses the potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous

materials. In order to accomplish this goal, staff utilized the most current public health exposure levels (both acute and chronic) that are established to protect the public from the effects of an accidental chemical release.

In order to assess the potential for released hazardous materials to travel off site and affect the public, staff analyzed several aspects of the proposed use of these materials at the facility. Staff recognizes that some hazardous materials must be used at power plants. Therefore, staff conducted its analysis by examining the choice and amount of chemicals to be used, the manner in which the applicant will use the chemicals, the manner by which they will be transported to the facility and transferred to facility storage tanks, and the way the applicant plans to store the materials on site.

Staff reviewed the applicant's proposed engineering and administrative controls concerning hazardous materials usage. Engineering controls are the physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent the spill of hazardous material from occurring, or which can either limit the spill to a small amount or confine it to a small area. Administrative controls are the rules and procedures that workers at the facility must follow that will help to prevent accidents or to keep them small if they do occur. Both engineering and administrative controls can act as methods of prevention or as methods of response and minimization. In both cases, the goal is to prevent a spill from moving off site and causing harm to the public.

Staff reviewed and evaluated the applicant's proposed use of hazardous materials as described by the applicant (MMC 2007b, Section 5.5). Staff's assessment followed the five steps listed below.

- Step 1: Staff reviewed the chemicals and the amounts proposed for on-site use as listed in **Table 5.5-1** of the AFC and determined the need and appropriateness of their use.
- Step 2: Those chemicals proposed for use in small amounts or whose physical state is such that there is virtually no chance that a spill would migrate off site and impact the public were removed from further assessment.
- Step 3: Measures proposed by the applicant to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different-sized transfer-hose couplings and administrative controls such as worker training and safety management programs.
- Step 4: Measures proposed by the applicant to respond to accidents were reviewed and evaluated. These measures also included engineering controls such as catchment basins and methods to keep vapors from spreading and administrative controls such as training emergency response crews.
- Step 5: Staff analyzed the theoretical impacts on the public of a worst-case spill of hazardous materials, as reduced by the mitigation measures proposed by the applicant. When mitigation methods proposed by the applicant are sufficient, no further mitigation is recommended. If the proposed mitigation is not sufficient to reduce the potential for adverse impacts to an insignificant level, staff will propose additional prevention and response controls until the potential for causing harm to

the public is reduced to an insignificant level. It is only at this point that staff can recommend that the facility be allowed to use hazardous materials.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Small Quantity Hazardous Materials

Hazardous chemicals such as mineral and lubricating oils, cleaning detergents, welding gasses, and other various chemicals would be used and stored in relatively small amounts. (See **Hazardous Materials Appendix B** for a list of all chemicals proposed for use and storage at CVEUP). In conducting the analysis, staff determined in Steps 1 and 2 that these materials, although present at the proposed facility, pose a minimal potential for off-site impacts since they will be stored in small quantities, have low mobility/volatility, or have low levels of toxicity. These hazardous materials are eliminated from further consideration.

After removing from consideration those chemicals that pose no risk of off-site impact in Steps 1 and 2, staff continued with Steps 3, 4, and 5 to review the remaining hazardous materials: natural gas and aqueous ammonia. However, the project will be limited to using, storing, and transporting only those hazardous materials listed in Appendix B of this document as per staff's proposed condition **HAZ-1**.

Large Quantity Hazardous Materials

Natural Gas

Natural gas poses a fire and/or possible explosion risk because of its flammability. Natural gas is composed mostly of methane, but also contains ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, and tasteless and is lighter than air. Natural gas can cause asphyxiation when methane is 90 percent in concentration. Methane is flammable when mixed in air at concentrations of 5 to 14 percent, which is also the detonation range. Natural gas, therefore, poses a risk of fire and/or possible explosion if a release occurs under certain specific conditions. However, it should be noted that, due to its tendency to disperse rapidly (Lees 1998), natural gas is less likely to cause explosions than many other fuel gases such as propane or liquefied petroleum gas, but can explode under certain conditions (as demonstrated by the recent natural gas detonation in Belgium in July 2004).

While natural gas would be used in significant quantities, it would not be stored on site. It would be delivered via an existing pipeline that would be tapped into at the proposed CVEUP site. The risk of a fire and/or explosion on site can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (NFPA) code 85A requires both the use of double-block and bleed valves for gas shut off and automated combustion controls. These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, start-up procedures would require air purging of the gas turbines prior to start up, thereby precluding the presence of an explosive mixture. The safety management plan proposed by the applicant would address the handling and use of natural gas and would significantly

reduce the potential for equipment failure because of either improper maintenance or human error.

Aqueous Ammonia

Aqueous ammonia would be used to control the emission of oxides of nitrogen (NO_x) from the combustion of natural gas at the CVEUP project. The accidental release of aqueous ammonia without proper mitigation can result in significant down-wind concentrations of ammonia gas. CVEUP would store 19 percent aqueous ammonia solution in an existing above-ground ammonia tank with a maximum capacity of 12,000 gallons (MMC 2007b, Section 5.5.2.3.2). The secondary containment basin is also above ground and capable of holding the full contents of the tank plus rainfall. Polyballs are placed at the bottom of the secondary containment basin and serve to limit the surface area of any spilled aqueous ammonia (see **HAZARDOUS MATERIALS MANAGEMENT Figure 1**, below). Limiting the surface area reduces the evaporation rate of ammonia vapors from the basin. The tanker truck transfer pad would be contained by a berm that drains into a subsurface vault.

Hazardous Materials Management Figure 1



Based on staff's analysis described above, aqueous ammonia is the only hazardous material that may pose a significant risk of off-site impact. The use of aqueous ammonia can result in the release of ammonia vapor in the event of a spill. This is a result of its moderate vapor pressure and the large amounts of aqueous ammonia that will be used and stored on site. However, the use of aqueous ammonia poses far less risk than the use of the far more hazardous anhydrous ammonia (ammonia that is not diluted with water).

To assess the potential impacts associated with an accidental release of aqueous ammonia, staff uses four benchmark exposure levels of ammonia gas occurring off site. These include:

1. the lowest concentration posing a risk of lethality, 2,000 parts per million (ppm);

2. the concentration immediately dangerous to life and health level of 300 ppm;

3. the emergency response planning guideline level 2 of 150 ppm, which is also the RMP level 1 criterion used by U.S. Environmental Protection Agency (EPA) and California; and

4. the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm.

If the potential exposure associated with a potential release exceeds 75 ppm at any public receptor, staff will also assess the probability of occurrence of the release, the severity of the consequences, and the nature of the potentially exposed population in determining whether the likelihood and extent of potential exposure are sufficient to support a finding of potentially significant impact. A detailed discussion of the exposure criteria considered by staff, as well as their applicability to different populations and exposure-specific conditions, is provided in **HAZARDOUS MATERIALS Appendix A**.

Section 5.5.2.4.2 and Appendix 5.5A of the AFC (MMC 2007b) describe the modeling parameters used for the worst-case accidental releases of aqueous ammonia in the applicant's off-site consequence analysis (OCA). The OCA was conducted by the applicant and submitted as a response to a staff workshop data request (CH2MHill2007a, WSQ-1). Pursuant to the California Accidental Release Program (CalARP) regulations (federal risk management plan regulations do not apply to sources that store or use aqueous ammonia solutions below 20 percent), the OCA was performed for the worst-case release scenario, which involved the failure and complete discharge of the storage tank, as well as an alternative release scenario involving a spill during truck unloading. Ammonia emissions from two potential release scenarios were calculated following methods provided in the RMP off-site consequence analysis guidance, U.S. EPA, April 1999. The default meteorological data necessary for emission and dispersion calculations were supplemented by daily temperature data as required by CCR Title 19, section 2750.2. The maximum temperature recorded in the area in the past three years (108°F), a wind speed of 1.5 meters per second, and atmospheric stability class F were used for emission and dispersion calculations for the worst-case scenario. Potential off-site ammonia concentrations were estimated using the SLAB numerical dispersion model.

HAZARDOUS MATERIALS MANAGEMENT Table 2 shows the applicant's modeled distance to the four benchmark criteria concentrations at an elevation of 5.25 feet above ground level.

HAZARDOUS MATERIALS MANAGEMENT Table 2
Distance to EPA/CalARP and Energy Commission Toxic Endpoints

Scenario	Distance in Feet to 2,000 ppm	Distance in Feet to IDLH (300 ppm)	Distance in Feet to AIHA's ERPG-2 (150 ppm)	Distance in Feet to Energy Commission level (75 ppm)
Worst Case	~43	~68	~77	~85
Alternative	NA (Ammonia concentration did not reach 2,000 ppm)	~51	~90	~146

Source: Table 2 of CVEUP Data responses Attachment WSQ-1

Figures 1 and 2 of Attachment WSQ-1 (CH2MHill2007a) show how far each benchmark concentration would reach from the ammonia tank site. Ammonia concentrations exceeding 75 ppm would extend slightly beyond the facility fence line for the alternative scenario, but not for the worst-case scenario.

Staff conducted its own independent modeling and found a small difference between its results and those found by the applicant (see **HAZARDOUS MATERIALS**

MANAGEMENT Table 3, scenario 1). Staff found that a spill within the secondary containment basin would result in a spill surface area limited to approximately 74 square feet by the presence of the polyballs. Modeling shows that evaporation from a surface area of this size could result in the migration of ammonia vapors off site in concentrations that could possibly impact the off-site public. Staff estimated that the distance to the level of insignificant impact (75 ppm of ammonia in air) could be 210 feet, just beyond the nearest fence line of 131 feet to the east. However, this result is tempered by the fact that the secondary containment structure has walls high enough to prevent some ammonia fumes from leaving the containment area. Staff notes that although modeling this reduction in evaporation rate with precision is difficult, it can rely on its experience and professional judgment to determine whether the unadjusted modeling result can reliably document a significant impact to the off-site public — a step necessary before staff can consider requiring additional mitigation beyond that proposed by the applicant. In this case, staff concludes that both the applicant's and staff's independent modeling overestimate the off-site impact. Staff therefore believes that the applicant's proposed engineering controls will ensure protection of public health.

HAZARDOUS MATERIALS MANAGEMENT Table 3
Distance to EPA/CalARP and Energy Commission Toxic Endpoints

RESULTS USING SCREEN3:

TANK SCENARIO 1 (1.5 m/sec wind speed, F stability, 73.8 sq ft pool)

Receptor	Airborne (µg/m3)	Concentration (ppm)	Distance (feet)	Distance (meters)
PMI	3.90E+05	562	46	14
IDLH	2.08E+05	300	94	29
Fenceline (east)	1.21E+05	174	131	40
ERPG-2	1.04E+05	150	143	44
Energy Commission	5.20E+04	75	210	64
Odor threshold	1.39E+03	2	1,522	464

Source: staff modeling

Mitigation

The potential for accidents resulting in the release of hazardous materials is greatly reduced through implementation of a safety management program that would include the use of both engineering and administrative controls. Elements of both facility controls and the safety management plan are summarized below.

Engineering Controls

Engineering controls help to prevent accidents and releases (spills) from moving off site and affecting communities by incorporating engineering safety design criteria in the design of the project. The engineered safety features proposed by the applicant for use at the CVEUP project include:

- construction of secondary containment areas surrounding each of the hazardous materials storage areas (such as the secondary containment basin required by Condition of Certification **HAZ-4** for aqueous ammonia) designed to contain

accidental releases that might happen during storage or delivery plus the volume of fire suppression water associated with 20 minutes of operating;

- physical separation of stored chemicals in isolated containment areas separated by a noncombustible partition in order to prevent accidental mixing of incompatible materials, which could result in the evolution and release of toxic gases or fumes;
- installation of both an automatic sprinkler system and an exhaust system for indoor hazardous materials storage areas;
- construction of bermed containment areas surrounding the aqueous ammonia storage tank and the truck unloading area;
- process protective systems including continuous tank level monitors, automated leak detectors, temperature and pressure monitors, alarms, and emergency block valves.

Administrative Controls

Administrative controls also help prevent accidents and releases (spills) from moving off site and affecting neighboring communities by establishing worker training programs, process safety management programs, and complying with all applicable health and safety laws, ordinances, and standards.

A worker health and safety program will be prepared by the applicant and include (but not be limited to) the following elements (see the **Worker Safety and Fire Protection** section for specific regulatory requirements):

- worker training regarding chemical hazards, health and safety issues, and hazard communication;
- procedures to ensure the proper use of personal protective equipment;
- safety operating procedures for the operation and maintenance of systems utilizing hazardous materials;
- fire safety and prevention; and
- emergency response actions including facility evacuation, hazardous material spill clean-up, and fire prevention.

At the facility, the project owner will be required to designate an individual with the responsibility and authority to ensure a safe and healthful work place. The project health and safety official will oversee the health and safety program and have the authority to halt any action or modify any work practice to protect the workers, facility, and the surrounding community in the event of a violation of the health and safety program.

The applicant will also prepare a risk management plan for aqueous ammonia, as required by both CalARP regulations and Condition of Certification **HAZ-2**. This condition also includes the requirement for a program for the prevention of accidental releases and responses to an accidental release of aqueous ammonia. A hazardous materials business plan will also be prepared by the applicant that would incorporate state requirements for the handling of hazardous materials (MMC 2007b, Section

5.5.2.3.2). Other administrative controls would be required in proposed Conditions of Certification **HAZ-1** (limitations on the use and storage of hazardous materials and their strength and volume) and **HAZ-3** (development of a safety management plan).

On-Site Spill Response

In order to address the issue of spill response, the facility will prepare and implement an emergency response plan that includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, and prevention equipment and capabilities, as well as other elements. Emergency procedures will be established which include evacuation, spill cleanup, hazard prevention, and emergency response.

The San Diego City and County Department of Environmental Health Hazardous Materials Incident Response Team (DEH-HIRT) would be the responder to hazardous materials incidents. The DEH-HIRT is capable of handling any hazardous materials-related incident at the proposed facility and would respond from two stations; Station No. 44, located at 10011 Black Mountain Road in San Diego, about 21 miles from the CVEUP site, and the San Diego County Station located at 1255 Imperial Avenue, about 15 miles from the site (MMC 2007b, Sections 5.5.2.5 and 5.10.1.6.3). Staff finds that the DEH-HIRT teams are capable of responding to a hazardous materials emergency call from CVEUP with an adequate response time.

Transportation of Hazardous Materials

Hazardous materials including aqueous ammonia will be transported to the facility by tanker truck. While many types of hazardous materials will be transported to the site, staff believes that transport of aqueous ammonia poses the predominant risk associated with hazardous materials transport.

Staff reviewed the applicant's proposed transportation routes for hazardous materials delivery. Trucks would travel on either I-5 or I-805 to Main Street. This would involve traveling one section of Main Street from I-805 for approximately 1.0 miles east of the project site or approximately 1.5 miles from I-5 on the part of Main Street located to the west of the project site (MMC 2007b, Section 5.5.2.2). The nearest school to the proposed CVEUP site (Otay Elementary) is located just off Main Street (at the intersection with Albany Street) which is not directly along the transportation route but is within approximately 350 feet of Main Street (MMC 2007b, Section 5.5.2.6). However, staff agrees with the applicant that there is no feasible or superior alternative route for the transport of hazardous materials to the facility other than Main Street.

Ammonia can be released during a transportation accident and the extent of impact in the event of such a release would depend upon the location of the accident and the rate of dispersion of ammonia vapor from the surface of the aqueous ammonia pool. The likelihood of an accidental release during transport is dependent upon three factors:

- the skill of the tanker truck driver;
- the type of vehicle used for transport; and
- accident rates.

To address this concern, staff evaluated the risk of an accidental transportation release in the project area. Staff's analysis focused on the project area after the delivery vehicle leaves the main highway (I-5 or I-805). Staff believes it is appropriate to rely upon the extensive regulatory program that applies to the shipment of hazardous materials on California highways to ensure safe handling in general transportation (see Federal Hazardous Materials Transportation Law 49 USC §5101 et seq, DOT regulations 49 CFR subpart H, §172–700, and California Department of Motor Vehicles (DMV) regulations on hazardous cargo). These regulations also address the issue of driver competence. See AFC section 5.12 for additional information on regulations governing the transport of hazardous materials.

To address the issue of tanker truck safety, aqueous ammonia will be delivered to the proposed facility in DOT-certified vehicles with design capacities of 6,500 gallons. These vehicles will be designed to DOT Code MC-307. These are high-integrity vehicles designed to haul caustic materials such as ammonia. Staff has, therefore, proposed Condition of Certification **HAZ-5** to ensure that, regardless of which vendor supplies the aqueous ammonia, delivery will be made in a tanker that meets or exceeds the specifications described by these regulations.

To address the issue of accident rates, staff reviewed the technical and scientific literature on hazardous materials transportation (including tanker trucks) accident rates in the United States and California. Staff relied on six references and three federal government databases to assess the risk of a hazardous materials transportation accident.

Staff used the data from the Davies and Lees (1992) article, which references both the 1990 Harwood et al. and 1993 Harwood studies, to determine that the frequency of release for the transportation of hazardous materials in the U.S. is between 0.06 and 0.19 releases per 1,000,000 miles traveled on well-designed roads and highways. The maximum use of aqueous ammonia each year of the operation of the proposed CVEUP project will require about 18 tanker truck deliveries of aqueous ammonia per year (one delivery every two to three weeks as stated by the applicant at the January 17, 2008 Data Response Workshop), each delivering about 6,500 gallons. Each delivery will travel approximately 1.0 miles from I-805 or approximately 1.5 miles from I-5 along Main Street to the facility.

This would result in about 18 miles or 27 miles of delivery tanker truck travel in the project area per year (with a full load) for trucks arriving from I-805 or I-5, respectively. Staff believes that the risk over this distance is insignificant. Data from the U.S. DOT show that the actual risk of a fatality over the past five years from all modes of hazardous material transportation (rail, air, boat, and truck) is approximately 0.1 in 1,000,000.

In addition, staff used a transportation risk assessment model (developed by staff) in order to calculate the probability of an accident resulting in a release of a hazardous material due to delivery from the freeway to the facility along Main Street. Results show a risk of 0.5 in 1,000,000 for one trip from I-805 and a risk of 0.8 in 1,000,000 for one trip from I-5. The total annual risk would be 14 in 1,000,000 and 42 in 1,000,000 for 19 deliveries from I-805 and I-5, respectively. This risk was calculated using accident rates

on various types of roads (in this case, urban multilane undivided) with distances traveled on each type of road computed separately. Although it is an extremely conservative model in that it includes risk of accidental release from all modes of hazardous materials transportation and does not distinguish between a high-integrity steel tanker truck and other less secure modes, the results still show that the risk of a transportation accident is insignificant.

Staff therefore believes that the risk of exposure to significant concentrations of aqueous ammonia during transportation to the facility is insignificant because of the remote possibility that an accidental release of a sufficient quantity could be dangerous to the public. The transportation of similar volumes of hazardous materials on the nation's highways is neither unique nor infrequent. Staff's analysis of the transportation of aqueous ammonia to the proposed facility (along with data from the U.S. DOT) demonstrates that the risk of accident and exposure is less than significant.

In order to further ensure that the risk of an accident involving the transport of aqueous ammonia to the power plant is insignificant, staff proposes an additional administrative control in proposed Condition of Certification **HAZ-6** that would require the use of only one specific route to the site, that being the shortest route from an interstate (I-805 west on Main to the facility). Also, in response to concerns raised by the public, staff is including a requirement within **HAZ-6** that deliveries of aqueous ammonia be scheduled only during those times of the day when school buses are not present on the transportation route. The project owner would be required to coordinate those deliveries with any school in the area whose buses (or contractor buses) use the designated hazardous materials transportation route.

Based on the environmental mobility, toxicity, the quantities at the site, and frequency of delivery, it is staff's opinion that aqueous ammonia poses the predominate risk associated with both use and hazardous materials transportation. Staff concludes that the risk associated with the transportation of other hazardous materials to the proposed project does not significantly increase the risk of ammonia transportation.

Seismic Issues

It is possible that an earthquake could cause the failure of a hazardous materials storage tank. An earthquake could also cause failure of the secondary containment system (berms and dikes), as well as the failure of electrically controlled valves and pumps. The failure of all of these preventive control measures might then result in a vapor cloud of hazardous materials that could move off site and affect residents and workers in the surrounding community. The effects of the Loma Prieta earthquake of 1989, the Northridge earthquake of 1994, and the earthquake in Kobe, Japan, in January 1995, have all heightened concerns about earthquake safety.

Information obtained after the January 1994 Northridge earthquake showed that some damage was caused both to several large storage tanks and to smaller tanks associated with the water treatment system of a cogeneration facility. The tanks with the greatest damage, including seam leakage, were older tanks, while the newer tanks sustained displacements and failures of attached lines. Therefore, staff conducted an analysis of the codes and standards which should be followed when designing and building storage tanks and containment areas to withstand a large earthquake. Staff

also reviewed the impacts of the February 2001 Nisqually earthquake near Olympia, Washington, a state with similar seismic design codes as California. No hazardous materials storage tanks failed as a result of that earthquake. Referring to the sections on **Geologic Hazards and Resources** and **Facility Safety Design** in the AFC, staff notes that the proposed facility will be designed and constructed to the standards of the 2001 California Building Code for Seismic Zone 4 (MMC 2007b, Section 2.2.1.1.1). Therefore, on the basis of what occurred in Northridge with older tanks and the lack of failures during the Nisqually earthquake (with newer tanks), staff determined that tank failures during seismic events are not probable and do not represent a significant risk to the public.

Site Security

The applicant proposes to use hazardous materials identified by the U.S. EPA as requiring the development and implementation of special site security measures to prevent unauthorized access. The U.S. EPA published a Chemical Accident Prevention Alert regarding site security (EPA 2000a), the U.S. Department of Justice published a special report entitled *Chemical Facility Vulnerability Assessment Methodology* (US DOJ 2002), the North American Electric Reliability Council published *Security Guidelines for the Electricity Sector* in 2002 (NERC 2002), and the U.S. Department of Energy (DOE) published the draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE 2002). The energy generation sector is one of 14 areas of critical infrastructure listed by the U.S. Department of Homeland Security. On April 9, 2007, the U.S Department of Homeland Security published in the Federal Register (6 CFR Part 27) an interim final rule requiring that facilities that use or store certain hazardous materials conduct vulnerability assessments and implement certain specified security measures. This rule was implemented with the publication of Appendix A, the list of chemicals, on November 2, 2007. While the rule applies to aqueous ammonia solutions of 20 percent or greater and this proposed facility plans to utilize a 19 percent aqueous ammonia solution, staff still believes that all power plants under the jurisdiction of the Energy Commission should implement a minimum level of security consistent with the guidelines listed here.

The applicant has stated that a security plan will be prepared for the proposed facility and will include a description of perimeter security measures and procedures for evacuating, notifying authorities of a security breach, monitoring fire alarms, conducting site personnel background checks, site access, and a security plan and background checks for hazardous materials drivers. Perimeter security measures utilized for this facility may include security guards, security alarms, breach detectors, motion detectors, and video or camera systems (MMC 2007b, Section 5.5.4.2.5).

In order to ensure that neither this project nor a shipment of hazardous material is the target of unauthorized access, staff's proposed Conditions of Certification **HAZ-7** and **HAZ-8** address both construction security and operation security plans. These plans would require implementation of site security measures consistent with the above-referenced documents.

The goal of these conditions of certification is to provide for the minimum level of security for power plants necessary for the protection of California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks.

The level of security needed for the CVEUP project is dependent upon the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of the consequences of that event. The results of the off-site consequence analysis prepared as part of the RMP will be used, in part, to determine the severity of consequences of a catastrophic event.

In order to determine the level of security, the Energy Commission staff used an internal vulnerability assessment decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002), the North American Electric Reliability Council's (NERC) 2002 guidelines, the U.S. DOE VAM-CF model, and the U.S. Department of Homeland Security regulations published in the Federal Register (Interim Final Rule 6 CFR Part 27). Staff determined that this project would fall into the category of medium vulnerability due to the urban setting and close proximity to sensitive receptors. Staff therefore proposes that certain security measures be implemented but does not propose that the project owner conduct its own vulnerability assessment.

These security measures include perimeter fencing and breach detectors, alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contacts in the event of a security breach. Site access for vendors shall be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors will have to maintain their transport vehicle fleet and employ only properly licensed and trained drivers. The project owner will be required, through the use of contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to the U.S. DOT 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 through personnel background security checks (as per 49 CFR Part 1572, Subparts A and B). The compliance project manager (CPM) may authorize modifications to these measures or may require additional measures in response to additional guidance provided by the U.S. Department of Homeland Security, the U.S. DOE, or the NERC, after consultation with both appropriate law enforcement agencies and the applicant.

CUMULATIVE IMPACTS AND MITIGATION

Staff analyzed the potential for the existence of cumulative impacts. A significant cumulative hazardous materials impact is defined as the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact where the release of one hazardous material alone would not cause a significant impact. Existing locations that use or store gaseous or liquid hazardous materials, or locations where such facilities might likely be built, were both considered. Staff believes that while cumulative impacts are theoretically possible, they are not probable because of the many safeguards implemented to both prevent and control an uncontrolled release. The chances of one uncontrolled release occurring are remote. The chance of two or more occurring simultaneously, with resulting airborne plumes mingling to create a significant impact, are even more remote. Staff believes the risk to the public is insignificant.

The applicant stated that there are no adjacent facilities to the CVEUP that use aqueous ammonia and that there are no proposed projects in the City of Chula Vista that plan to

use hazardous materials that may pose a risk of offsite impacts (MMC 2007b, Section 5.5.3). The applicant will develop and implement a hazardous materials handling program for CVEUP independent of any other projects considered for potential cumulative impacts. Staff believes that the facility, as proposed by the applicant and with the additional mitigation measures proposed by staff, poses a minimal risk of accidental release that could result in off-site impacts. It is unlikely that an accidental release that has very low probability of occurrence (about one in one million per year) would independently occur at the CVEUP site and another facility at the same time. Therefore, staff concludes that the facility would not contribute to a significant hazardous materials-related cumulative impact.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

There were several written and verbal comments received from the public on hazardous materials management issues. Staff is unaware of any agency comments on this issue.

The majority of comments on hazardous materials addressed a concern over the necessity and safety of using a 19 percent aqueous ammonia solution for selective catalytic reduction. Concerns were raised about the potential impacts of an accidental release of aqueous ammonia on site and during transport to the site. An ancillary concern was raised about the security of the site and whether an intruder could intentionally cause the release of ammonia that could impact the public.

Ms. Theresa Acerro, President of the Southwest Chula Vista Civic Association, made several written and verbal statements at the January 17, 2008 Data Response and Issues Resolution Workshop that were, in part, echoed by other members of the community. Ms. Acerro expressed concern over the toxicity of aqueous ammonia, accidental releases, historical use and releases at sites across the country, security, and safety of transportation in an urban environment where children, schools, and other sensitive receptors exist. Staff's response at the workshop was as follows:

> Staff thanks Ms. Acerro and the other members of the community for voicing their concerns about hazardous materials use and transport and specifically about aqueous ammonia use and transport. Staff welcomes the opportunity to provide additional information about the use of aqueous ammonia. Various sections of the PSA provide more detailed analysis but a summary of staff's analysis appears here. A water solution of ammonia is much safer than the pure form of ammonia – anhydrous ammonia – and has been used in Energy Commission certified power plants for decades without incident. In fact, no aqueous ammonia has been spilled from an on-site storage tank or piping system in an amount that caused any on-site or off-site impacts at CEC-certified power plants in California since the inception of the CEC. In fact, staff is unaware that any aqueous ammonia has leaked from a power plant system. This excellent safety record is due to the many stringent safety requirements imposed on any project owner and the commitment of the project owners to safety. Staff has conducted health-protective air dispersion modeling to identify potential risks should a spill occur and has imposed additional stringent safety requirements at those power plants. The combination of engineering controls, administrative controls, spill prevention, spill containment, and spill cleanup

response all serve to reduce the risk of harm to the public to well below the level of significance. All measures that can be done to protect the public are implemented. Additionally, a recent search of the federal hazardous materials transportation accident data base shows that no incidences involving a tanker truck carrying aqueous ammonia on the way to a CEC-certified power plant has ever occurred.

Many of the accidental releases the public has referenced involve the use or transport of anhydrous ammonia, not aqueous ammonia. Other accidents involve ammonia releases from old or improperly maintained refrigeration systems. These examples are not relevant to the use of aqueous ammonia at a gas-fired power plant. Staff does not deny that ammonia at certain concentrations is harmful to people. But it is the concentration and the duration of exposure – not the mere presence – that determines if harm will result.

Regarding the concern raised about the transportation of aqueous ammonia through the area, staff proposes that the applicant require that vendors take the shortest route from the freeway and that no deliveries be made during hours when the route is used by school buses.

Finally, staff wishes to reassure the public that the security of this power plant, if built, will be up to the level required by proposed condition **HAZ-8** and will be consistent with that proposed by the U.S. Department of Homeland Security. This includes perimeter protection and breach detection.

Intervener Environmental Health Coalition requested that a review be made of the potential use of SCONOx to control stack emissions of oxides of nitrogen. The use of this technology would obviate the need for the use, storage, and transportation of aqueous ammonia. Staff's response was as follows:

Staff reviewed the state of SCONOx technology and determined that it may not be ready for use at this time. The SCONOx system is an alternative to the use of ammonia to control NOx emission from exhaust. This technology uses one catalyst for the reduction of both NOx and CO, with zero ammonia slip (Czarnecki 2000). Industry claims that SCONOx can provide ammonia-free NOx emission reduction to levels below 2 ppm, and be successfully used in applications in the 5 to 500 MW range (EmeraChem 2002). SCONOx works by simultaneously oxidizing CO to CO_2 and NO to NO_2, and absorbing NO_2 on the surface of the catalyst by using a reaction with the potassium carbonate coating of the catalyst. This reaction produces potassium nitrites and nitrates that build up on the surface of the catalyst and cause the need to regenerate it periodically to maintain maximum NOx absorption rates.

SCONOx technology has been mostly used on small scale units, but a scaled-up system for use in 100 MW units and greater has been designed.

Some of the facilities that use SCONOx include:

- 32 MW turbine at the Federal Cogeneration facility in LA, installed 1996
- 25 MW facility at University of California, San Diego installed 2001

- 25 MW City of Vernon power plant
- an industrial facility in Massachusetts (unknown MWs)
- 43 MW CTG at Redding Power Plant

Although SCONOx technology has not been used at larger scale facilities (500 MW), there is conjecture in the literature by EPA and the South Coast Air Quality Management District (SCAQMD) that the SCONOx technology can be scaled up to a larger facility and still achieve the same NOx emission reduction. This has not yet been proven and EPA staff has indicated that using SCONOx on larger scale facilities may work but not be cost effective (EPA 2003).

SCONOx has been proposed for a couple of large-scale plants, such as Otay Mesa (500 MW), where the applicant (Calpine) eventually determined SCR would work best for that site, and Nueva Azalea (552 MW), where SCAQMD had issued a temporary permit accepting the SCONOx proposal, but the project was dropped due to public opposition to the entire project (SCAQMD 2003a and 2003b).

Some of the drawbacks of SCONOx are:

- it has not been tested in larger facilities and therefore claims of application and efficiency remain unproven
- it is more costly than SCR to install and operate
- the companies that sell it are smaller than SCR companies, with less money to take care of major problems if they occur at larger facilities
- it has a very sensitive catalyst that is regenerated using hydrogen
- NOx emissions gradually rise over time requiring a 1 to 2-day shutdown every 6-12 months (depending on fuel quality and operation) to remove and regenerate the absorption modules off-site.

Staff has evaluated the use of SCONOx, including reviewing the California Air Resources Board document *"Guidance for the Permitting of Electrical Generation Technologies, 2001"*. Staff has also independently determined that the use of SCONOx at the Redding Power Plant (which uses SCONOx on its 43 MW CTG) shows that the catalyst must be removed and washed at least twice a year to maintain control efficiency. This cleaning process requires a shutdown of the unit; thus, SCONOx would not be acceptable for a power plant like CVEUP that needs to maintain reliability. Any requirement for a one to two-day shutdown for cleaning every 6-12 months in order to maintain maximum levels of NOx control might impair the plant's ability to operate when needed. Therefore, staff concludes that the use of SCONOx technology for this project may not be viable. Furthermore, staff has determined that the risks associated with the use, storage, and transportation of aqueous ammonia will not result in a significant risk and thus staff cannot require further mitigation or alternative technologies absent a significant risk.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that construction and operation of the CVEUP project would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts in the area of hazardous materials management.

CONCLUSIONS

Staff's evaluation of the proposed project (with proposed mitigation measures) indicates that hazardous material use will pose no significant impact to the public. Staff's analysis also shows that there will be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable LORS. In response to Health and Safety Code, section 25531 et seq., the applicant will be required to develop a Risk Management Plan (RMP). To ensure the adequacy of the RMP, staff's proposed conditions of certification require that the RMP be submitted for concurrent review by the San Diego County Department of Environmental Health, Hazardous Materials Division and by Energy Commission staff. In addition, staff's proposed conditions of certification require the review and approval of the RMP by staff prior to the delivery of any hazardous materials to the facility. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia, in addition to site security matters.

Staff recommends that the Energy Commission impose the proposed conditions of certification, presented herein, to ensure that the project is designed, constructed, and operated to comply with all applicable LORS and to protect the public from significant risk of exposure to an accidental ammonia release. If all mitigation proposed by the applicant and staff are required and implemented, the use, storage, and transportation of hazardous materials will not present a significant risk to the public.

Staff proposes eight conditions of certification mentioned throughout the text (above), and listed below. Condition of Certification **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in **Appendix B** of the staff assessment, unless there is prior approval by the Energy Commission compliance project manager. Condition of Certification **HAZ-2** requires that an RMP be prepared and submitted prior to the delivery of aqueous ammonia.

Staff believes that an accidental release of aqueous ammonia during transfer from the delivery tanker to the storage tank is the most probable accident scenario and therefore proposes Condition of Certification (**HAZ-3**) requiring the development of a safety management plan for the delivery of all liquid hazardous materials, including aqueous ammonia. The development of a safety management plan addressing the delivery of all liquid hazardous materials during construction, commissioning, and operations will further reduce the risk of any accidental release not addressed by the proposed spill-prevention mitigation measures and the required RMP. This plan would additionally prevent the mixing of incompatible materials that could result in toxic vapors. Condition of Certification **HAZ-4** requires that the aqueous ammonia storage tank be designed to

certain rigid specifications and that the present secondary containment basin be used. The transportation of hazardous materials is addressed in Conditions of Certification **HAZ-5** and **HAZ-6**. Site security during both the construction and operations phases is addressed in Conditions of Certification **HAZ-7** and **HAZ-8.**

PROPOSED CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous materials not listed in Appendix B, below, or in greater quantities or strengths than those identified by chemical name in Appendix B, below, unless approved in advance by the Compliance Project Manager (CPM).

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

HAZ-2 The project owner shall concurrently provide a Business Plan and a Risk Management Plan (RMP) prepared pursuant to the California Accidental Release Program (CalARP) to the San Diego County Department of Environmental Health, Hazardous Materials Division (HMD) and the CPM for review. After receiving comments from the San Diego County DEH HMD and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Business Plan and RMP shall then be provided to the San Diego County DEH HMD for information and to the CPM for approval.

Verification: At least thirty (30) days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Business Plan to the CPM for approval. At least thirty (30) days prior to delivery of aqueous ammonia to the site, the project owner shall provide the final RMP to the Certified Unified Program Agency for information and to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and other liquid hazardous materials by tanker truck. 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 incompatible hazardous materials including provisions to maintain lockout control by a power plant employee not involved in the delivery or transfer operation. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least thirty (30) days prior to the delivery of any liquid hazardous material to the facility, 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 tank with secondary containment basin and the bermed tanker truck transfer pad that drains into a subsurface vault presently on site shall be used by the project owner. The secondary containment basin shall be certified by the project owner as being capable of

holding 125 percent of the storage volume or the storage volume plus the volume associated with 24 hours of rain assuming a 25-year storm.

Verification: At least thirty (30) days prior to delivery of aqueous ammonia to the facility, the project owner shall submit the required certification to the CPM for approval.

HAZ-5 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 thirty (30) days prior to receipt of aqueous ammonia on site, 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-6 At least thirty (30) days prior to receipt of any hazardous materials on site, the project owner shall direct all vendors delivering any hazardous material to the site to use only the route approved by the CPM. Trucks will travel on I-805 to Main Street to the plant site. The project owner shall obtain approval of the CPM if an alternate route is desired. The project owner shall also consult with any school in the area where school buses use the designated hazardous materials transportation route and shall prohibit through contractual language the transportation of aqueous ammonia to the site that would coincide with school bus traffic along the approved route.

Verification: At least thirty (30) days prior to receipt of any hazardous materials on site, the project owner shall submit to the CPM for review and approval copies of 1) notices to hazardous materials vendors describing the required transportation route, 2) the contract with the aqueous ammonia vendor describing the time of day limitation on deliveries, and 3) evidence that schools in the area who use the transport route have been consulted.

HAZ-7 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Security Plan shall include the following:

1. perimeter security consisting of fencing enclosing the construction area;
2. security guards;
3. site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
4. written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on site or off site;
5. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and
6. Evacuation procedures.

Verification: At least thirty (30) days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-8 The project owner shall also prepare a site-specific security plan for the commissioning and operational phases that will be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. permanent full perimeter fence or wall, at least 8 feet high;

2. main entrance security gate, either hand operated or motorized;

3. evacuation procedures;

4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;

5. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;

6. A. a statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;

   B. a statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner), that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractors who visit the project site;

7. site access controls for employees, contractors, vendors, and visitors;

8. a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;

9. closed circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate and the ammonia storage tank; and

10. additional measures to ensure adequate perimeter security consisting of either:

    a. security guard(s) present 24 hours per day, 7 days per week;

    or

    b. power plant personnel on site 24 hours per day, 7 days per week, and **all** of the following:

        1. the CCTV monitoring system required in item 9, above, shall include cameras able to pan, tilt, and zoom; that have low-light capability, are recordable, and are able to view 100 percent of the perimeter fence, the ammonia storage tank, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; **and**

        2. perimeter breach detectors **or** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical power plant components—transformers, gas lines, and compressors—depending upon circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with both appropriate law enforcement agencies and the applicant.

Verification: At least thirty (30) days prior to the initial receipt of hazardous materials on site, the project owner shall notify the CPM that a site-specific operations site security plan is available for review and approval. In the annual compliance report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and that updated certification statements have been appended to the operations security plan. In the annual compliance report, the project owner shall include a statement that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

SAMPLE CERTIFICATION (Attachment A)

Affidavit of Compliance for Project Owners

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company name)

for employment at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment B)

Affidavit of Compliance for Contractors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company name)

for contract work at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment C)

Affidavit of Compliance for Hazardous Materials Transport Vendors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B,

_____

(Company name)

for hazardous materials delivery to

_____

(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

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HAZARDOUS MATERIALS
Appendix A

Basis for Staff's Use of 75 Parts Per Million Ammonia Exposure Criteria

BASIS FOR STAFF'S USE OF 75 PARTS PER MILLION AMMONIA EXPOSURE CRITERIA

Staff uses a health-based airborne concentration of 75 parts per million (PPM) to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this level is not consistent with the 200-ppm level used by the U.S. Environmental Protection Agency and the California Environmental Protection Agency in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's analysis of the proposed project. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices and actions are implemented in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines states that "these values have been derived as planning and emergency response guidelines, **not** exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures for the entire population. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. California Environmental Quality Act requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL.

HAZARDOUS MATERIALS Appendix A Table-1
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH[2]	)SH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 minutes	Exposure above this level requires the use of "highly reliable" respiratory protection and poses the risk of death, serious irreversible Injury, or impairment of the ability to escape.
IDLH/10[1]	EPA, NIOSH	Work place standard adjusted for general population factor of 10 for variation in sensitivity	30 ppm	30 minutes	Protects nearly all segments of general population from irreversible effects.
STEL[2]	NIOSH	Adult healthy male workers	35 ppm	15 minutes, 4 times per 8-hour day	No toxicity, including avoidance of irritation.
EEGL[3]	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 minutes	Significant irritation, but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one-time exposure.
STPEL[4]	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 minutes 30 minutes 10 minutes	Significant irritation, but protects nearly all segments of general population from irreversible acute or late effects. One-time accidental exposure.
TWA[2]	NIOSH	Adult healthy male workers	25 ppm	8 hours	No toxicity or irritation on continuous exposure for repeated 8-hour work shifts.
ERPG-2[5]	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	200 ppm	60 minutes	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin).

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

** The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The WHO (1986) warned that the young, elderly, asthmatics, those with bronchitis, and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

REFERENCES FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1

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ABBREVIATIONS FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1

ACGIH, American Conference of Governmental and Industrial Hygienists
AIHA, American Industrial Hygienists Association
EEGL, Emergency Exposure Guidance Level
EPA, Environmental Protection Agency
ERPG, Emergency Response Planning Guidelines
IDLH, Immediately Dangerous to Life and Health Level
NIOSH, National Institute of Occupational Safety and Health
NRC, National Research Council
STEL, Short Term Exposure Limit
STPEL, Short Term Public Emergency Limit
TLV, Threshold Limit Value
WHO, World Health Organization

HAZARDOUS MATERIALS
Appendix B

Hazardous Materials Proposed for Use at the CVEUP

HAZARDOUS MATERIALS Appendix B
Hazardous Materials Proposed for Use at the CVEUP

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site	CERCLA SARA RQ[a]
Acytylene	47-86-2	Welding gas	Health: hazardous if inhaled Physical: combustible, flammable	300 pounds	NA
Aqueous Ammonia 19% Solution	7664-41-7	NO_X emissions control	Health: irritation to permanent damage from inhalation, ingestion, and skin contact Physical: reactive, vapor is combustible	10,200 gallons	100 pounds
Cleaning Chemicals/ Detergents	None	Periodic cleaning of combustion turbine	Health: various Physical: various	Up to 25 gallons or 100 pounds per chemical	NA
Hydraulic Oil	None	In combustion turbine and turbine control valve actuators	Health: hazardous if ingested Physical: may be flammable/combustible	150 gallons	42 gallons
Lubrication Oil	None	Lubricate rotating equipment	Health: hazardous if ingested Physical: may be flammable/combustible	400 gallons	42 gallons
Mineral Insulating Oil	8012-95-1	Transformers/switch yard	Health: hazardous if ingested Physical: may be flammable/combustible	550 gallons	42 gallons
Oxygen	7782-44-7	Welding gas	Health: skin irritant Physical: flammable	300 pounds	NA
Paint	Various	Touchup of painted surfaces	Health: various Physical: various	Up to 25 gallons or 100 pounds per type	NA
Propane	74-98-6	Torch gas	Health: causes frostbites Physical: flammable, oxidizing	100 pounds	NA
Sulfure Hexaflouride/ USEPA Protocol Gasses	2551-62-4	Calibration gasses	Health: hazardous if inhaled Physical: flammable	400 pounds	NA

Source: CVEUP 2007a Tables 5.5-1, 5.5-2, and 5.5-3

a. Reportable quantities for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act.

LAND USE

Negar Vahidi

SUMMARY OF CONCLUSIONS

The proposed Chula Vista Energy Upgrade Project, with the effective implementation of the recommended condition of certification, would be consistent with the applicable laws, ordinances, regulations, and standards pertaining to local land use planning and would not generate a significant impact under the California Environmental Quality Act guidelines with respect to the act's Appendix G issues, "Land Use and Planning" and "Agriculture Resources." Energy Commission staff believes that the proposed project is consistent with the current development pattern for the area established by the Chula Vista General Plan, Municipal Code, and Southwest Area Redevelopment Plan. In addition, the proposed Chula Vista Energy Upgrade Project would not be incompatible with existing on-site or nearby uses, as it is consistent with the general character of these permitted uses and the planned development pattern for the City's Main Street Industrial Corridor. Staff is proposing Condition of Certification **LAND-1** to ensure the project is constructed and operated in accordance with the City's minimum Limited Industrial zoning code standards, to the extent feasible.

INTRODUCTION

The land use analysis in the Chula Vista Energy Upgrade Project (CVEUP or "proposed project") Application for Certification (AFC) focuses on the project's consistency with land use plans, ordinances, regulations, and policies and the project's compatibility with existing or reasonably foreseeable land uses. In addition, a power plant and its related facilities generally have the potential to create impacts in the areas of air quality, noise, dust, public health, traffic and transportation, and visual resources. These individual resource areas are discussed in detail in separate sections of this document. The proposed CVEUP will use existing electrical transmission, natural gas, water service, and sanitary sewer pipelines and will not have any off-site facilities.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Land use LORS directly applicable to the proposed CVEUP site and construction laydown/worker parking area include the City of Chula Vista (City) General Plan and Municipal Code and the Chula Vista Redevelopment Plan. Other Land Use LORS applicable to lands surrounding the CVEUP site and laydown area include the Chula Vista Multiple Species Conservation Program (MSCP) Subarea Plan and the Otay Valley Regional Park Concept Plan. **LAND USE Table 1** provides a general description of land use LORS applicable to the proposed project. The project's consistency with these LORS is discussed in **LAND USE Table 4**.

LAND USE Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law[1]	Description
Federal	None
State	None
Local	
Chula Vista General Plan	The Chula Vista General Plan functions as the "constitution" for future growth and development. It consists of six elements, including the Land Use & Transportation Element, Economic Development Element, Housing Element, Public Facilities & Services Element, Environmental Element, and Growth Management Element. The elements of the general plan are closely interrelated. Each element must be internally consistent as well as consistent with one another. The Land Use and Transportation Element addresses the location and compatibility of land uses and provides for a planned pattern of land uses. The General Plan also includes three Redevelopment Plans for Chula Vista's Redevelopment project areas (see below).
Chula Vista Municipal Code	The Chula Vista Municipal Code consists of all of the regulatory and penal ordinances and certain administrative ordinances of the City, codified pursuant to the provisions of Sections 50022.1 through 50022.8 and 50022.10 of the Government Code. The Municipal Code includes the City's Subdivision Ordinance and Zoning Ordinance, including the Growth Management Ordinance. Zoning classifies the immediate, permissible uses of land and is one of the primary means of implementing the General Plan. The Chula Vista Zoning Ordinance divides the City into districts or zones specifying what uses are permitted, conditionally permitted, or prohibited within each zone.
Chula Vista Redevelopment Plan – Southwest Area Plan	The City of Chula Vista has three redevelopment plans encompassing redevelopment project areas. Redevelopment plans are implemented through a variety of means, including large to small scale projects, as well as focused strategic plans. The proposed CVEUP is located in the South Geographic Focus Area, which includes a myriad of land uses and historical development patterns. To create a comprehensive and consistent vision for the successful redevelopment of the South Geographic Focus Area, the Chula Vista Redevelopment Agency plans on preparing a Southwest Specific Plan, which would establish development standards and design guidelines consistent with the land use policies and objectives identified in the Southwest Area Plan of the General Plan, which currently details the objectives for the redevelopment area.
Otay Valley Regional Park Concept Plan	The Otay Valley Regional Park (OVRP) Concept Plan, adopted in May 2001, established a plan for multi-jurisdictional regional open space of 8,700 acres that will contain a substantial preserve area, active recreation, and passive park opportunities. Equestrian, hiking, and biking trails are anticipated. The park will extend through the Otay River Valley, from San Diego Bay to the Upper and Lower Otay Lakes. While

[1] The proposed CVEUP site and construction laydown/worker parking area are located within the boundaries of the City of Chula Vista and are not subject to land use LORS of the City of San Diego.

	the park is regional in scope, the provision of certain park and recreational facilities will effectively serve as local neighborhood and/or community parks for Chula Vista residents.
Chula Vista Multiple Species Conservation Program Subarea Plan[2]	The Multiple Species Conservation Program (MSCP) is a comprehensive, long-term habitat conservation plan developed to address the needs of multiple species and the preservation of natural vegetation communities in San Diego County. The MSCP Subregional Plan was adopted by the City of San Diego and San Diego County in 1997, and conditionally approved by the City of Chula Vista in October 2000. The MSCP Subregional Plan encompasses an area of approximately 580,000 acres and 12 local jurisdictions, including the City of Chula Vista. On May 13, 2003, the City of Chula Vista City Council and Planning Commission approved the City of Chula Vista MSCP Subarea Plan (Subarea Plan) and formally adopted it as part of the City's General Plan. The Subarea Plan is the policy document through which the MSCP Subregional Plan is implemented within the City's jurisdiction. The Subarea Plan provides the framework for habitat planning and specifically establishes areas of conservation and development within the Chula Vista MSCP Planning Area.

SETTING

PROJECT SITE

The proposed CVEUP site is 3.8 acres and is located within the City of Chula Vista (City) in southern San Diego County, California. The proposed project site is currently occupied by a 44.5-megawatt (MW) peaking power plant approved by the City in 2000 and purchased by MMC in 2006 (see the **Project Description** section for detailed information about the proposed CVEUP components).

The existing on-site facility occupies the southern portion of the proposed CVEUP site. The site is set back from the south side of Main Street approximately 835 feet, with access provided via a private easement located on the adjacent property to the east and along the eastern edge of the CVEUP site. Currently, this easement provides access to employee parking for the newly constructed light industrial buildings of the Chula Vista Commerce Center located immediately east of the project site.

The proposed project construction laydown/worker parking area is a 5.0-acre former pallet storage yard immediately south and west of the project site within the City. Currently, this parcel consists of vacant and undeveloped land. Lands located directly south of the proposed CVEUP site and directly west of the construction laydown area are located within the City of San Diego.

The Farm Land Mapping and Monitoring Program (FMMP) of the California Department of Conservation (CDC) provides statistics on conversion of farmland to nonagricultural uses for San Diego County where the CVEUP site is located. According to the FMMP "Important Farmlands" maps, the proposed CVEUP site and construction

[2] The **Biological Resources** section addresses consistency with the MSCP.

laydown/worker parking area are designated as “Urban and Built-Up Land” (CDC 2008). In addition, there is no land within one mile of the project site that is listed or mapped as classified farmland.

SURROUNDING AREA

Existing land uses immediately adjacent to, and nearby, the proposed CVEUP site include:

- The Chula Vista Commerce Center, which includes light industrial/commercial businesses directly adjacent to the east;
- The Advance Paint and Body shop located immediately east of the Chula Vista Commerce Center;
- South Bay Recycling located on the southeast corner of Main Street and Reed Court, adjacent to the auto body shop;
- A salvage yard and abandoned car wash directly adjacent to the north (between the CVEUP site and Main Street);
- San Diego Gas & Electric’s (SDGE’S) existing Otay Substation located on the northeast corner of Main Street and Albany Avenue;
- The Otay Recreation Center located directly to the east of the Otay Substation and adjacent to the north of Main Street;
- Otay Elementary School (built in February 1975) located immediately to the north and west of the Otay Substation, adjacent to the north side of the Otay Recreation Center, approximately 1,320 feet (0.25 miles) from the proposed CVEUP site;
- Single-family residences located along the north side of Main Street, west of Albany Avenue;
- A commercial warehouse directly adjacent to the west of the CVEUP site;
- Single-family residences located south of Main Street, west of the warehouse, and east of Del Monte Avenue, approximately 350 feet to the west of the CVEUP site; and
- The Otay Valley Regional Park directly adjacent to the south, located within the City of San Diego jurisdictional boundaries.

GENERAL PLAN LAND USE AND ZONING DESIGNATIONS

Project Site

The power plant site is located in the City of Chula Vista’s Main Street District of the Montgomery Subarea within the Southwest Area Plan, which is an area slated for redevelopment by the City. According to the City’s General Plan, “…the Southwest Planning Area has a grid street pattern and a diversity of land uses, including a mix of residential, commercial, and industrial businesses that, in some cases, have evolved over time without adequate planning, and have resulted in land use conflicts” (COCV 2005a, p. LUT-131). The Main Street District “functions as a commercial-industrial service area…” with the “…focus of limited industrial uses within western Chula Vista” (COCV 2005a, p. LUT-156).

The northern portion of the CVEUP site is designated “IL, Limited Industrial” under the Industrial Category (Section 4.9.5) in the City of Chula Vista General Plan Land Use Element (COCV 2005a, p. LUT-47). The Limited Industrial designation is intended for light manufacturing; warehousing; auto repair; auto salvage yards; and flexible-use projects that combine these uses with associated office space (COCV 2005a, p. LUT-53).

The southern portion of the CVEUP site has a General Plan land use designation of “OS, Open Space.” The Open Space designation is intended for lands to be protected from urban development, including floodplains, canyon, mountain, and agricultural uses. These lands may include unique natural conditions; provide scenic vistas; or be areas to be set aside that have potential exposure to hazards such as earthquakes; landslides; fires; floods; erosion; or even high levels of roadway noise. Passive recreation uses, such as trails, staging areas, scenic overlooks, and picnic areas, may occur within these areas (COCV 2005a, p. LUT-54).

The proposed construction laydown/worker parking area has a General Plan land use designation of “OSP, Open Space Preserve.” The Open Space Preserve designation is intended for areas designated within the Chula Vista Multiple Species Conservation Program (MSCP) Subarea Plan for the permanent conservation of biological resources. The various Preserve categories and locations of these lands are provided in the Chula Vista MSCP Subarea Plan (COCV 2005a, p. LUT-55).

The entire CVEUP site is zoned “ILP, Limited Industrial Precise Plan”[3] (CVMC 2008). Permitted uses in the I-L zone include, but are not limited to: manufacturing; wholesale businesses, storage and warehousing; laboratories; car washing establishments; electrical substations and gas regulator stations; and any other limited manufactured use which is determined by the City’s Planning Commission to be of the same general character as the other uses in this area.

The zoning designation for the construction laydown/worker parking area is “A70, Agricultural/County” with permitted uses including: agricultural uses; single-family dwellings; and accessory uses. In addition, according to the Chula Vista Municipal Code (CVMC) § 19.20.020, the agricultural zone allows for agricultural processing plants (per CVMC § 19.58.030), which process agricultural products produced on the premises or within a contiguous agricultural area, so located as to provide convenient trucking access with a minimum of interference to normal traffic and that shall provide parking and loading spaces.

The City of Chula Vista Redevelopment Agency issued a Special Use Permit in September 2000, to the existing 44.5-MW peaking power plant. According to information prepared by City staff and presented in the board packet that recommended approval of the Special Use Permit, “[t]he zoning on the currently vacant site (Limited Industrial) allows public and quasi public uses like a peak load power plant through a Special Use Permit… With the approval of the Special Use Permit (and the conditions listed in the Agency Resolution) the proposed project is determined to be consistent

[3] According to the City of Chula Vista, the proposed CVEUP site does “…not include a Precise Plan” (COCV 2008).

with the Zoning Ordinance, the Montgomery Specific Plan, and the General Plan of the City of Chula Vista" (COCV 2000).

Within One-Mile Radius of the Project Site

LAND USE Tables 2 and **3** describe the general plan and zoning designations within a one-mile radius of the proposed CVEUP site. AFC Land Use FIGURES 5.6-2 and 5.6-3 illustrate these designations. This information is presented to illustrate the local agencies' planned pattern of land use development in the project area.

LAND USE Table 2
General Plan Land Use Designations within a One-Mile Radius of the CVEUP Site

Jurisdiction	General Plan Land Use Designation*
City of Chula Vista	North: CR (Retail Commercial), IL (Limited Industrial), OS (Open Space), OSP (Open Space Preserve), PQ (Quasi-Public), PRK (Parks and Recreation), RLM (Low-Medium Residential), RM (Medium Residential), RMH (Medium-High Residential) South: OS (Open Space), OSP (Open Space Preserve) East: IL (Limited Industrial), OS (Open Space), OSP (Open Space Preserve), RH High Residential), RLM (Low-Medium Residential), RMH (Medium-High Residential) West: CR (Retail Commercial), IL (Limited Industrial), OS (Open Space), OSP (Open Space Preserve), PRK (Parks and Recreation), RLM (Low-Medium Residential)
City of San Diego[4]	South: OS (Park, Open Space and Recreation), PUB (Institutional & Public and Semi-Public Facilities) RES (Residential) East: OS (Park, Open Space and Recreation)

[4] The proposed CVEUP site and construction laydown/worker parking area are located within the boundaries of the City of Chula Vista and are not subject to land use LORS of the City of San Diego.

LAND USE Table 3
Zoning Designations within a One-Mile Radius of the CVEUP Site

Jurisdiction	Zoning Designation*
City of Chula Vista	North: ILP (Limited Industrial-Precise Plan), IL (Limited Industrial), R17P (Single Family-7000 SF-PPL), R3L (Apartments Low Rise), CN (Neighborhood Commercial), R2T (Two Family-7000 SF/Townhomes), R2P (Two-Family Residential-7000 SF-Precise Plan), R1 (Single-Family-7000 SF), R3P12 Apartmetns-12 DU's-Precise Plan), R3GD (Garden Apartments-17 DU's-Design), R3P12 (Apartments-12 DUs-Precise Plan), MHP (Mobile Home Park Zone), R2P (Two Family-7000 SF-Precise Plan), R15P (Single-Family-5000 SF-PPL), CT (Thoroughfare Commercial), R3 (Apartments-32 DUs), R3P (Apartments-32 DUs-Precise Plan), CC (Central Commercial), CCP (Central Commercial-Precise Plan) South: A70 (Agricultural/County) East: ILP (Limited Industrial-Precise Plan), IL (Limited Industrial), R2P (Two-Family Residential-7000 SF-Precise Plan), R1 (Single-Family-7000 SF), R3P8 (Apartments-8 DUs-Precise Plan), R15P (Single-Family-5000 SF-PPL), R2 (Two Family-7000 SF), R1P7 (Single Family-7 DUs/Acre), R8P7(Eight Units/acre Plan 7000 SF) West: ILP (Limited Industrial-Precise Plan), R16P (Single Family-6000 SF-PPL), MHP (Mobile Home Park Zone), CCP (Central Commercial-Precise Plan), CTP (Thoroughfare Commercial-Precise Plan), S94 (Special Zones/County)
City of San Diego[5]	South: AR-1-1 (Agricultural-Residential-minimum 10-acre lots), AR-1-2 (Agricultural-Residential-minimum 1-acre lots), CC-1-3 (Community Serving Commercial), CC-2-3 (Commercial Community), OF-1-1 (Open Space Floodplain), RM-1-1 (Residential-Multiple Unit-3,000 sq. feet), RM-2-5 (Residential-Multiple Unit-1,500 sq. feet), RS-1-1 (Residential-Single Unit-40,000 sq. ft. lots), RS-1-2 (Residential-Single Unit-20,000 sq. ft. lots), RS-1-6 (Residential-Single Unit-6,000 sq. ft. lots), RS-1-7 (Residential-Single Unit-5,000 sq. ft. lots) East: AR-1-1 (Agricultural-Residential-minimum 10-acre lots), OF-1-1 (Open Space Floodplain)

*Source: MMC 2007b.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Energy Commission staff has analyzed the information provided in the AFC and has acquired information from other sources to evaluate consistency of the proposed CVEUP with applicable land use LORS and the proposed project's potential to have significant adverse land use-related impacts. In addition, conditions developed by staff to reduce any potential impacts to a less than significant level are provided, as well as discussion of the feasibility and enforceability of the recommended conditions of approval.

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Significance criteria used in this document are based on the California Environmental Quality Act (CEQA) Guidelines (CCR 2006) and performance standards or thresholds identified by the Energy Commission staff, based on applicable LORS and utilized by

[5] The proposed CVEUP site and construction laydown/worker parking area are located within the boundaries of the City of Chula Vista and are not subject to land use LORS of the City of San Diego.

other governmental regulatory agencies. An impact may be considered significant if the proposed project results in:

- Conversion of Farmland
  - Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
  - Conflict with existing zoning for agricultural use or a Williamson Act contract.
  - Other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural uses.
- Physical disruption or division of an established community.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project. This includes, but is not limited to, a General Plan, redevelopment plan, or zoning ordinance.
- Individual environmental effects, which, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable, compound, or increase other environmental impacts.

In general, a power plant and its related facilities may also be incompatible with existing or planned land uses, resulting in potentially significant impacts, if they create unmitigated noise, dust, or a public health or safety hazard or nuisance; results in adverse traffic or visual impacts; or precludes, interferes with, or unduly restricts existing or future uses. Please see other sections of this document, as noted, for a detailed discussion of any additional potential project impacts and recommended mitigation and conditions of certification.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Conversion of Farmland

According to the FMMP, the proposed CVEUP site is designated as “Urban and Built-Up Land” (CDC 2008). In addition, although the proposed construction laydown/worker parking area has a City of Chula Vista zoning designation of “A70, Agricultural/County,” the FMMP designation for this site is “Urban and Built-Up Land.” A former pallet storage yard, the site is currently vacant. Given the historic and current uses on site, and the FMMP designations for both sites, the proposed CVEUP would not convert any Farmland (i.e., with FMMP designations of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) to nonagricultural use. Neither the construction nor operational activities of the proposed project would result in any impacts to existing agricultural operations or foreseeable future agricultural use. In addition, the project site is not located in an area that is under a Williamson Act contract. Therefore, the proposed project would not result in the conversion of Farmland to non-agricultural use,

or conflict with existing agricultural zoning or Williamson Act contracts. The project would have no impact with respect to farmland conversion.

Physical Division of an Existing Community

The proposed CVEUP is located in the City of Chula Vista's Main Street District, which functions as a commercial-industrial service area within western Chula Vista (COCV 2005a, p. LUT-156). The power plant would be located entirely on private property, on an existing parcel with an existing peaker plant. Access to the site and the adjacent construction laydown/worker parking area would be through the existing driveway to the parking lot of the Chula Vista Commerce Center (an existing light industrial park). Therefore, no existing roadways or pathways would be blocked or removed from service due to the proposed CVEUP. In addition, no linear facilities would be constructed as a result of the proposed project, since the CVEUP would use existing linear infrastructure for electric, water, and sewer. Therefore, implementation of the proposed project would not result in any impacts associated with the physical division of an existing or established community.

Conflict with Any Applicable Habitat or Natural Community Conservation Plan

The **Biological Resources** section provides a detailed discussion of LORS applicable to wildlife and plants, including the proposed CVEUP's consistency with the San Diego MSCP. As discussed in the **Biological Resources** section, the proposed project will be consistent with the San Diego MSCP and the Chula Vista MSCP Subarea Plan with the boundary adjustment recommended by the USFWS, and discussed in the **Biological Resources Section**. Therefore, the proposed CVEUP would not conflict with the goals and policies of the MSCP.

Conflict with Any Applicable Land Use Plan, Policy, or Regulation

As required by California Code of Regulations, Title 20, Section 1744, Energy Commission staff evaluates the information provided by the project owner in the AFC (and any amendments), project design and operational components, and siting to determine if elements of the proposed project would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or that would normally have jurisdiction over the project except for the Energy Commission's exclusive authority. As part of the licensing process, the Energy Commission must determine whether a proposed facility complies with all applicable state, regional, and local LORS (Public Resources Code section 25523[d][1]). The Energy Commission must either find that a project conforms to all applicable LORS or make specific findings that a project's approval is justified even where the project is not in conformity with all applicable LORS (Public Resources Code section 25525). When determining LORS compliance, staff is permitted to rely on a local agency's assessment of whether a proposed project is consistent with that agency's zoning and general plan. On past projects, staff has requested that the local agency provide a discussion of the findings and conditions that the agency would make when determining whether a proposed project would comply with the agency's LORS, were they the permitting authority. Any conditions recommended by an agency are considered by Energy Commission staff for inclusion in the proposed conditions of certification for the project.

As part of staff's analysis of local LORS compliance, and specifically to determine the City's view on the project's consistency with its General Plan and zoning code, staff sent a letter to the City on December 27, 2007, detailing the LORS compliance issues associated with the proposed CVEUP. In the letter, staff pointed out that "[b]ased on the allowable uses of the proposed CVEUP site and laydown areas, a power plant (and associated activities) is not specifically listed as a permitted use or conditional use for the site and laydown areas" (CEC 2007). In addition, staff requested that the City provide its position on the proposed project's consistency with its General Plan, Zoning Ordinance, and other applicable LORS, including a Precise Plan or a "modifier" (if any).

On January 30, 2008, the City of Chula Vista provided a letter to the Energy Commission stating that the "City will require more time to respond definitively to the CEC's questions regarding the specific Land Use questions asked in the CEC's December 27, 2007 correspondence,…" because the "…Chula Vista City Council has not taken an official position on the proposed project" (COCV 2008). In addition, the letter stated that "City Staff believes that they and the City Council need to receive the facts that will be established and analyzed under the CEC Staff Assessment Process before the City can provide informed answers to the questions asked by the community, the CEC and the Applicant" (COCV 2008). The City did not provide any specific assessment of the proposed project's consistency with its General Plan and zoning code (i.e., CVMC). Therefore, staff has conducted a consistency analysis of the applicable City land use LORS without the benefit of the City's own interpretation of those LORS. The proposed project's compliance with applicable LORS is contained in **LAND USE Table 4** at the end of this subsection.

According to the City's letter, the existing on-site peaker facility was permitted under a Special Use Permit issued by the City of Chula Vista Redevelopment Agency under the direction of the Community Development Department (COCV 2008). Since the issuance of that Special Use Permit, the City's Community Development Department has been reorganized and the land use planning functions are now part of the City Planning Department, where that process is referred to as a Conditional Use Permit (CUP). The letter states, "[t]o the best of our knowledge, the original project did not include a Precise Plan. The City would require a CUP, OPA, Building permits and potentially Engineering grading, encroachment and demolition permits, and a recycling and solid waste diversion report if this project were being considered under the City's process" (COCV 2008). Based on this information, and the LORS consistency analysis conducted by staff, the proposed CVEUP is consistent with applicable land use LORS (see **LAND USE Table 4**) conditional upon the applicant's compliance with proposed Condition of Certification **LAND-1**.

LAND USE Table 4 provides the consistency of the proposed CVEUP with the applicable land use LORS adopted by the City of Chula Vista, as identified in **LAND USE Table 1**. A condition of certification has been proposed to make the project consistent with the LORS, if feasible. Staff has determined that the project would comply with all land use LORS with implementation of proposed Condition of Certification **LAND-1**. Staff has proposed Condition of Certification **LAND-1** as a means of verifying that the project, if certified, would be built, to the greatest extent feasible, in accordance with the City of Chula Vista's Municipal Code minimum Limited Industrial (I-L) zone standards.

LAND USE Table 4
Project Compliance with Adopted Land Use LORS

Applicable LORS	Description of Applicable LORS	Consistency	Basis for Consistency
Federal	None		
State	None		
Local			
City of Chula Vista General Plan: Chapter 5 - Land Use and Transportation Element – Policies (COCV 2005a)	LUT 1.1 - Ensure that land uses develop in accordance with the Land Use Diagram and Zoning code in an effort to attain land use compatibility.	YES (Conditional upon applicant's compliance with Condition of Certification **LAND-1**)	The proposed CVEUP would be developed on a site, which has a General Plan land use designation of I-L (in the northern portion of the site where the peaking units would be installed) and a zoning designation of ILP (for the entire site). Given the site's designations and the current on-site (i.e., peaker plant) and immediately surrounding land uses (auto salvage yard, light industrial/commercial warehouses, auto body shop, and electric substation), the proposed CVEUP is compatible with surrounding uses. In addition, in September 2000, the City conditionally approved the existing on-site 44.5-MW peaking power plant through a Special Use Permit and concluded that the "…project will represent an improvement for the area…" and "…it will contribute to the elimination of blighting influences, which furthers the goals and objectives of the Southwest Redevelopment Plan" (COCV 2000). Based on this information, and the fact that the proposed CVEUP represents the intensification or upgrade of the same exact existing on-site land use, staff concludes that the City views such a land use type to be appropriately sited at the proposed location and consistent with its goals and objectives for development consistent with its Land Use diagram. In addition, by issuing a Special Use Permit for the existing peaker plant, it is staff's interpretation that the City views a peaker power plant to be similar to the list of conditional uses permitted within the Limited Industrial zone as described in the City's Municipal Code (see below for a discussion of conditionally permitted uses in the I-L zone). Based on staff's review of the City's General Plan (including the Land Use Diagram) and zoning code, a power plant is not specifically listed as a permitted use or conditional use for the CVEUP site or construction laydown/worker parking area. However, given that the City issued a Special Use Permit for the previous peaking power plant, staff assumes that the proposed CVEUP would also require a Special Use Permit were it not for the exclusive authority of the Energy Commission to ensure compliance with the City's current Land Use Diagram and zoning code standards. Therefore, staff proposes Condition of Certification **LAND-1**, which requires the applicant to ensure that the proposed CVEUP is constructed and operated

Applicable LORS	Description of Applicable LORS	Consistency	Basis for Consistency
			in compliance with the City's requirements. Implementation of **LAND-1** would bring the proposed project into consistency with Policy LUT 1.1.
	LUT 5.6 - Allow for the revitalization and intensification of infill sites within the Northwest and Southwest Planning Areas, consistent with FAR limitations; and amend the Zoning Ordinance so that it does not inhibit appropriate infill development.	YES	The proposed CVEUP site currently consists of a 44.5-MW peaking power plant, which was conditionally permitted by the City's Redevelopment Agency in September 2000. Development of the proposed 100-MW peaking facility represents an intensification or upgrade of the same existing on-site land use consistent with this policy.
	LUT 6.8 - Require that any land use that handles, generates, and/or transports hazardous substances will not negatively impact existing or future sensitive receptors/land uses, as defined by state and federal regulations.	YES	Hazardous substances necessary for operation of the CVEUP will be stored on site. To ensure that the storage of such substances does not negatively impact sensitive receptors, the applicant has stated that it will obtain and comply with all necessary City Fire and County Health Department permits. Ammonia and water containment areas would be provided. The **Hazardous Materials Management** and **Public Health** sections provide analysis of this issue.
	LUT 7.3 - Require that commercial and industrial development adjacent to residential or educational uses be adequately screened and buffered to minimize noise, light, glare, and any other adverse impacts upon these uses.	YES	The proposed project would include fencing, sound barriers, and landscaping in order to ensure appropriate transitions between land uses. The proposed CVEUP is not immediately adjacent to any residential or educational uses. Any adverse visual or noise effects to nearby residential and educational uses will be minimized through fencing, sound abatement features, and landscaping. Lighting is proposed to be installed for security purposes and will be shielded to reduce glare. The **Visual Resources** and **Noise** sections provide a discussion of these impacts on surrounding uses.
<u>City of Chula Vista</u> Chapter 5 - Land Use and Transportation Element, Section 8.0 Southwest Area Plan (i.e., Redevelopment Plan policies)	LUT 45.5 - The City shall prepare, or cause to have prepared, a specific plan or plans, for the Main Street District area that address an increase in depth of Limited Industrial designated land uses on the north side of Main Street back to Zenith Street; establishes design and landscape guidelines and zoning-level standards; and	YES	Through implementation of policy LUT 45.5, the City seeks to maintain and further develop Main Street as an industrial corridor. According to the Land Use and Transportation Element, "…[t]he City will prepare an Implementation Program to define logical planning units within the overall Main Street District, and to assure establishment of … plans/regulations for the overall District and the identified planning units. The Implementation Program will also include interim provisions for the consideration of any projects within this area prior to completion and adoption of the applicable plan/regulations" (COCV 2005). Given that the proposed CVEUP is an upgrade to the existing on-site industrial use and is compatible with the

Applicable LORS	Description of Applicable LORS	Consistency	Basis for Consistency
(COCV 2005a)	addresses the interface of the Otay Valley Regional Park with land uses on or near Main Street.		industrial character of the surrounding area along Main Street, the proposed project is consistent with this policy.
	LUT 45.6 - Maintain Main Street primarily as a limited industrial corridor.	YES	The proposed CVEUP would be an upgrade to the existing on-site industrial use and would therefore help maintain the character of Main Street as an industrial corridor.
	LUT 45.14 - Require development adjacent to the Otay Valley Regional Park to orient buildings for maximum public access to open space and to provide compatible landscaping along the park's edge.	YES	The proposed project site abuts the Otay Valley Regional Park; however, given the industrial uses in the area and the absence of a public right-of-way, there is no access from the site to the Regional Park. The proposed project would site the peaker plant on the northern portion of the site away from the park and would provide native landscaping along the southern boundary of the site to ensure compatibility with the adjacent Regional Park.
City of Chula Vista Chapter 6 – Economic Development Element (COCV 2005b)	ED 1.3 - Encourage the preservation and expansion of existing industrial uses in areas designated as industrial.	YES	The proposed CVEUP would be the continuation and upgrade of an existing industrial use within an area of the City designated for industrial uses and along the Main Street industrial corridor. As such, the proposed project would be consistent with this policy.
City of Chula Vista Chapter 8 – Public Facilities & Services Element (COCV 2005c)	PFS 22.4 - Review energy facility requests and encourage siting and design techniques that minimize community impacts. Such techniques may include undergrounding facilities, where possible co-locating new facilities with existing utility infrastructure; locating facilities in non-residential areas…The development and operation of natural gas-fired plants within the City shall utilize "best available control technology"	YES	The intent of this policy is to implement the City's Objective PFS-22 (Ensure adequate energy supplies throughout Chula Vista) (COCV 2005c). Given the rapid rate of growth and development in the City and the region, the availability of adequate energy supplies represents one of the key issues facing the City. Development of the proposed CVEUP would provide the City with 100 MW of peaking power. The proposed project involves efficiency upgrades to an existing peaker power plant, on a site currently permitted for such a use (through a Special Use Permit), with connections to existing utility infrastructure. In addition, the CVEUP site is located in an area designated for industrial use, and the project includes landscaping enhancements as well as implementation of best available control technology (BACT) for air emissions. Therefore, the proposed CVEUP is consistent with this policy. The **Air Quality** section provides a discussion of

Applicable LORS	Description of Applicable LORS	Consistency	Basis for Consistency
	to the greatest extent practicable.		the proposed project BACT.
<u>City of Chula Vista</u> Chapter 9 – Environmental Element (COCV 2005d)	E 6.4 - Avoid siting new or re-powered energy generation facilities and other major toxic air emitters within 1,000 feet of a sensitive receiver, or the placement of a sensitive receiver within 1,000 feet of a major toxic emitter. The City's Environmental Element states, "A General Plan should seek to avoid the development of sensitive receptors in close proximity to land uses that pose a significant hazard to human health and safety, due to the quantity, concentration, or physical or chemical characteristics of the hazardous materials that they utilize, or the hazardous waste that they generate or emit" (p. E-7). The City's Environmental Element further acknowledges that "As development and redevelopment in Chula Vista continues, the potential exists for facilities that use, store, and handle hazardous materials and waste to be sited in locations where such activities may be incompatible with existing and planned surrounding land uses" (p.E-67).	YES	The CVEUP is proposed to be implemented on a site which is currently conditionally permitted by the City of Chula Vista to allow for a peaker power plant. Although the proposed project is within 1,000 feet of residential sensitive receptors, it represents an upgrade to a currently permitted and similar power plant use, which is compatible with the general land use character and development pattern of the surrounding area. Given the City's plans for maintaining and developing the Main Street area as an industrial corridor, the industrial pattern of development immediately surrounding the site, and the City's General Plan and zoning designations within a one-mile radius of the site, the implementation of the proposed CVEUP appears to be consistent with the City's goals and objectives for the pattern of development in the project area. The residential uses that are within 1,000 feet of the proposed CVEUP site existed in those locations prior to the City's decision to conditionally permit the existing on-site peaker plant. Based on the City's decision to issue such a permit to the same exact type of land use, staff concludes that the City does not define a peaker power plant as a "major toxic emitter," or a land use that poses "…significant hazard to human health and safety," and that it views such a land use type to be appropriately sited at the proposed location and consistent with its goals and objectives for development in the area. In addition, by issuing a Special Use Permit for the existing peaker plant, it is staff's interpretation that the City views a peaker power plant to be similar to the list of conditional uses permitted within the Limited Industrial Zone as described in the City's Municipal Code (see below for a discussion of conditionally permitted uses in the I-L zone). Also, please refer to the **Hazardous Materials Management** and **Public Health** sections.
	E 23.3 - Avoid siting industrial facilities and uses that pose a significant hazard to human health	YES	As discussed above for Policy E 6.4, staff's interpretation of the City's issuance of a Special Use Permit to the existing peaker power plant is that the City does not view such a use to pose a significant risk to human health

Applicable LORS	Description of Applicable LORS	Consistency	Basis for Consistency
	and safety in proximity to schools or residential dwellings.		and safety. It should be noted that the residential pockets that exist in the surrounding area existed prior to the City issuing the Special Use Permit for the existing peaker plant. Also, Otay Elementary School, which is the school in closest proximity (approx. 1,320 feet) to the proposed CVEUP site, was built in 1975 (OES 2008), 25 years prior to the City's issuance of the Special Use Permit for the existing peaker plant. Given that the proposed project is an upgrade to the existing and conditionally permitted peaker plant, and that it would not be defined (by the City) as a use that would pose a significant hazard to human health and safety, the CVEUP is consistent with this policy.
<u>City of Chula Vista</u> Municipal Code: Title 19, Zoning and Specific Plans	Title 19 of the City of Chula Vista's Municipal Code serves as the City's zoning ordinance, which is intended to implement the objectives and policies of the City's General Plan. Chapter 19.44 of the Municipal Code is directly related to the I-L, Limited Industrial Zone, and the permitted uses within that zone (CVMC 2006). The following sections are specifically applicable to the proposed project: • §19.44.020 - Permitted Uses identifies permitted uses, standards, and restrictions applicable to development in those areas zoned I-L. Permitted uses include: manufacturing; wholesale businesses; storage and warehousing; laboratories; truck/trailer sales establishments; material sales yards, service yards, and storage yards; minor auto repair; laundries; car wash; plumbing and heating shops; exterminating services; animal hospitals; pharmaceutical and	YES (Conditional upon applicant's compliance with Condition of Certification **LAND-1**)	An electric generating facility such as the proposed CVEUP is not specifically listed as a permitted or conditional use within the I-L zone. However, electric generating facilities are also not listed as a prohibited use in I-L zone. The existing on-site peaking facility was conditionally permitted within the I-L zone in 2000 by the City's Redevelopment Agency through a Special Use Permit, which is now referred to as a Conditional Use Permit by the City (COCV 2000). As described above under the section entitled **Conflict with Any Applicable Land Use Plan, Policy, or Regulation,** the City has stated that the proposed CVEUP would require a Conditional Use Permit if the project were being considered under the City's permitting process. Therefore, as discussed in detail above under the consistency analysis for LUT 1.1, because the proposed CVEUP represents the intensification or upgrade of an existing permitted use within the I-L zone, staff concludes that the City views such a land use type to be appropriately sited at the proposed location. In addition, by issuing a Special Use Permit (i.e., Conditional Use Permit) for the existing peaker plant, it is staff's interpretation that the City views a peaker power plant to be similar to the list of conditional uses permitted within the Limited Industrial zone as described in the City's Municipal Code Chapter 19.44. Therefore, the proposed CVEUP would be consistent with the City's zoning code conditional upon the applicant's compliance with **LAND-1,** which requires the applicant to comply with the conditions that the City would attach to the project if it were to issue a Conditional Use Permit similar to the existing on-site peaking facility.

Applicable LORS	Description of Applicable LORS	Consistency	Basis for Consistency
	•		
	• food product manufacturing; electrical substations and gas regulator stations; and any other limited manufactured use which is determined by the [Planning] commission to be of the same general character as the above uses. • §19.44.040 - Conditional Uses identifies the procedures for reviewing and conditioning projects requiring a conditional use permit before they can be approved in the I-L zone. Conditional uses include: machine shops and sheet metal shops; service stations; steel fabrication; restaurants; drive-in theaters; major auto repair, engine rebuilding and paint shops; commercial parking lots and garages; plastics and other synthetics manufacturing; building heights exceeding 45 feet; unclassified uses; trucking yards, terminals and distributing operations; retail sale of bulky items such as furniture and carpet; retail distribution centers; roof mounted satellite dishes; recycling collection centers; hazardous waste facilities; and brewing or distilling of liquors. • §19.44.050 - Prohibited Uses identifies uses that cannot be		

Applicable LORS	Description of Applicable LORS	Consistency	Basis for Consistency
	• sited within the I-L zone. Prohibited uses include manufacturing of uses and processes involving: asphalt, cement, charcoal and fuel briquettes; rubber, chemical and allied products; coal, coke and tar products; turpentine; stockyards; industrial metal; nitrating of cotton or other materials; and any other use which is determined by the [Planning] commission to be of the same general character as the above uses.		
	Chapter 19.20 addresses the Agricultural Zone (CVMC 2004). The purpose of the agricultural zone, including the A70/County zone, is intended to preserve agricultural land which may be suited for eventual development in urban uses. The following sections are specifically applicable to the proposed project: • §19.20.020 - Permitted Uses. Permitted uses include: agriculture, single-family dwelling; public parks; factory-built home/mobile home. • §19.20.030 - Accessory Uses and Buildings. Accessory uses/buildings associated with permitted uses, include: living quarters of persons regularly employed on the premises; guest houses; offices; private garages and parking areas; roadside stands; recreation areas; and stables and corrals.	YES	The construction laydown/worker parking area for the proposed CVEUP is located on a site to the southeast of the peaker site. This site has a City zoning designation of A70 (Agricultural/County). In the December 27, 2007 letter to the City, Energy Commission staff specifically asked for the City's interpretation of the laydown area's consistency with the A70 zone (CEC 2007). In the City's response letter, the City did not specifically address proposed project consistency with this zoning designation. Based on staff's interpretation of the uses outlined in the Chapter 19.20 (Agricultural Zone), the construction laydown/worker parking area would be consistent with the accessory uses described in §19.20.030 because the site would be used for storage of construction equipment and as a parking area for construction employees. In addition, the construction laydown/worker parking area would only be used temporarily during construction activities. Once construction is complete, the applicant would vacate the site. The proposed CVEUP would be consistent with the A70 zoning requirements.

Applicable LORS	Description of Applicable LORS	Consistency	Basis for Consistency
	• §19.20.040 - Conditional Uses. Conditional uses include: Poultry farms; kennels; riding stables; guest ranches; quarters for transient labor; electric substations and gas regulators; unclassified uses; tables and corrals; hay and feed stores; and plant nurseries. No prohibited uses are listed in Chapter 19.20.		
Otay Valley Regional Park (OVRP) Concept Plan	General Policies-apply to all elements of the Concept Plan throughout the park: • Encourage private development that occurs within or adjacent to OVRP to provide linkages with OVRP trails and, as appropriate, to provide open space, recreational facilities, staging and viewing areas in conjunction with the park (p. 35).	YES	The proposed project site abuts the park. However, given the industrial uses in the area and the absence of a public right-of-way, there is no access from the site to the regional park. The proposed project would site the peaker plant on the northern portion of the site away from the park and would provide native landscaping along the southern boundary of the site to ensure compatibility with the adjacent regional park.
	• (Interstate 5 to Interstate 805 Concept Plan Segment): This segment runs through a highly urbanized area. Regional access is available from Interstates 5 and 805 as well as a trolley station at Palm Avenue and Hollister Street. Local access is available from Palm Avenue, Main Street, Hollister Street, Beyer Boulevard and Beyer Way (p. 46).	YES	The proposed CVEUP would occur in the Interstate 5 to Interstate 805 Concept Plan Segment portion of the Concept Plan area. However, there are no policies for this segment directly applicable to the proposed project.

Applicable LORS	Description of Applicable LORS	Consistency	Basis for Consistency
Chula Vista Multiple Species Conservation Program Subarea Plan[6]	The MSCP Subarea Plan is a part of the City's General Plan. The Subarea Plan is the policy document through which the MSCP Subregional Plan is implemented within the City's jurisdiction. The Subarea Plan provides the framework for habitat planning and specifically establishes areas of conservation and development within the Chula Vista MSCP Planning Area.	YES	The LORS consistency analysis in the **Biological Resources** section provides a detailed discussion of the proposed CVEUP's compliance with the MSCP Subarea Plan.

[6] The **Biological Resources** section addresses consistency with the MSCP.

Land Use Compatibility

This section addresses the proposed project's physical compatibility with other existing land uses in the same setting. The proposed CVEUP would be located within the City's Main Street Industrial Corridor, in an area that supports several differing land use types ranging from single-family residences and schools to auto salvage yards and electric substations (see the "Setting" sub-section for a description). The proposed project site has a General Plan land use designation of I-L (Limited Industrial) on the northern portion of the site, and OS (Open Space) on the southern portion of the site, and the entire site is zoned for Limited Industrial (I-L) uses. The proposed CVEUP is physically compatible with other uses currently permitted on site (i.e., existing peaker plant) and immediately adjacent within the same land use and zoning designations. Surrounding properties are used primarily for auto salvage activities and storage, warehousing, and light industrial/commercial businesses. The current on-site use is a 44.5-MW peaking power plant, and the proposed project would represent an upgrade of the same existing on-site use to 100 MWs. Sensitive receptors such as residences and one elementary school are within 0.25 miles of the project site. As noted in the **LAND USE Table 4**, the primary purpose of the Limited Industrial General Plan land use and zoning designations is to identify and encourage industrial development in areas suitable for this type of use.

When a jurisdictional authority, such as the City of Chula Vista, establishes zoning designations to implement its general plan, it is that agency's responsibility to ensure the compatibility of adjacent zoning and permitted uses and incorporate conditions and restrictions that ensure those uses will not result in a significant adverse impact ("minimum of detriment") to surrounding properties. It is therefore assumed that permitted industrial uses, or those deemed equivalent to a permitted use (such as the proposed CVEUP), sited on properties zoned Limited Industrial within an Industrial Corridor, are compatible with surrounding uses and zoning districts. Those uses operating under a valid use permit would also be considered compatible.

Administrative or conditional use permitting requirements (see discussion in **LAND USE Table 4** above) and project reviews under CEQA are in place to evaluate the compatibility of projects that are not a permitted use or that have elements that may adversely impact public safety, the environment, or that could interfere with or unduly restrict existing and/or future permitted uses. As noted in the discussions above, the City conditionally approved the existing on-site 44.5-MW peaking power plant through a Special Use Permit (and the supporting CEQA Initial Study/Mitigated Negative Declaration) and concluded that the "…project will represent an improvement for the area…" and "…it will contribute to the elimination of blighting influences, which furthers the goals and objectives of the Southwest Redevelopment Plan" (COCV 2000). Based on this information, and the fact that the proposed CVEUP represents the intensification or upgrade of the same exact existing on-site land use, staff concludes that the City views such a land use type to be appropriately sited at the proposed location and consistent with its goals and objectives for development within the City's Main Street Industrial Corridor and the Southwest Redevelopment Area. In addition, by issuing a Special Use Permit for the existing peaker plant, it is staff's interpretation that the City views a peaker power plant to be similar to the list of conditional uses permitted within the Limited Industrial zone as described in the City's Municipal Code (see CCMC

consistency discussion in **LAND USE Table 4**), and that such a use would not pose a significant hazard to human health and safety. However, given that the City issued a Special Use Permit (i.e., Conditional Use Permit) for the previous peaking power plant, staff assumes that the proposed CVEUP would also require a Conditional Use Permit were it not for the exclusive authority of the Energy Commission to ensure compliance with the City's development requirements. Therefore, staff proposes Condition of Certification **LAND-1**, which requires the applicant to ensure that the proposed CVEUP is constructed and operated in compliance with the City's standards for project development within the I-L General Plan and Zoning designations.

The construction laydown/worker parking area site is currently highly disturbed vacant land, and the proposed project activities are consistent with the uses allowed under the site's A70/County zoning designation. In addition, project-related activities at this site are temporary and would only occur for the duration of construction activities. Upon completion of construction, the applicant would vacate the site. Therefore, land use impacts resulting from activities at the construction laydown/worker parking area would be less than significant. The **Traffic and Transportation** section provides a discussion of vehicular access to the proposed CVEUP and construction laydown/worker parking area.

Sensitive Receptors

A proposed siting location may be considered inappropriate if a new source of pollution or hazard is located within close proximity to a sensitive receptor. From a land use perspective, sensitive receptor sites are those locations where people who would be more adversely affected by pollutants, toxins, noise, dust, or other project-related consequence or activity are likely to live or gather. Children, those who are ill or immune-compromised, and the elderly are generally considered more at risk from environmental pollutants. Therefore, schools, along with day-care facilities, hospitals, nursing homes, and residential areas, are considered to be sensitive receptor sites for the purposes of determining a potentially significant environmental impact. Depending on the applicable code, close proximity is defined as "within 1000 feet" of a school (California Health & Safety Code §§42301.6–9) or within 0.25 miles of a sensitive receptor, under CEQA (CCR 2006; CCR 2008). Proximity is not necessarily the deciding factor for a potentially significant impact, but is the threshold generally used to require further evaluation.

As described in the "Setting" sub-section, Otay Elementary School is located approximately 1,325 feet (0.25 mile) northeast of the proposed CVEUP site across Main Street, immediately adjacent to the Otay Electric Substation. The Otay Elementary School was built in 1975 (OES 2008), well before Otay Substation and the existing on-site 44.5-MW peaking power plant were built. In addition, the school is located over 1,000 feet from the northern boundary of the CVEUP site. Given the existing permitted industrial uses surrounding the school, and the fact that the portion of Main Street to which the school is adjacent is a designated Industrial Corridor, the proposed project would not be incompatible from a land use perspective with this sensitive receptor.

Single-family residences are located approximately 350 feet west of the proposed CVEUP site and on the north side of Main Street, just west of Albany Avenue. These residential sensitive receptors are located within 1,000 feet of the proposed project site

and represent the only residentially zoned pocket (CVMC zoning of R16P) within a large area zoned I-L (see AFC Land Use **FIGURE 5.6-3**). Given the existing permitted uses surrounding these residences, such as Otay Substation, the Main Street Industrial Corridor (which runs through the residential zone) auto salvage yards, and commercial/light industrial businesses, the proposed project would not be considered an incompatible land use with the surrounding and nearby uses, including these sensitive receptors.

Although from a land use perspective, the siting of the CVEUP at the proposed location is not incompatible with nearby surrounding sensitive receptors, these sensitive receptors may experience project-related nuisance impacts such as construction-generated noise, dust, and traffic and operation-related public health impacts. The **Air Quality, Hazardous Materials Management, Noise, Public Health, Traffic and Transportation,** and **Visual Resources** sections provide detailed analyses of the noise, dust, public health hazards or nuisance and adverse traffic or visual impacts on surrounding sensitive receptors such as the school and residential uses.

Based on analyses cited in other sections of this document and considering the zoning and land use designations for the project site and surrounding locations, the proposed CVEUP would not result in a significant project-related impact at any sensitive receptor location.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (CCR 2006, §15065[A][3]).

As noted in the AFC §5.6.3, applications for 26 proposed projects have been filed with the City of Chula Vista. These are mostly residential development projects, with some commercial developments, one warehouse development, and one manufacturing development. One of these projects, a proposed sewing manufacturing and wholesale sales business, would be located within 1,000 feet of the proposed CVEUP. Nearby planned land uses, such as the proposed sewing manufacturing development, are consistent with the industrial nature of the local zoning and with the proposed CVEUP's power generation use.

The area in the vicinity of the proposed project site is essentially built out. The proposed CVEUP would be constructed on a site with an existing 44.5-MW peaking power plant and would represent a similar land use type to the existing on-site and immediately adjacent uses. The proposed project would not require a General Plan amendment, zoning amendment, or other changes or concessions that would alter the development standards, availability of permits, or use of the project site or surrounding properties.

The proposed CVEUP would not make a significant contribution to regional impacts related to new development and growth. The project is planned to serve the existing and anticipated electrical needs of the immediate project area by connecting to existing electric and other utility infrastructure. The land use effects of the proposed CVEUP in

combination with past, present, and reasonably foreseeable projects in the area would not be cumulatively considerable. Therefore, cumulative land use impacts would be less than significant.

CONCLUSIONS AND RECOMMENDATIONS

- The proposed project would not result in conversion of any Farmland (as classified by the FMMP) to non-agricultural use or conflict with existing agricultural zoning or Williamson Act contracts.
- The proposed project would not disrupt or divide the physical arrangement of an established community.
- As discussed in the **Biological Resources** section, the proposed project is consistent with the Chula Vista MSCP Subarea Plan and thus the San Diego Regional MSCP with the recommended corrections to the MSCP boundaries.
- Energy Commission staff believes that the project is consistent with the current development pattern for the area established by the Chula Vista General Plan, Municipal Code, and Southwest Area Redevelopment Plan. Staff is proposing Condition of Certification **LAND-1** to ensure the project is constructed and operated in accordance with the City's minimum Limited Industrial zoning code standards, to the extent feasible.
- The proposed CVEUP would not be incompatible with existing on-site or nearby uses, as it is consistent with the general character of these permitted uses and the planned development pattern for the City's Main Street Industrial Corridor.
- The proposed project's cumulative land use impacts would be less than significant.

If the California Energy Commission approves the project, staff is proposing Condition of Certification **LAND-1** to ensure the project is constructed and operated in accordance with the City's minimum Limited Industrial zoning standards, to the extent feasible.

PROPOSED CONDITION OF CERTIFICATION

LAND-1 The project owner shall ensure that the project and its associated facilities are constructed and operated in compliance with the City of Chula Vista's Limited Industrial (I-L) Zone requirements, such as height limits, minimum design and performance standards (such as air quality best available control technology and noise abatement measures), landscaping requirements, and other applicable municipal code requirements.

The project owner shall submit a development plan for the site to the City of Chula Vista in sufficient time for review and comment and to the Energy Commission's Compliance Project Manager (CPM) for review and approval prior to the proposed start of construction. The development plan shall include all elements normally required for review and permitting of a similar project, including site plan, structural dimensions, design and exterior elevation(s),

and proof of any required permits, such as building permits, engineering grading, encroachment, and demolition permits, and a recycling and solid waste diversion report (COCV 2008).

Verification: At least 90 calendar days prior to the start of construction, including any demolition, grading, or site remediation on the project site, the project owner shall submit the proposed development plan to the City of Chula Vista for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the City of Chula Vista.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from the local jurisdiction, along with any changes to the proposed development plan, to the CPM for review and approval.

REFERENCES

CCR 2006. California Code of Regulations, Title 14, Chapter 3 (CEQA Guidelines), §§15000-15387, as amended July 11, 2006.

CCR 2008. California Code of Regulations, Health & Safety Code, §§42301.6-42301.9. Site accessed at: http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=42001-43000&file=42300-42316. February 7, 2008.

CDC 2008. California Department of Conservation, Farmland Mapping and Monitoring Program. E-mail correspondence from Kerri Kisko, Associate Land and Water Use Scientist to Negar Vahidi, CEC Land Use Technical Specialist. Received January 28, 2008.

CEC 2007. California Energy Commission/P. Richins. CEC Land Use Issues letter to Assistant City Manager of City of Chula Vista, Scott Tulloch. December 27, 2007.

CEC 2008. California Energy Commission. Negar Vahidi, Land Use Technical Specialist. ROC (Report of Conversation) – City of Chula Vista Land Use Questions. January 11, 2008.

COCV 2000. City of Chula Vista Redevelopment Agency. Redevelopment Agency Agenda Statement Granting a Special Use Permit to Allow a Peak Load Power Plant on the Property Located at 3497 Main Street Within the Southwest Redevelopment Project Area. September 26, 2000.

COCV 2005a. City of Chula Vista General Plan. Chapter 5: Land Use and Transportation Element. Adopted on December 13, 2005: City Council Resolution Nos. 2005-424, 2005-425 & 2005-426.

COCV 2005b. City of Chula Vista General Plan. Chapter 6: Economic Development Element. Adopted on December 13, 2005: City Council Resolution Nos. 2005-424, 2005-425 & 2005-426.

COCV 2005c. City of Chula Vista General Plan. Chapter 8: Public Facilities & Services Element. Adopted on December 13, 2005: City Council Resolution Nos. 2005-424, 2005-425 & 2005-426.

COCV 2005d. City of Chula Vista General Plan. Chapter 9: Environmental Element. Adopted on December 13, 2005: City Council Resolution Nos. 2005-424, 2005-425 & 2005-426.

COCV 2008. City of Chula Vista. Scott Tulloch, Assistant City Manager and Michael T. Meacham, Director of Conservation & Environmental Services. Memo to CEC RE: Chula Vista Energy Upgrade Project; dated and received January 31, 2008.

CVMC 2004. City of Chula Vista Municipal Code. Title 19, Zoning and Specific Plans, Chapter 19.20, Agricultural Zone. Revised January 2004.

CVMC 2006. City of Chula Vista Municipal Code. Title 19, Zoning and Specific Plans, Chapter 19.44, I-L - Limited Industrial Zone. Revised August 2006.

CVMC 2008. City of Chula Vista Municipal Code. Title 19, Zoning and Specific Plans. E-Zone accessed on January 25, 2008 for APN 629-06-204. Accessed at: http://www.chulavistaca.gov/City_Services/Development_Services/Planning_Building/eZoning/eZoning1.asp

MMC 2007b. – Application for Certification for the Chula Vista Energy Upgrade Project, Volumes 1 and 2. Section 5.6, Land Use. Submitted to the California Energy Commission, August 10, 2007.

OES 2008. Otay Elementary School. Phone call from Negar Vahidi, CEC Land Use Technical Specialist to the School Administrative Office. February 1, 2008.

PRC 2005. Public Resources Code §25000 et seq (Division 15 - Warren-Alquist State Energy Resources Conservation and Development Act), Chapter 6 - Power Facility and Site Certification, §§25500-25543; September 2005.

NOISE AND VIBRATION

Steve Baker

SUMMARY OF CONCLUSIONS

California Energy Commission staff concludes that the Chula Vista Energy Upgrade Project can be built and operated in compliance with all applicable noise and vibration laws, ordinances, regulations, and standards and, if built in accordance with the conditions of certification proposed below, would produce no significant adverse noise impacts on people within the affected area, either direct, indirect, or cumulative.

INTRODUCTION

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 groundborne 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 construction and operation of the Chula Vista Energy Upgrade Project (CVEUP) and to recommend procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS) and to avoid creation of significant adverse noise or vibration impacts. For an explanation of technical terms and acronyms employed in this section, please refer to **NOISE Appendix A** immediately following.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

NOISE Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal (OSHA): 29 U.S.C. § 651 et seq.	**Protects workers from the effects of occupational noise exposure.**
State (Cal/OSHA): Cal. Code Regs., tit. 8, §§ 5095–5099	**Protects workers from the effects of occupational noise exposure.**
Local **City of Chula Vista General Plan Noise Element, Ch. 9, § 3.5 Noise**	**Table 9-2 establishes Exterior Land Use/Noise Compatibility Guidelines for different land uses.**
City of Chula Vista Municipal Code, Ch. 19.68, Noise Control Ordinance	**Table III establishes Exterior Noise Limits for different land uses. Section 19.68.060(C)(2) exempts construction and demolition work from these limits.**

FEDERAL

Under the Occupational Safety and Health Act of 1970 (29 USC § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure (29 CFR § 1910.95). These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **NOISE Appendix A, Table A4** immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

There are no federal laws governing off-site (community) noise.

The only guidance available for evaluation of power plant vibration is guidelines published by the Federal Transit Administration (FTA) for assessing the impacts of groundborne vibration associated with construction of rail projects. These guidelines have been applied by other jurisdictions to assess groundborne vibration of other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from groundborne vibration. The FTA measure of the threshold of perception is 65 VdB,[1] which correlates to a peak particle velocity of about 0.002 inches per second (in/sec).

[1] VdB is the common measure of vibration energy.

The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

STATE

California Government Code section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its General Plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The California Occupational Safety and Health Administration (Cal/OSHA) has promulgated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, §§ 5095–5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards (see the **Worker Safety and Fire Protection** section of this document, and **NOISE Appendix A, Table A4**).

LOCAL

City of Chula Vista General Plan Noise Element

Chapter 9 of the City of Chula Vista General Plan includes section 3.5, the Noise Element. The Noise Element includes Table 9-2, Exterior Land Use/Noise Compatibility Guidelines. Noise at residences, schools, and neighborhood parks is considered generally acceptable if it does not exceed 65 dBA[2] community noise equivalent level (CNEL); noise at offices and community parks is considered generally acceptable if it does not exceed 70 dBA CNEL; and noise at commercial and industrial receptors is considered generally acceptable if it does not exceed 75 dBA CNEL (COCV 2005).

City of Chula Vista Municipal Code

Chapter 19.68 of the City of Chula Vista Municipal Code addresses Noise Control. Section 19.68.030 sets exterior noise limits, which are summarized in Table III, Exterior Noise Limits (COCV 2007). Section 19.68.060(C)(2) exempts construction and demolition work from these limits. Table III is reproduced here as **NOISE Table 2**:

[2] For an explanation of technical terms and acronyms employed in this section, please refer to **NOISE Appendix A** immediately following.

NOISE Table 2: Exterior Noise Limits
Noise Level (dBA)

Receiving Land Use Category	10 p.m. to 7 a.m. Weekdays	**7 a.m. to 10 p.m. Weekdays**
	10 p.m. to 8 a.m. Weekends	**8 a.m. to 10 p.m. Weekends**
All residential (except multiple dwelling)	45	**55**
Multiple dwelling residential	50	**60**
Commercial	60	**65**
Light Industry	70	**70**
Heavy Industry	**80**	**80**

Source: COCV 2007, § 19.68.030, Table III

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA Guidelines (Cal. Code Regs., tit. 14, App. G) sets forth some characteristics that may signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

1. exposure of persons to, or generation of, noise levels in excess of standards established in the local General Plan or noise ordinance or applicable standards of other agencies;

2. exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

3. substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

4. substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission staff, in applying item 3 above to the analysis of this and other projects, has concluded that a potential for a significant noise impact exists where the noise of the project plus the background exceeds the background by 5 dBA or more at the nearest sensitive receptor.

Staff considers it reasonable to assume that an increase in background noise levels up to 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA is considered significant. An increase between 5 and 10 dBA should be considered adverse, but may be either significant or insignificant, depending on the particular circumstances of the case.

Factors to be considered in determining the significance of an adverse impact as defined above include:

1. the resulting combined noise level;[3]
2. the duration and frequency of the noise;
3. the number of people affected;
4. the land use designation of the affected receptor sites; and
5. public concern or controversy as demonstrated at workshops or hearings or by correspondence.

Noise due to construction activities is usually considered to be insignificant in terms of CEQA compliance if:

- the construction activity is temporary;
- use of heavy equipment and noisy activities are limited to daytime hours; and
- all industry-standard noise abatement measures are implemented for noise-producing equipment.

Staff uses the above method and threshold to protect the most sensitive populations, including the minority population.

SETTING

The CVEUP would be constructed on the vacant northern portion of the 3.8-acre Chula Vista Power Plant site in the City of Chula Vista, San Diego County. The site lies in an area of mixed industrial, commercial, residential, and recreational uses in the City of Chula Vista's Main Street Industrial Corridor, a district zoned Light Industrial. The Otay River Preserve bounds the southern portion of the site. The existing 44.5 MW Chula Vista Power Plant would be demolished and removed, leaving linear connections for water, sewer, natural gas, and electric transmission, along with an 18-foot high sound wall along the southern boundary of the site, for use by the CVEUP (MMC 2007b, AFC §§ 1.1, 1.1.1, 2.0, 2.1.1, 5.7.2.1).

The ambient noise regime in the project vicinity consists of the existing power plant, local industry, airplane and helicopter overflights, and traffic on local roads and freeways. The nearest sensitive noise receptors are residences 400 feet west and 1,000 feet north; a school 1,300 feet north-northeast; and the Otay River Preserve, adjacent to the southern site boundary (MMC 2007b, AFC § 5.7.2.1).

[3] For example, a noise level of 40 dBA would be considered quiet in many locations. A noise limit of 40 dBA would be consistent with the recommendations of the California Model Community Noise Control Ordinance for rural environments and with industrial noise regulations adopted by European jurisdictions. If the project would create an increase in ambient noise no greater than 10 dBA at nearby sensitive receptors, and the resulting noise level would be 40 dBA or less, the project noise level would likely be insignificant.

Ambient Noise Monitoring

In order to establish a baseline for comparison of predicted project noise to existing ambient noise, the applicant has presented the results of an ambient noise survey (MMC 2007b, AFC § 5.7.2.2; Tables 5.7-3, 5.7-4, 5.7-5; Figure 5.7-1). The survey was conducted on July 25 and 26, 2007, and monitored existing noise levels at the following locations, shown on **NOISE AND VIBRATION Figure 1**:

1. Measuring Location M-1: Near a residence at 3336 Alvoca Street, part of a residential neighborhood approximately 400 feet west of the site. This represents the nearest sensitive receptor, the one most likely to be impacted by project noise. Long-term (25-hour) monitoring showed ambient noise levels typical of an industrial neighborhood.

2. Measuring Location M-2: Near a residence at 160 Zenith Street, part of a residential neighborhood approximately 1,000 feet north of the site. Long-term (25-hour) monitoring showed ambient noise levels similar to those at M-1.

3. Measuring Location M-3: The southeast corner of the site. Long-term (25-hour) monitoring showed ambient noise levels representative of the Otay River Preserve.

NOISE Table 3 summarizes the ambient noise measurements (MMC 2007b, AFC Tables 5.7-3, 5.7-4, 5.7-5):

NOISE Table 3
Summary of Measured Ambient Noise Levels

Measurement Location	Measured Noise Levels, dBA		
	L_{eq} – Daytime[1]	L_{eq} – Nighttime[2]	L_{90} – Nighttime[3]
M-1: Nearest residence at 3336 Alvoca Street	51.0	43.9	36.5
M-2: Residence at 160 Zenith Street	49.7	46.8	42.5
M-3: Southeast corner of site	58.5	56.2	51.5

Source: MMC 2007b, AFC Tables 5.7-3, 5.7-4, 5.7-5
[1] Staff calculations of average of 15 daytime hours
[2] Staff calculations of average of 9 nighttime hours
[3] Staff calculations of average of 4 consecutive quietest hours of the nighttime

DIRECT IMPACTS AND MITIGATION

Noise impacts associated with the project can be created by short-term construction activities and by normal long-term operation of the power plant.

Construction Impacts and Mitigation

Construction noise is usually considered a temporary phenomenon. Construction of the CVEUP is expected to last between 8 and 12 months, typical of other simple cycle power plants in terms of schedule, equipment used, and other types of activities (MMC 2007b, AFC §§ 1.3, 2.1.14).

Compliance with LORS

Construction of an industrial facility such as a power plant is typically noisier than permissible under usual noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances. The City of Chula Vista Municipal Code exempts all construction and demolition noise from numerical noise limits, but restricts noise to certain hours of the day (see **NOISE Table 2**, above). The applicant offers to restrict construction and demolition work to the hours from 7 a.m. to 8 p.m. (MMC 2007b, AFC § 5.7.5.3); the Municipal Code requires noisy work to be delayed until 8 a.m. on weekends. Staff proposes Condition of Certification **NOISE-6**, below, to ensure that noisy construction is limited to these hours.

CEQA Impacts

Power Plant Site

To evaluate construction noise impacts, staff compares the projected noise levels to the ambient. Since construction noise typically varies continually with time, it is most appropriately measured by, and compared to, the L_{eq} (energy average) metric.

Aggregate construction noise may be expected to reach levels as high as 70 dBA L_{eq} at the residence at M-1. Comparing projected noise levels to the ambient noise levels at M-1 (see **NOISE Table 4**, below) shows an increase during daytime of 19 dBA. Such an increase represents a quadrupling of noise level and would generally be considered a significant impact. However, the projected levels are conservative, based on surveys of construction equipment taken 30 years ago. Modern construction equipment is quieter, so actual noise levels should be less than predicted. Since noisy construction work will be restricted to daytime hours, staff believes it will be noticeable, but tolerable, at the nearest residences.

The increase of construction noise over nighttime ambient noise levels at M-1 would be approximately 26 dBA. Such an increase represents nearly a tripling in noise level, and at night, when people are sleeping, would clearly prove annoying. For this reason, staff proposes Condition of Certification **NOISE-6**, below, to ensure that noisy construction is limited to the daytime hours between 7 a.m. and 8 p.m. weekdays and 8 a.m. to 8 p.m. weekends.

NOISE Table 4
Predicted Power Plant Construction Noise Impacts

Receptor	Highest Construction Noise Level[1] (dBA L_{eq})	Measured Existing Ambient[2] (dBA L_{eq})	Cumulative (dBA L_{eq})	**Change (dBA)**
M-1 — Nearest residence	70	51 daytime	70 daytime	**+19 daytime**
		44 nighttime	70 nighttime	**+26 nighttime**
M-2 — Residences to north	62	50 daytime	62 daytime	**+12 daytime**
		47 nighttime	62 nighttime	**+15 nighttime**
School to north-northeast	**60**	**—**	**60**	**—**

1 Source: MMC 2007b, AFC Table 5.7-7 and staff calculations
2 Source: MMC 2007b, AFC Table 5.7-3 and staff calculations of average of daytime and nighttime hours.

Construction noise at the school to the north-northeast of the site could reach 60 dBA. This is unlikely to present significant adverse impacts, since classroom walls, windows, and doors would provide substantial attenuation.

In the event that actual construction noise should annoy nearby residents, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a Notification Process to make nearby residents aware of the project, and a Noise Complaint Process that requires the applicant to resolve any problems caused by noise from the project.

Linear Facilities

Linear facilities include pipelines for natural gas, water, and wastewater and lines interconnecting to the electrical transmission system. All linears will lie within the project site, so their construction noise impacts will be similar to those of the power plant itself (MMC 2007b, AFC §§ 1.1.1, 2.0, 2.1.6, 2.1.7, 5.7.2.1). Limiting noisy construction to daytime hours should provide adequate mitigation of impacts. To ensure compliance with this restriction, staff proposes Condition of Certification **NOISE-6**, below.

Pile Driving

The applicant predicts that the noise from pile driving could be expected to reach 104 dBA at a distance of 50 feet. Pile driving noise would thus be projected to reach a level of 85 dBA at M-1, the nearest residential receptor (staff calculation). Added to the existing daytime ambient level of 51 dBA L_{eq}, this would combine to produce 85 dBA, an increase of 34 dBA over the ambient level (see **NOISE Table 5** below). This would likely constitute an intolerable impact. Similarly, pile driving noise at the school to the north-northeast of the site would reach 75 dBA, an annoying level. Staff believes that merely

limiting pile driving to daytime hours, as proposed by the applicant, would result in impacts that are intolerable to residents and disruptive to students.

Staff recommends that pile driving be performed using a quieter process. Staff has identified several commercially available technologies that reduce pile driving noise by 20 to 40 dBA compared to traditional pile driving techniques. These include padded hammers, "Hush" noise-attenuating enclosures, vibratory drivers, and hydraulic techniques that press the piles into the ground instead of hammering them (Eaton 2000, Gill 1983, Ken-Jet, Kessler & Schomer 1980, NCT, WOMA 1999, Yap 1987). To ensure that pile driving noise will not cause annoyance, staff proposes Condition of Certification **NOISE-7**, below.

NOISE Table 5
Pile Driving Noise Impacts

Receptor	Pile Driving Noise Level (dBA L_{eq})	Daytime Ambient Noise Level (dBA L_{eq})	Cumulative Level (dBA)	**Change (dBA)**
M-1	85	51	85	**+34**
M-2	77	50	77	**+27**
School	**75**	**—**	**75**	**—**

1 Source: MMC 2007b, AFC Table 5.7-8 and staff calculations

Vibration

The only construction operation likely to produce vibration that could be perceived off site would be pile driving, should it be employed. Vibration attenuates rapidly; it is likely that no vibration would be perceptible at any appreciable distance from the project site. Staff therefore believes there would be no significant impacts from construction vibration.

Worker Effects

The applicant has acknowledged the need to protect construction workers from noise hazards and has recognized those applicable LORS that would protect construction workers (MMC 2007b, AFC § 5.7.3.2.3). To ensure that construction workers are, in fact, adequately protected, staff has proposed Condition of Certification **NOISE-3**, below.

Operation Impacts and Mitigation

The primary noise sources of the CVEUP include the gas turbine generators, gas turbine air inlets, selective catalytic reduction (SCR) units and their exhaust stacks, electrical transformers, fuel gas compressors and metering equipment, and various pumps and fans (MMC 2007b, AFC §§ 1.1.1, 2.0, 2.1.4). Staff compares the projected noise with applicable LORS. In addition, staff evaluates any increase in noise levels at sensitive receptors due to the project in order to identify any significant adverse impacts.

The applicant included the following noise mitigation measures in performing computer modeling of noise impacts from project operation (MMC 2007b, AFC §§ 2.1.1, 2.1.4, 5.7.2.1):

- metal acoustical gas turbine enclosures; and
- an existing 18-foot high sound wall along the southwest, south, and southeast boundaries of the project site.

As detailed project design progresses, if noise modeling shows that the project will produce too much noise, the applicant may employ one or more of the following mitigation measures to reduce plant operating noise to acceptable levels (MMC 2007b, AFC § 5.7.3.3.3):

- increased inlet air silencing;
- increased gas turbine enclosure vent silencing;
- acoustical barrier walls around the SCR unit inlets and expansion joints, an acoustical shroud around the SCR units, and/or increased thickness of SCR steel plate;
- increased exhaust stack silencing;
- low-noise fans and motors for fin fan coolers; and
- silencers, barriers, lagging and/or partial or full enclosures around auxiliary equipment.

Compliance with LORS

The applicant performed noise modeling to determine the project's noise impacts on sensitive receptors (MMC 2007b, AFC § 5.7.3.3.3; Table 5.7-10). Project operating noise at M-1 (the nearest noise-sensitive residence, 400 feet west of the project site) is predicted not to exceed 45 dBA L_{eq}. This figure complies with the City of Chula Vista Municipal Code limits for residential land uses. It likewise complies with the City of Chula Vista General Plan Noise Element, which limits noise levels in residential uses to 65 dBA CNEL. For a steady, continuous noise source such as a power plant, this is equivalent to 58 dBA L_{eq}; see **NOISE Table 6**. While the applicant has not yet chosen the exact equipment to be employed in the project, the project detailed design will be adjusted to ensure that this noise level (45 dBA L_{eq}) is not exceeded. Staff proposes Condition of Certification **NOISE-4**, below, to ensure compliance.

NOISE Table 6
Plant Operating Noise LORS Compliance

Receptor	LORS	LORS Limit	**Projected Noise Level[1]**
M-1-Nearest Residence	City of Chula Vista General Plan Noise Element	65 dBA CNEL (equivalent to 58 dBA L_{eq})	**45 dBA L_{eq}**
	City of Chula Vista Municipal Code	**45 dBA L_{eq} nighttime 55 dBA L_{eq} daytime**	

Source: COCV 2005, COCV 2007, § 19.68.030, Table III and MMC 2007b, AFC § 5.7.3.3.3.

CEQA Impacts

Power plant noise is unique. Essentially, a power plant operates as a steady, continuous, broadband noise source, unlike the intermittent sounds that comprise the majority of the noise environment. As such, power plant noise contributes to, and becomes part of, the background noise level, or the sound heard when most intermittent noises cease. Where power plant noise is audible, it will tend to define the background noise level. For this reason, staff compares the projected power plant noise to the existing ambient background (L_{90}) noise levels at the affected sensitive receptors. If this comparison identifies a significant adverse impact, then feasible mitigation must be incorporated in the project to reduce or remove the impact.

In many cases, a power plant will be intended to operate around the clock for much of the year. The applicant specifically states, however, that the CVEUP is intended to operate primarily as a peaking power plant, running chiefly on summer afternoons when called upon. The plant may also perform some daily cycling and load following duty; nighttime operation should be relatively rare (MMC 2007b, AFC §§ 1.1.1, 1.1.2, 1.5.3, 2.1.15, 5.7.3.3.3, 6.1). Staff typically evaluates project noise emissions by comparing them to the nighttime ambient background level; this assumes the potential for annoyance due to power plant noise is greatest at night when residents are trying to sleep. Nighttime ambient noise levels are typically lower than the daytime levels; differences of 5 to 10 dBA are common. Staff believes it is prudent to average the lowest nighttime hourly background noise level values to arrive at a reasonable baseline for comparison with the project's predicted noise level. At M-1, this is the span from 1:00 a.m. to 5:00 a.m. (see MMC 2007b, AFC Table 5.7-3). This value is 37 dBA L_{90}.

In the case of a peaking facility, where nighttime operation can be expected to occur only rarely, it is reasonable to evaluate noise impacts on receptors during the daytime, when the plant is most likely to operate. In this case, staff compares the project noise to the daytime ambient background level, averaged over the daytime hours. At M-1, this is the span from 7:00 a.m. to 10:00 p.m. (see MMC 2007b, AFC Table 5.7-3). This value is 45 dBA L_{90}.

Power plant noise levels at M-1, the nearest sensitive receptor, are predicted to reach 45 dBA L_{eq}; see **NOISE Table 7**.

NOISE Table 7
Power Plant Noise Impacts at Nearest Sensitive Receptor

Receptor M-1	Power Plant Noise Level, dBA L_{eq}[1]	Ambient Background Level, dBA L_{90}	Cumulative Noise Level, dBA	**Change from Ambient Background Level**
Nighttime	45	37[2]	46	**+9**
Daytime	**45**	**45[3]**	**48**	**+3**

[1] Source: MMC 2007b, AFC § 5.7.3.3.3.
[2] Source: MMC 2007b, AFC Table 5.7-3 and staff calculations of average of four quietest consecutive nighttime hours.
[3] Source: MMC 2007b, AFC Table5.7-3 and staff calculations of average of fifteen consecutive daytime hours.

When projected plant noise is added to the daytime ambient value (as calculated by staff), the cumulative level is 3 dBA above the ambient value at M-1 (see **NOISE Table 7**). This increase is below the range that staff considers a potentially significant adverse

impact and would, in fact, be barely noticeable. When plant noise is added to the nighttime ambient value, the cumulative level is 9 dBA above the ambient value at M-1. While this is a noticeable increase, it lies within the range staff considers only potentially significant. Since the plant is unlikely to operate a significant portion of the time during these quiet nighttime hours, staff believes any noise impacts would be insignificant. To ensure this noise level is not further exceeded, staff proposes Condition of Certification **NOISE-4**, below.

Tonal Noises

One possible source of annoyance would be strong tonal noises. Tonal noises are individual sounds (such as pure tones) that, while not louder than permissible levels, stand out in sound quality. The applicant plans to avoid the creation of annoying tonal (pure-tone) noises by balancing the noise emissions of various power plant features during plant design (MMC 2007b, AFC § 5.7.3.3.4). To ensure that tonal noises do not cause annoyance, staff proposes Condition of Certification **NOISE-4**, below.

Linear Facilities

All water and gas piping lie underground and would be silent during operation. Noise effects from the electrical interconnection line typically do not extend beyond the right-of-way easement of the line and would thus be inaudible to any receptors (MMC 2007b, AFC § 5.7.3.3.2).

Vibration

Vibration from an operating power plant could be transmitted by two chief means; through the ground (groundborne vibration) and through the air (airborne vibration).

The operating components of a simple cycle power plant consist of high-speed gas turbine generators, compressors, and various pumps and fans. All of these pieces of equipment must be carefully balanced in order to operate; permanent vibration sensors are attached to the turbines and generators. Based on experience with numerous previous projects employing similar equipment, Energy Commission staff believes that groundborne vibration from the CVEUP would be undetectable by any likely receptor.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves and can rattle the walls of lightweight structures. In staff's experience, airborne vibration impacts from a plant such as the CVEUP are typically imperceptible at any significant distance from the plant. The CVEUP's chief source of airborne vibration would be the gas turbines' exhaust. In a power plant such as the CVEUP, however, the exhaust must pass through the selective catalytic reduction (SCR) units before it reaches the atmosphere. The SCR units act as efficient mufflers; this makes it highly unlikely that the CVEUP would cause perceptible airborne vibration effects.

Worker Effects

The applicant has acknowledged the need to protect plant operating and maintenance workers from noise hazards and has committed to comply with applicable LORS (MMC 2007b, AFC § 5.7.3.3.1). Signs would be posted in areas of the plant with noise levels exceeding 85 dBA (the level that OSHA recognizes as a threat to workers' hearing), and

hearing protection would be required. To ensure that plant operation and maintenance workers are, in fact, adequately protected, Energy Commission staff has proposed Condition of Certification **NOISE-5**, below.

CUMULATIVE IMPACTS AND MITIGATION

Section 15130 of the CEQA Guidelines (Cal. Code Regs., tit. 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The CEQA Guidelines require that the discussion reflect the severity of the impacts and the likelihood of their occurrence, but need not provide as much detail as the discussion of the impacts attributable to the project alone.

The applicant has identified 26 projects in the vicinity of the CVEUP, but only one may pose a potential for cumulative noise impacts (MMC 2007b, AFC § 5.7.4). This is the demolition of an existing manufacturing facility approximately 1,000 feet to the north of the site and subsequent construction and operation of a garment factory. Limiting CVEUP construction noise to the daytime, as proposed by the applicant and required by staff's proposed Condition of Certification **NOISE-6**, would prevent any significant cumulative impacts from construction. Since the CVEUP, at 45 dBA, will not contribute significantly to ambient noise levels, and will be in compliance with LORS for this industrial area, it is highly unlikely that the two projects could create a significant cumulative noise impact.

FACILITY CLOSURE

In the future, upon closure of the CVEUP, all operational noise from the project would cease, and no further adverse noise impacts from operation of the CVEUP would be possible. The remaining potential temporary noise source is the dismantling of the structures and equipment and any site restoration work that may be performed. Since this noise would be similar to that caused by the original construction, it can be treated similarly. That is, noisy work could be performed during daytime hours, with machinery and equipment properly equipped with mufflers. Any noise LORS that were in existence at that time would apply. Applicable conditions of certification included in the Energy Commission decision would also apply unless modified.

CONCLUSIONS AND RECOMMENDATIONS

Construction of the CVEUP could create significant noise impacts on nearby sensitive noise receptors if pile driving is not adequately mitigated. Consequently, staff recommends that a quieter method of pile driving be employed in the construction of the facility. Staff proposes a condition of certification to ensure this (below). The CVEUP, if built and operated in conformance with these proposed conditions of certification, would comply with all applicable noise and vibration LORS for both operation and construction and would produce no significant adverse noise impacts on people within the affected area, directly, indirectly, or cumulatively.

PROPOSED CONDITIONS OF CERTIFICATION

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, 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 and include that telephone number in the above notice. 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: Prior to ground disturbance, the project owner shall transmit to the Compliance Project Manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

NOISE COMPLAINT PROCESS

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

1. Use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;

2. Attempt to contact the person(s) making the noise complaint within 24 hours;

3. Conduct an investigation to determine the source of noise related to the complaint;

4. Take all feasible measures to reduce the noise at its source if the noise is project related; and

5. 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 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 implemented.

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program and a statement, signed by the project owner's project manager, verifying that the noise control program will be implemented throughout construction of the project. 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 noise control program and the project owner's project manager's signed statement. The project owner shall make the program available to Cal/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 noise levels due to plant operation to exceed an average of 45 dBA L_{eq} measured at monitoring location M-1, the residence at 3336 Alvoca Street. No new pure-tone components may be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected residential locations to determine the presence of pure tones or other dominant sources of plant noise.

1. When the project first achieves a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct a community noise survey at monitoring location M-1 or at closer locations acceptable to the CPM. This survey shall be performed during power plant operation and shall also include measurement of one-third octave band sound pressure levels to determine whether new pure-tone noise components have been caused by the project.

2. If the results from the noise survey indicate that the power plant average noise level (L_{eq}) at M-1 exceeds the above value, mitigation measures shall be implemented to reduce noise to a level of compliance with this limit.

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

Verification: The survey shall take place within 30 days of the project's first achieving a sustained output of 80 percent or greater of rated capacity. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report will be a description of any additional

mitigation measures necessary to achieve compliance with the above-listed noise limit and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

NOISE-5 Following the project's 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 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 relating to any project features shall be restricted to the times of day delineated below:

Weekdays	7:00 a.m. to 8:00 p.m.
Weekends and Holidays	8:00 a.m. to 8:00 p.m.

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

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

NOISE-7 The project owner shall perform pile driving using a quieter process than the traditional pile driving techniques to ensure that noise from these operations does not cause annoyance at monitoring locations M-1 and M-2.

Verification: At least 15 days prior to first pile driving, the project owner shall submit to the CPM a description of the pile driving technique to be employed, including calculations showing its projected noise impacts at monitoring locations M-1 and M-2.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Chula Vista Energy Upgrade Project
(07-AFC-4)

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).

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NOISE APPENDIX A
FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive area, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that "A-weighting" of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **NOISE Table A1** provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq}), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA (L_{dn}). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical L_{dn} values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, those higher levels nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (U.S. Environmental Protection Agency, Effects of Noise on People, December 31, 1971).

To help the reader understand the concept of noise in decibels (dBA), **NOISE Table A2** illustrates common noises and their associated sound levels, in dBA.

NOISE Table A1
Definition of Some Technical Terms Related to Noise

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L_{10}, L_{50}, & L_{90}	The A-weighted noise levels that are exceeded 10%, 50%, and 90% of the time, respectively, during the measurement period. L_{90} is generally taken as the background noise level.
Equivalent Noise Level, L_{eq}	The energy average A-weighted noise level during the noise level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L_{dn} or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location.
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, Model Community Noise Control Ordinance, California Department of Health Services 1976, 1977.

NOISE Table A2
Typical Environmental and Industry Sound Levels

Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing

Source: Handbook of Noise Measurement, Arnold P.G. Peterson, 1980

Subjective Response to Noise

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed, with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of 1 dB cannot be perceived.

2. Outside of the laboratory, a 3-dB change is considered a barely noticeable difference.

3. A change in level of at least 5 dB is required before any noticeable change in community response would be expected.

4. A 10-dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response (Kryter, Karl D., The Effects of Noise on Man, 1970).

Combination of Sound Levels

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a 3-dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus 3 dB). **NOISE Table A3** indicates the rules for decibel addition used in community noise prediction.

NOISE Table A3
Addition of Decibel Values

When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to ± 1 dB.	

Source: Architectural Acoustics, M. David Egan, 1988.

Sound and Distance

Doubling the distance from a noise source reduces the sound pressure level by 6 dB.

Increasing the distance from a noise source 10 times reduces the sound pressure level by 20 dB.

Worker Protection

OSHA noise regulations are designed to protect workers against the effects of noise exposure and list permissible noise level exposure as a function of the amount of time to which the worker is exposed, as shown in **NOISE Table A4**.

NOISE Table A4
OSHA Worker Noise Exposure Standards

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: 29 CFR § 1910.95.

NOISE AND VIBRATION - FIGURE 1

Chula Vista Energy Upgrade Project - Noise Monitoring Locations



CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, JANUARY 2008

SOURCE: AFC - Figure 5.7-1

PUBLIC HEALTH

Obed Odoemelam, Ph.D.

INTRODUCTION

The purpose of this **Public Health** analysis is to determine if toxic emissions from the proposed Chula Vista Energy Update Project (CVEUP) could potentially cause significant adverse public health impacts or violate standards for public health protection in the project area. Toxic pollutants (or non-criteria pollutants) are pollutants for which there are no specific air quality standards. The other pollutants for which there are specific air quality standards are known as criteria pollutants. If potentially significant health impacts are identified for the non-criteria pollutants considered in this analysis, staff would evaluate mitigation measures to reduce those impacts to less-than-significant levels.

Although the emission and exposure levels for criteria air pollutants are addressed in the **Air Quality** section, California Energy Commission (Energy Commission) staff has included **Attachment A** at the end of this **Public Health** section to provide specific information on the nature of their respective health effects. The discussion in the **Air Quality** section mainly focuses on the potential for exposure at levels above ambient air quality standards and the regulatory measures necessary to mitigate that exposure, with particular emphasis on ozone and particulate matter since existing area levels exceed air quality standards. Staff considers it necessary to mitigate the impacts of these and non-criteria pollutants to ensure overall public health protection while the project is operating. The impacts on public and worker health from accidental releases of hazardous materials are examined in the **Hazardous Materials Management** section, while health effects from electric and magnetic fields are addressed in the **Transmission Line Safety and Nuisance** section. Pollutants released from the project in wastewater streams are discussed in the **Soils and Water Resources** section. Facility releases in the form of hazardous and non-hazardous wastes are addressed in the **Waste Management** section.

LAWS, ORDINANCES, REGULATION, AND STANDARDS

PUBLIC HEALTH Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Clean Air Act section 112 (42 U.S. Code section 7412)	Requires new sources that emit more than 10 tons per year of any specified hazardous air pollutant (HAP) or more than 25 tons per year of any combination of hazardous air pollutants (HAPs) to apply Maximum Achievable Control Technology (MACT).
State	
California Health and Safety Code sections 39650 et seq.	These sections mandate the California Air Resources Board (ARB) and the Department of Health Services to establish safe exposure limits for toxic air pollutants and identify pertinent best available control technologies (BACT). They also require that the new source review rule for each air pollution control district include regulations that require new or modified procedures for controlling the emission of toxic air contaminants.
California Health and Safety Code section 41700	This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California Code of Regulations, Title 22, section 60306	Requires that whenever a cooling system uses recycled water in conjunction with an air conditioning facility and a cooling tower that creates a mist that could come into contact with employees or members of the public, a drift eliminator shall be used, and chlorine, or other biocides shall be used to treat the cooling system re-circulating water to minimize the growth of Legionella and other micro-organisms.
Local	
San Diego Air Pollution Control District (SDAPCD) Rules 1200 and 1210	Require that Best Available Control Technology (BACT) for Toxic Air Pollutants (TACs) be applied to major sources of these pollutants and that a risk assessment or risk screening analysis be conducted for new or modified sources through the new source review (NSR) process.

ASSESSMENT OF IMPACTS

This section describes staff's method of analyzing the potential health impacts of toxic pollutants, together with the criteria used to determine their significance.

METHOD OF ANALYSIS

The toxic emissions addressed in this **Public Health** section are those that the public could be exposed to during both project construction and routine operation. If these toxic contaminants are released into the air or water, people may come into contact with them through inhalation, dermal contact, or ingestion via contaminated food or water.

Ambient air quality standards for the criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, ensure the safety of everyone, including those with heightened sensitivity to the effects of environmental pollution (sensitive receptors). Since non-criteria pollutants do not have such standards, a process known as a health risk assessment is used to determine if people could be exposed to them at unhealthy levels. The risk assessment procedure consists of the following steps:

- Identification of the types and amounts of hazardous substances that a source could release to the environment;
- Estimation of worst-case concentrations of project emissions into the environment, using dispersion modeling;
- Estimation of the amounts of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact; and
- Characterization of the potential health risks by comparing worst-case exposures to safe standards, based on known health effects.

For the proposed CVEUP and similar sources, a screening-level risk assessment is initially performed using simplified assumptions intentionally biased toward protection of public health. In other words, the analysis is designed to overestimate the public health impacts from exposure to emissions. Therefore, in reality it is likely that the actual risks from the project will be much lower than the risks estimated by the screening-level assessment. This overestimation is generated by identifying conditions that could lead to the highest or worst-case risks, and then assuming them in the study. This process involves the following:

- Using the highest levels of pollutants that could be emitted from the source;
- Assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
- Using the type of air quality computer models that predict the greatest plausible impacts;
- Calculating health risks at the location where the pollutant concentrations are estimated to be highest;
- Using health-based standards designed to protect the most sensitive members of the population - including the young, elderly, and those with respiratory illnesses; and
- Assuming an individual’s exposure to cancer-causing agents would occur over a 70-year lifetime.

A screening-level risk assessment will, at a minimum, include the potential health effects of inhaling hazardous substances. Some facilities may also emit certain substances that could present a health hazard from non-inhalation pathways of exposure (see California Air Pollution Control Officers Association, CAPCOA 1993). When these substances are found in emissions, a screening-level analysis is conducted to include the following additional exposure pathways: soil ingestion, dermal exposure, and mother's milk (CAPCOA 1993, p. III-19).

The risk assessment process addresses three categories of health impacts: acute (short-term) health effects, chronic (long-term) health effects, and cancer risk (also long-term). Acute health effects result from short-term (one-hour) exposure to relatively high concentrations of pollutants. Acute effects are temporary in nature, and include symptoms such as irritation of the eyes, skin, and respiratory tract.

Chronic health effects result from long-term exposure to lower concentrations of pollutants. This exposure period is defined as approximately from 10–100 percent of a lifetime (from 7 to 70 years). Chronic health effects include reduced lung function and heart disease.

The analysis for non-cancer health effects compares maximum project pollutant exposure levels to safe levels called reference exposure levels (RELs). These are amounts of toxic substances to which even sensitive individuals can be exposed without suffering adverse health effects (CAPCOA 1993, p. III-36). This means that these exposure limits would serve to protect even sensitive individuals including infants, school pupils, the aged, and people suffering from illnesses or diseases (which make them more susceptible to the effects of toxic substance exposure). The RELs are based on the most sensitive adverse health effects reported in the medical and toxicological literature, and include specific margins of safety that address the uncertainties associated with inconclusive scientific and technical information available at the time standards were set. They are therefore intended to provide a reasonable degree of protection against hazards that research has yet to identify. Each margin of safety is designed to prevent impacts demonstrated to be harmful, as well as impacts from lower levels of exposure that may pose an unacceptable risk of harm, even when the risk is not precisely identified by nature or degree. Health protection can be expected if the estimated worst-case exposure is below the relevant REL. In such a case, an adequate margin of safety would exist between the predicted exposure and the estimated threshold of toxicity.

Exposure to multiple toxic substances may result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformance with CAPCOA guidelines, the health risk assessment assumes that the effects of the individual substances are additive for a given organ system (CAPCOA 1993, p. III-37). In cases where the actions could be synergistic (that is greater than their sum), this approach may underestimate the health impact in question. Staff believes that the best way to address this uncertainty is through use of the margin of safety noted above.

For carcinogenic substances, the health assessment considers the risk of developing cancer and conservatively includes the previously noted assumption that the individual would be exposed continuously over a 70-year lifetime. The risk that is calculated is not necessarily meant to project the actual expected incidence of cancer, but rather to represent a theoretical upper-bound estimate based on worst-case assumptions.

Cancer risk is expressed in terms of chances per million of developing cancer, and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant will cause cancer (known as its potency factor and established by the California Office of Environmental Health Hazard Assessment, OEHHA), and the length of the exposure period. Cancer risks for individual carcinogens are added together to yield the total cancer risk from the source being considered. The conservative nature of these screening assumptions means that actual cancer risks are likely to be considerably lower than their estimates.

The screening-level analysis is performed to assess worst-case public health risks associated with a proposed project. If the screening analysis were to predict a risk of no significance, no further analysis would be necessary. However, if the risk were to be above the significance level, further analysis, using more realistic site-specific assumptions, would be performed to obtain a more accurate estimate of public health risk.

SIGNIFICANCE CRITERIA

Commission staff assesses the health effects of exposure to toxic emissions by first considering their impact on the maximally exposed individual. This individual is a person who is hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using worst-case assumptions, as described above. If the potential risk to this individual is below established levels of significance, staff would consider the potential risk to be less than significant anywhere else in the project area. As described earlier, non-criteria pollutants are evaluated for short-term (acute) and long-term (chronic) non-cancer health effects, as well as for cancer (long-term) health effects. The potential significance of project-related health impacts is determined separately for each of the three categories of health effects.

Acute and Chronic Non-Cancer Health Effects

Staff assesses the significance of non-cancer health effects by calculating a “hazard index” for the exposure being considered. A hazard index is a ratio obtained by comparing the exposure from facility emissions to the reference (safe) exposure level for a specific toxicant. A ratio of less than one signifies a worst-case exposure within safe levels. The hazard indices for all toxic substances with the same types of health effects are then added together to yield a total hazard index for the source being evaluated. This total hazard index is calculated separately for acute and chronic effects. A total hazard index of less than one indicates that the cumulative worst-case exposure would be within safe levels. Under these conditions, health protection would be assumed even for sensitive members of the population. In that case, staff would assume that there would be no significant non-cancer public health impacts from project operations.

Cancer Risk

Staff relies upon the regulations developed to implement provisions of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986 (Health & Safety Code, §§ 25249.5 et seq.) for guidance in establishing the level of significance for assessed cancer risks. Title 22, California Code of Regulations, section 12703(b) states that "the risk level which represents no significant risk shall be one which is calculated to result in one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure." This risk level is equivalent to a cancer risk of 10 in 1,000,000, which is often written as $10x10^{-6}$. An important distinction from the provisions in Proposition 65 is that its significance level applies separately to each cancer-causing substance, while staff determines significance based on the total risk from all cancer-causing chemicals from the source in question. The manner in which the significance level is applied by staff is therefore more conservative (or health-protective) than under the provisions of Proposition 65.

As noted earlier, the initial risk analysis for a project is normally performed at the screening level, which is designed to overstate actual risks. When a screening analysis shows cancer risks to be above the significance level, refined assumptions would likely result in a lower, more representative risk estimate. If facility risk, based upon refined assumptions, were to exceed the significance level of 10 in 1,000,000, staff would require appropriate measures to reduce that risk to less than significant. If, after all risk reduction measures have been considered, a refined analysis still identifies a cancer risk of greater than 10 in 1,000,000, staff would deem that risk to be significant, and would not recommend approval for the project.

SETTING

This section describes the environment in the vicinity of the proposed project site to emphasize how its meteorology and terrain affect the potential for any emitted pollutants to accumulate to levels capable of impacting the health of area residents. It is known for example that any emission plume from CVEUP or a similar facility may affect elevated areas before lower areas because of a reduced opportunity for atmospheric mixing. Consequently, individuals in areas of elevated terrain can experience increased pollutant exposure and related potential for health effects. Also, the types of land use near a site can influence population density and therefore the number of individuals potentially exposed to a project's emissions. Additional factors affecting potential public health impacts include existing air quality and releases of pollutants from past site contamination.

The public health effects of specific concern in this analysis are the cancer and non-cancer effects considered possible from exposure to the types of pollutants expected from the proposed CVEUP and similar gas-fired facilities. The potential for significant cancer effects is assessed with the aim of minimizing any significant additions to the previously noted high background cancer risks from largely unknown causes. The non-cancer effects of particular community and staff concern for this project is asthma, which has been established as possibly from high enough exposure to some components of the project's emissions. As staff notes later in addressing the inquiries by area residents, the present area background asthma rates are not higher than staff

would expect for communities with the background pollutant levels measured at existing area monitoring stations. The main issue in this analysis is the capacity of these project-related emissions to significantly add to asthma-related impacts at projected levels.

SITE AND VICINITY DESCRIPTION

According to information provided by the applicant in the Application for Certification (AFC), the proposed project site is located within the city of Chula Vista's Main Street Industrial Corridor zoned for industrial use and with fencing on all sides. The site is a 3.88-acre land parcel on which is located MMC's Chula Vista Power Plant, which would be dismantled and removed once the proposed CVEUP is built. Land uses in the immediate vicinity are predominantly light industrial or commercial, with areas of open space. The closest residential area lies approximately 350 feet to the west. There are nine sensitive receptor locations (schools) within a two-mile radius of the site (CH2MHill 2007a, pp. 5.6-1, 5.6-2 and 5.9-1 through 5.9-2). The location of sensitive receptors is an important factor in assessing the potential for public health impacts.

The topography of the site is essentially flat with a mean elevation of approximately 58 feet above sea level as is the land to the north, west, and south of the site (CH2MHill 2007a pp. 5.9-1 and 5.1-5).

As noted by the applicant from the Census 2000 data (CH2MHill 2007a and Appendix 5.10A), there are census blocks with minority populations of 50 percent or greater within a six-mile radius of the proposed CVEUP. However, there are no census blocks in the same area where low income individuals constitute more than 50 percent of the population.

METEOROLOGY

Meteorological conditions, including wind speed, wind direction, and atmospheric stability affect the extent to which pollutants are dispersed into the air as well as the direction of pollutant transport. This, in turn, affects the level of public exposure to emitted pollutants and associated health risks. An emission plume from a given facility may impact elevated areas before the lower-lying areas because of reduced opportunity for atmospheric mixing. When wind speeds are low and the atmosphere is stable, dispersion is reduced and localized exposure may be increased.

As the applicant notes in the AFC (CH2MHill 2007a, pp 5.1-5 and 5.1-60), the climate at the project site is influenced by the Pacific Ocean through its related high-pressure system, which is a semi-permanent, subtropical high-pressure system located off the west coast of the United States. The moderating influence of this ocean pressure system leads to cool summers and winters that are warm in comparison with other places along the same general latitude. The temperatures rarely dip below freezing but weather of 90 degrees or more is more frequent. The hottest temperatures occur during September and October from the influence of the dry westerly winds that often blow for days at a time. The annual rainfall is approximately 10 inches but does increase with elevation and distance from the coast. In the mountains to the north for example, the average is between 20 inches and 40 inches. Nighttime and early morning fog is usually encountered in the spring and summer but generally dissipates in the morning to produce clear afternoons.

Atmospheric stability is a measure of the turbulence that influences pollutant dispersion. Mixing heights (the height above ground level below which the air is well mixed and in which pollutants can be effectively dispersed) are lower during the morning hours because of temperature inversions, which are followed by temperature increases in the warmer afternoons. Staff's **Air Quality** section presents a more detailed discussion of the area's meteorology as related to pollutant dispersion.

EXISTING AIR QUALITY

The proposed project site is within the jurisdiction of San Diego Air Pollution District (SDAPCD or Air District). When there are measured levels of the individual carcinogenic pollutants in the project or any specific area, these measured values can be considered together with the cancer risk factors to obtain the theoretical background cancer risk from breathing the air. Such background risk estimates can be further considered for more specific perspectives by noting that the overall lifetime cancer risk for the average American from such contaminated air and all other sources is about 1 in 3, or 330,000 in one million as noted by the American Cancer Society (2004). The SDAPCD monitors the area's toxic air contaminants at the El Cajon and Chula Vista air monitoring stations in collaboration with the California Air Resources Board. As discussed in the Air District's report on their 2006 Air Toxics "Hot spots" program (SDAPCD 2007), there has been a 70 percent reduction in the area's cancer risks from airborne carcinogens since 1989 for carcinogens other than diesel particulate. The related cancer risk estimates for 2006 were 143 in one million for Chula Vista and 164 in one million for El Cajon, down from 481 and 545 in one million respectively in 1989. For diesel particulates, the related cancer risk estimate is 420 in one million, which is a decrease of approximately 50 percent from 1989's estimate of 870 in one million. These significant risk reductions reflect the effectiveness of the Air District's ongoing toxic emission reduction measures. The potential cancer risk from CVEUP and similar sources should be assessed within the context of their potential additions to these background risk levels.

The criteria pollutant-related air quality for the project area is assessed in the **Air Quality** section by adding existing levels (as measured at area monitoring stations), to the project-related levels, and then comparing the resulting levels with the applicable air quality standards. Public health protection is achieved only through specific technical and administrative measures ensuring exposure below air quality standards when the project is operating. It is this combination of measures that is addressed in the **Air Quality** section.

IMPACTS

POTENTIAL IMPACTS OF PROJECT'S NON-CRITERIA POLLUTANTS

The health impacts of the non-criteria pollutants of specific concern in this analysis can be assessed separately as either construction-phase impacts or operational-phase impacts.

Construction Phase Impacts

Possible construction-phase health impacts, as noted in the AFC are from human exposure to wind-blown dust from site excavation and grading, and emissions from

construction-related equipment. These dust-related impacts may result from either exposure to the dust itself as PM10 or PM 2.5, or exposure to any toxic contaminants that might be adsorbed onto the dust particle (CH2MHill 2007a, pp. 5.1-1, 5.1-12, 5.9-4, and Appendix 5.1E). As more fully discussed in the **Waste Management** section, the applicant's site contamination assessments did not find any specific signs of environmental contamination from past industrial activities but recommended a specific plan for cleaning up any chemical contaminants that might be encountered during construction (CH2MHill 2007a, pp 5.14-1 and 5.14-2 and Appendix 5.14A). The recommended **Waste Management** conditions of certification are intended to ensure development and implementation of this management plan.

The applicant has specified the mitigation measures necessary to minimize construction-related fugitive dust as required by SDAPCD Rule 54. The only soil-related construction impacts of potential significance would be from the possible impacts of PM10 or PM 2.5 as a criteria pollutant for the 7- to 8-month construction period. As mentioned earlier, the potential for significant impacts from criteria pollutants is assessed in the **Air Quality** section, where the requirements for the identified mitigation measures are presented as specific conditions of certification.

The exhaust from diesel-fueled and other construction equipment has been established as a potent human carcinogen. Thus, construction-related emission levels could possibly add to the carcinogenic risk analyzed in this analysis. The applicant has presented the diesel emissions from the different types of equipment to be used in the construction phase (CH2MHill 2007a Appendix 5.1E). Staff considers the recommended control measures specified in **Air Quality** conditions of certification (AQ-SC3, and AQ-SC4) to be adequate for reducing any exposure to levels that would not pose a significant cancer risk, especially in this relatively short construction period.

Operational Impacts

The main health risk from the proposed CVEUP would be associated with emissions from its combustion turbines, testing of the emergency diesel firewater pump engine, and evaporative cooling.

PUBLIC HEALTH Table 1 lists the project's toxic emissions and shows how each would contribute to the risk estimated from the health risk analysis. For example, the first row shows that oral exposure to acetaldehyde is not of concern but, if inhaled, may have cancer and chronic (long-term) non-cancer health effects, but not acute (short-term) effects.

As noted in a publication by the South Coast Air Quality Management District (SCAQMD 2000, p 6), one property that differentiates the air toxics of concern from the criteria pollutants is their tendency to be highest in close proximity to the source and quickly drop off with distance. This means that the levels of CVEUP's air toxic contaminants would be highest in the immediate area and decrease rapidly with distance.

The applicant's estimates of CVEUP's potential contribution to the area's carcinogenic and non-carcinogenic pollutants were obtained from a screening-level health risk assessment conducted according to procedures specified in the 1993 CAPCOA

guidelines. The results from this assessment (summarized in staff's **PUBLIC HEALTH Table 2**) were provided to staff along with documentation of the assumptions used (CH2MHill 2007a pp 5.9-8 through 5-9-11 and Appendix 5.1D). This documentation included:

- Pollutants considered;
- Emission levels assumed for the pollutants involved;
- Dispersion modeling used to estimate potential exposure levels;
- Exposure pathways considered;
- The cancer risk estimation process;
- The hazard index calculation; and
- Characterization of project-related risk estimates.

Staff finds these assumptions to be acceptable for use in this analysis, and agrees with the applicant's findings with regard to the numerical public health risk estimates expressed either in terms of the hazard index for each non-carcinogenic pollutant, or as a cancer risks for estimated levels of carcinogenic pollutants. These analyses were conducted to establish the maximum potential for acute and chronic effects on body systems such as the liver, central nervous system, the immune system, kidneys, the reproductive system, the skin, and the respiratory system.

PUBLIC HEALTH Table 2
Types of Health Impacts and Exposure Routes Attributed to Toxic Emissions

Substance	Oral Cancer	Oral Non-Cancer	Inhalation Cancer	Non-cancer (Chronic)	Non-cancer (Acute)
Acetaldehyde			✔	✔	
Acrolein				✔	✔
Ammonia				✔	✔
Arsenic	✔	✔	✔	✔	✔
Benzene			✔	✔	✔
1,3-Butadiene			✔	✔	
Cadmium		✔	✔	✔	
Chromium			✔	✔	
Copper				✔	✔
Ethylbenzene				✔	
Formaldehyde			✔	✔	✔
Hexane				✔	
Lead	✔	✔	✔	✔	
Mercury		✔		✔	✔
Naphthalene		✔		✔	
Nickel			✔	✔	✔
Polynuclear Aromatic Hydrocarbons (PAHs)	✔	✔	✔	✔	
Propylene				✔	
Propylene oxide			✔	✔	✔
Toluene				✔	✔
Xylene				✔	✔
Zinc				✔	

Source: Prepared by staff using reference exposure levels and cancer unit risks from CAPCOA Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment guidelines, October 1993, SRP 1998, and Office of Environmental Health Hazard Assessment Air Toxics Hot Spots Program Risk Assessment guidelines.

As shown in **PUBLIC HEALTH Table 3**, the chronic hazard index at the point of maximum impact (PMI) is 0.0069 while the maximum hazard index for acute effects is 0.088. These values are well below staff's significance criterion of 1.0, suggesting that the pollutants in question are unlikely to pose a significant risk of either chronic or acute non-cancer health effects anywhere in the project area.

PUBLIC HEALTH Table 3
CVEUP Operation Hazard/Risk

Type of Hazard/Risk	Hazard Index/Risk	Significance Level	Significant?
Acute Non-cancer	0.088	1.0	No
Chronic Non-cancer	0.0069	1.0	No
Individual Cancer	0.15×10^{-6} (a)	10.0×10^{-6}	No

Staff's summary of information from CH2MHill 2007a pp. 5.9-8 through 5.9-11, and Appendix 5.1D.
(a) Risk at the point of maximum impact

The cancer risk estimate for the point of maximum impact is 0.15 in 1,000,000, which is well below staff's significance criterion of 10 in 1,000,000 for this screening-level assessment. Thus, project-related cancer risk from project operations would be less than significant for all individuals in the project area.

The conservatism in these assessments is reflected in the previously noted fact that (a) the individual considered is assumed to be exposed at the highest possible levels to all the carcinogenic pollutants from the project for a 70-year lifetime, (b) all the carcinogens are assumed to be equally potent in humans and experimental animals, even when their cancer-inducing abilities have not been established in humans, and (c) that humans are assumed to be as susceptible as the most sensitive experimental animal, despite knowledge that cancer potencies often differ between humans and experimental animals. Only a relatively few of the many environmental chemicals identified so far as capable of inducing cancer in animals have been shown to also cause cancer in humans.

CUMULATIVE IMPACTS

As previously noted, the maximum impact location would be the spot where pollutant concentrations for the proposed project would theoretically be highest. Even at this hypothetical location (which is immediately beyond the existing MMC property boundary), staff does not expect any significant change in lifetime risk to any person, given the calculated incremental cancer risk of 0.15 in 1,000,000, which staff regards as not potentially contributing significantly to the previously noted average American lifetime individual cancer risk of 330,000 in 1,000,000. Modeled facility-related risks are much lower for more distant locations. Given the previously noted conservatism in the calculation method used, the actual risks would likely be much smaller. Therefore, staff does not consider the incremental risk estimate from CVEUP's operation as suggesting a potentially significant contribution to the area's overall or cumulative cancer risk that includes the respective risks from the background pollutants from all existing area sources.

The worst-case long-term non-cancer health impact from the project (reflected by the chronic hazard index of 0.0069) is well below staff's significance level of 1.0 at the location of maximum impact. At this level, staff does not expect any contribution to existing area non-cancer health impacts to be significant. As with cancer risk, long-term non-cancer hazard risk would be lower at all other locations.

Given the identified lack of significant public health impacts from CVEUP's operation, the minority population living within six miles of the proposed project as noted in the Setting section of this analysis, would not be exposed to the emitted pollutants at levels considered significant regarding environmental justice.

COMPLIANCE WITH LORS

The toxic pollutant-related cancer and non-cancer risks from the proposed CVEUP's operation reflect the effectiveness of control measures (including the use of cleaner-burning natural gas, and an oxidation catalyst which reduces hazardous air pollutant emissions) proposed by the applicant. Since these risk estimates are far below the significance levels in the applicable LORS, staff concludes that the related operational plan would comply with these LORS.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received specific comments from the general public about the potential for CVEUP's emissions to cause cancer or exacerbate the areas' asthma problem given that asthma is commonly believed to be caused or triggered by criteria pollutants (SOx, NOx, CO, and PM2.5 addressed in the **Air Quality** Section) and that some of the toxic air pollutants of specific concern in this **Public Health** analysis are theoretically capable of inducing cancer. A related February 4, 2008 letter of complaint with forty signatories was forwarded to the Commission by Theresa Acerro on behalf of the Chula Vista Civic Association consisting of area business owners and employees. Many other comments by other concerned area residents were also forwarded together with scientific publications about the pollution-related health impacts at issue. The concern about the potential for noise impacts is addressed in the **Noise and Vibration** section in terms of compliance with the applicable noise limits. The concern about project-related visual blight is addressed in the **Visual Resources** section.

Potential Impacts of Project's Particulate Matter

Staff is addressing the specific community concern about the emitted particulate matter by first noting that there is no doubt that inhaled particulate matter is deleterious to human health. While PM10 (or the larger particles considered to be those greater than 10 microns in diameter) are usually unable to reach the deep recesses of the lungs and can thus be efficiently removed by the body's defense mechanisms, the smaller particles, PM10 (or those with a diameter of 10 microns or less) and in particular the very small particles, PM2.5 (or those with a diameter of 2.5 microns or less) are able to reach the deep recesses of the lungs where they can damage lung tissue. Numerous studies have shown that such PM2.5 can cause significant cardiopulmonary morbidity and mortality depending on the airborne concentration and the duration of human exposure at that concentration. As noted in the attachment A to this analysis, the California Environmental Protection Agency (CalEPA) has even recognized that PM from a specific source (diesel engines) can cause cancer in humans and has calculated a cancer potency factor for use in related health risk assessments. CalEPA's assessments have been used by the State and the Air Pollution Control Districts to establish rules and mitigation measures regarding the use of diesel equipment in

construction activities. The related mitigation measures for the proposed CVEUP are presented by the applicant in Appendix 5.1E and required by staff in specific conditions of certification in the **Air Quality** Section. Staff considers these requirements as adequate to reduce any cancer and non-cancer risks to insignificant levels during the relatively short (7- to 8-month) construction period. Both staff and the applicant have included the carcinogenic potential of PM emitted from the project's emergency diesel generator in assessing the potential cancer risk from operations.

Both PM10 and PM2.5 are highly heterogeneous and vary in size and composition by location, source, time, and space. Emitted PM2.5 can remain in the atmosphere for weeks to months before being removed mostly by precipitation events (rain). Because of the heterogeneity and wide variations in sources and airborne concentrations, it is very difficult to make definitive statements about the cancer-causing potential of PM10 and PM2.5 (together or alone) based on common toxicological testing. The article by Pope et al (2002) is one of the results of several epidemiological studies that have tended to associate long-term exposure to particulate matter with lung cancer. Research articles by Beeson (1998), Dockery (1993), Laden (2006), and Naess (2007) all support this association. However, it must be pointed out that all these studies were epidemiological studies that attempted to assess an association between ambient (background) airborne concentrations of PM2.5 from all sources and cancer incidence rates, suggesting PM2.5 as the likely culprit in any cancer causation. While these types of studies are fraught with uncertainty and cannot definitively ascribe the risk of cancer to any specific type or source of PM, staff agrees that an association has been demonstrated thus justifying the specific concern about PM2.5 exposure. However, the sources of ambient PM2.5 are many and include combustion sources and non-combustion sources, such as diesel PM (previously noted as known to the State of California to cause cancer), re-entrainment of particles deposited on the roads and other surfaces, inorganic salts like ammonia nitrate and sulfates, and particles emitted from various industrial sources, including natural gas-fired power plants. The available epidemiological evidence is not strong enough or specific enough for either the U.S. EPA or CalEPA to calculate a cancer potency factor for PM other than from diesel exhaust. Thus, despite the causal relationship suggested between PM2.5 and cancer incidence, neither CalEPA nor the U.S. EPA has declared PM2.5 to be a probable or likely human carcinogen nor have these agencies required that they be specifically assessed as carcinogens in human health risk assessments. Therefore, staff cannot specifically assess the carcinogenicity of the project's PM2.5 by itself but does note that the present difficulty in establishing its human carcinogenicity suggests that PM2.5 would be a carcinogen of low potency at normal environmental levels.

In further assessing the potential health risks from CVEUP's particulate emissions, staff would note the requirement in the **Air Quality** section for specific offsets for all emitted PM. Some of these offsets would be from the immediate vicinity others would be from throughout the San Diego Air District. Since the airborne concentration in the neighborhoods around the project site is impacted by regional PM emissions, offsets from local and region wide sources would both benefit the area around the project site.

Potential Impacts on Background Asthma

In the effort to respond to the community's concern about CVEUP and asthma, staff gathered a significant amount of data about the incidence of asthma in the country and the project area in particular. This data does not indicate that there are any unusual circumstances with respect to asthma incidence in the area. In its 2005 report titled "Asthma Report Card 2005" for example, the San Diego Regional Asthma Coalition discussed much of what is known about asthma with specific regard to its causes, differing rates within specific population groups, and its medical management. The coalition further noted that although approximately 11 percent of San Diego county residents were diagnosed with asthma in 2003, for example, the county's rates showed a small, statistically significant decrease from 2001 to 2003. The report further noted the 2005 figures as showing that diagnosis percentages in the county were slightly lower than the statewide average, but equal to those of neighboring counties. Staff does not note these facts to diminish the concern about asthma in the county or project area, but only to note that there is significant uncertainty about its causes and reasons for differing rates among population groups; we remain concerned about the asthma issue as a nationwide problem. Staff's review of the available scientific literature together with the low values of the previously noted indices of acute and chronic impacts from CVEUP operation supports our conclusion that CVEUP's emissions would not exacerbate the area's asthma problem at expected emission levels.

In further recognizing the justification for the area's residents' concern about asthma, staff would point to the large body of literature identifying asthma as having emerged as a major public health problem in all areas of the country in the last 20 years. Rates among children have been shown to have reached epidemic proportions in all states. The available evidence shows that there is no single cause of asthma in all cases. Theories of causation include those about lifestyle factors, genetics, and specific environmental agents. Studies to identify predisposing environmental agents or symptom triggers have not yielded a unifying theory to explain the present epidemic. It is well documented for example, that outdoor environmental exposures to criteria pollutants such as ozone, particulate matter (PM), sulfur dioxide and nitrogen oxides can exacerbate asthma and that ozone can also cause asthma. A recent study by McConnell et al (2002) that investigated the relationship between newly-diagnosed asthma in children and air pollutants found that exposure to pollutants other than ozone – including PM10 and PM2.5 – had no impact on asthma causation. It is therefore unclear whether criteria pollutants other than ozone also cause asthma. The California Air Resources Board (ARB), in an exhaustive compilation of the available scientific studies, summarized more than 18 studies assessing the ability of PM - fine and coarse - to exacerbate asthma (ARB 2002). The ARB found that "evidence for a fairly consistent (but not universal) effect of PM10 and PM2.5 has emerged over the last several years" but PM10 and PM2.5 causation of asthma has not been proved. As recently as 2006, the ARB stated that "the role air pollution plays in initiating asthma is still under investigation and may involve a very complex set of interactions between indoor and outdoor environmental conditions and genetic susceptibility." The ARB has, however, launched additional studies that will focus on the role of particulate matter pollution on asthma.

There are only a few studies available in the scientific literature that have attempted to link a specific stationary source (such as a power plant) to either the onset or exacerbation of asthma. The McConnell (2002) study mentioned above concluded that acute exposure to ozone and other outdoor air pollutants exacerbates asthma but combustion-related air pollution (from all combustion sources in the air basin) was not found to be associated with asthma. It of interest that air pollution levels in many regions of the United States -- including the San Diego County--are lower today than they were in the past yet asthma prevalence has increased substantially over the past 20 years.

It is evident that further research is needed to definitively establish emissions from gas-fired power plants as a cause or exacerbation of asthma. However, in comparison to other sources, natural gas-fired power plants such as the proposed CVEUP would produce limited amounts of pollutants capable of causing or exacerbating asthma and thus should be considered minor sources. Given the emissions controls and offsets required for the proposed CVEUP, staff believes that its operation would not create any significant public health impacts. Although staff agrees that the pollutants emitted from gas-fired power plants do indeed add incrementally to the risk of asthma in the general population, the available scientific evidence supports staff's determination that this incremental addition to the risk is insignificant. Therefore, staff concludes that the proposed CVEUP would have an insignificant impact on existing asthma rates in the surrounding area.

CONCLUSIONS AND RECOMMENDATIONS

Staff has determined that the toxic air emissions from the construction and operation of this proposed CVEUP would be at levels that do not require mitigation beyond the specific emission control measures noted above (and included as conditions of certification in the Air Quality and Waste Management sections), and therefore, do not recommend any related conditions of certification.

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ATTACHMENT A - CRITERIA POLLUTANTS

OZONE (O_3)

Ozone is not directly emitted from specific sources but is formed when reactive organic compounds (VOCs) interact with nitrogen oxides in the presence of sunlight. Heat speeds up the reaction, typically leading to higher concentrations in the relatively hot summer months. Ozone is a colorless, reactive gas with oxidative properties that allow for tissue damage in the exposed individual. The effects of such damage could be experienced as respiratory irritation that could interfere with normal respiratory function. Ozone can also damage plants and other materials susceptible to oxidative damage.

The U.S. EPA revised its federal ozone standard on July 18, 1997 (62 Fed. Reg. 38856), based on health studies that became available since the standard was last revised in 1979. These new studies showed that adverse health effects could occur at ambient concentrations much lower than reflected in the previous standard, which was based on acute health effects experienced during heavy exercise. In proposing the new standard, the EPA identified specific health effects known to have been caused by short-term exposures (of one to three hours) and prolonged exposure (of six to eight hours) (61 Fed. Reg. 65719). However, a 1999 federal court ruling blocked implementation of the ozone 8-hour standard, which is yet to be implemented.

Acute health effects from short-term exposures include a transient reduction in pulmonary function, and transient respiratory symptoms including cough, throat irritation, chest pain, nausea, and shortness of breath with associated effects on exercise performance. Other health effects of short-term or prolonged O_3 exposures include increased airway responsiveness (which predisposes the individual to bronchoconstriction induced by external stimuli such as pollen and dust), susceptibility to respiratory infection (through impairment of lung defense mechanisms), increased hospital admissions and emergency room visits, and transient pulmonary inflammation.

Generally, groups considered especially sensitive to the effects of air pollution include persons with existing respiratory diseases, children, pregnant women, and the elderly. However, controlled exposure data on people in clinical settings have indicated that the population at greatest risk of acute effects from ozone exposures as children and adults engaged in physical exercise. Children are most at risk because they are active outside, playing and exercising, during summer when ozone levels are highest. Adults who are outdoors and engaging in heavy exertion in the summer months are also among the individuals most at risk. This happens because such exertion increases the amount of O_3 entering the airways and can cause O_3 to penetrate to peripheral regions of the lung where lung tissue is more likely to be damaged. These individuals, as well as those with respiratory illnesses such as asthma, can experience a reduction in lung function and increased respiratory symptoms, such as chest pain and cough, when exposed to relatively low ozone levels during periods of moderate exertion.

CARBON MONOXIDE (CO)

Carbon monoxide is a colorless, odorless gas which is a product of inefficient combustion. It does not persist in the atmosphere, being quickly converted to carbon dioxide. However, it can reach high levels in localized areas, or "hot spots".

CO reduces the oxygen carrying capacity of the blood, thereby disrupting the delivery of oxygen to the body's organs and tissues. Persons sensitive to the effects of carbon monoxide include those whose oxygen supply or delivery is already compromised. Thus, groups potentially at risk to carbon monoxide exposure include persons with coronary artery disease, congestive heart failure, obstructive lung disease, vascular disease, and anemia, and the elderly, newborn infants, and fetuses (ARB 1989, p. 9). In particular, people with coronary artery disease were found to be especially at risk from carbon monoxide exposure (ARB 1989, p. 9). Tests conducted on patients with confirmed coronary artery disease indicated that exposure to low levels of carbon monoxide during exercise can produce significant cardiac effects. These effects include chest pain (angina) and electrocardiographic changes indicative of effects on the heart muscle (ARB 1989, p. 6). Such changes can limit the ability of patients with coronary artery disease to exert themselves even moderately. Therefore, the statewide carbon monoxide one-hour and eight-hour standards were adopted in part to prevent aggravation of chest pain. Additionally, however, the standards are intended to prevent decreased exercise tolerance in persons with peripheral vascular disease and lung disease, impaired central nervous system functions, and effects on the fetus (Cal. Code Regs. Tit. 17, sec. 70200).

PARTICULATE MATTER (PM)

Particulate matter is a generic term for particles of various substances, which occur as either liquid droplets or small solids of a wide range of sizes. Particles with the most potential to adversely affect human health are those less than 10 micrometers (millionths of a meter) in diameter (known as PM10), which may be inhaled and deposited within the deep portions of the lung (PM10). PM may originate from anthropogenic or natural sources such as stationary or mobile combustion sources or windblown dust. Particles may be emitted directly to the atmosphere or result from the physical and chemical transformation of gaseous emissions such as sulfur oxides, nitrogen oxides, and volatile organic compounds. PM10 may be made up of elements such as carbon, lead, and nickel; compounds such as nitrates, organics, and sulfates; and complex mixtures such as diesel exhaust and soil fragments. The size, chemical composition, and concentration of ambient PM10 can vary considerably from area to area and from season to season within the same area.

PM10 can be grouped into two general sizes of particles, fine and coarse, which differ in formation mechanisms, chemical composition, sources, and potential health effects. Fine-mode particles are those with a diameter of 2.5 micrometers or less (PM2.5), while the coarse-mode fraction of PM consists of particles ranging from 10 micrometers down to 2.5 micrometers in diameter.

Coarse-mode PM10 is formed by crushing, grinding, and abrasion of surfaces, and in the course of reducing large pieces of materials to smaller pieces. Coarse particles consist mainly of soil dust containing oxides of silicon, aluminum, calcium, and iron; as well as fly ash, particles from tires, pollen, spores, and plant and insect fragments. Coarse particles normally have shorter lifetimes (minutes to hours) and only travel over short distances (of less than tens of kilometers). They tend to be unevenly distributed across urban areas and have more localized effects than the finer particles.

PM2.5 is derived both from combustion by-products, which have volatilized and condensed to form primary PM2.5, and from precursor gases reacting in the atmosphere to form secondary PM2.5. Components include nitrates, organic compounds, sulfates, ammonium compounds, and trace elements (including metals) as well as elemental carbon such as soot. Major sources of PM2.5 are fossil fuel combustion by electric utilities, industry and motor vehicles, vegetation burning, and the smelting or other processing of metals. Dry deposition of fine mode particles is slow allowing such particles to often exist for long periods of time (from days to weeks) in the atmosphere and travel hundreds to thousands of kilometers. They tend to be uniformly distributed over urban areas and larger regions and are removed from the atmosphere primarily by forming cloud droplets and falling out within raindrops.

The health effects of PM10 from any given source usually depend on the toxicity of its constituent pollutants. The size of the inhaled material usually determines where it is deposited in the respiratory system. Coarse particles are deposited most readily in the nose and throat area while the finer particles are more likely to be deposited within the bronchial tubes and air sacs, with the greatest percentage deposited in the air sacs. Until recently, PM10 particles had been considered to be the major fraction of airborne particulates responsible for various adverse health effects. The PM10 fraction is known to be capable of penetrating the thoracic and alveolar regions of the human and animal lungs. The PM2.5 fraction, however, was found to pose a significantly higher risk for health. This is due to their size and associated deposition and retention characteristics in the respiratory tract, enabling it to penetrate and deposit within the deeper alveolar regions of the lung. The following aspects of PM2.5 deposition all contribute to the more serious health effects attributed to smaller particles:

- The deposition of PM2.5 favors the periphery of the lungs, which is especially vulnerable to injury for anatomical reasons.
- Clearance of the PM2.5 from within the deeper reaches of the lungs is a much slower process than from the upper regions. Consequently, the residence time is longer, implying longer exposure, and hence greater risk.
- The human anatomy further allows the penetration of the superficial tissues by PM2.5 and entry into the bodily circulation without much effort in the periphery of the lungs.

Many epidemiological studies have shown exposure to particulate matter capable of inducing a variety of health effects, including premature death, aggravation of respiratory and cardiovascular disease, changes in lung function and increases in existing respiratory symptoms, effects on lung tissue structure, and impacts on the body's respiratory defense mechanisms. The underlying biological mechanisms are still poorly understood. Based on their review of a number of these epidemiological studies (as published after 1987 when the federal standards were revised), together with suggestion of PM2.5 concentrations as a more reliable surrogate for the health impacts of the finer fraction of PM than PM10, the U.S. EPA concluded that the then-current standards were not sufficiently stringent to protect against significant effects in exposed humans. Therefore, federal PM standards were revised on July 18, 1997 (62 Fed. Reg. 38652) to add new annual and 24-hour PM2.5 standards to the existing annual and 24-hour PM10 standards. Taken together, these new standards were meant to provide

additional protection against a wide range of PM-related health effects, including premature death, increased hospital admissions and emergency room visits, primarily among sensitive individuals such as the elderly, children and individuals with cardiopulmonary diseases such as asthma. Other impacts include decreased lung function (particularly in children and asthmatics) and alterations in lung tissue and structure.

California has also had 24-hour and annual standards for PM10 (ARB 1982, pp. 81, 84). These standards were set to protect against asthma, premature death and bronchitis-related symptoms within the general population as well as sensitive individuals such as patients with respiratory disease, declines in pulmonary function, especially as related to children (Tit. 17, Cal. Code Regs. §70200). These standards were set to be more stringent than the federal standard, which the ARB regarded as inadequate for the protection desired (ARB 1991, p. 26).

On June 20, 2002, the ARB approved the adoption of a lower annual state standard for PM10, as well as a new annual standard for PM2.5 (ARB 2002). The new standards took effect on July 5, 2003. The 24-hour PM10 standard was not changed. The standards were established to prevent excess death, illnesses such as respiratory symptoms, bronchitis, asthma exacerbation, and cardiac disease, and restrictions in activity from short- and long-term exposures (Title 17, Cal. Code Regs. §70200).

NITROGEN DIOXIDE (NO_2)

Nitrogen dioxide is formed either directly or indirectly when oxygen and nitrogen in the air combine together during the combustion. It is a relatively insoluble gas, which can penetrate deep into the lungs, its principal site of toxicity. Its toxicity is thought to be due to its capacity to initiate free radical-mediated reactions while oxidizing cellular proteins and other biomolecules (ARB 1992, Appendix A, p. 4).

Sub lethal exposures in animals usually produce inflammations and varying degrees of tissue injury characteristic of oxidant damage (Evans in ARB 1992, Appendix A, and p 5). The changes produced by low-level acute or sub chronic exposures appear to be reversible when the animal study subject is allowed to recover in clean air. Health effects of particular concern in relation to low-level nitrogen dioxide exposure include: (1) effects of acute exposure on some asthmatics and possibly on some persons with chronic bronchitis, (2) effects on respiratory tract defenses against infection, (3) effects on the immune system, (4) initiation or facilitation of the development of chronic lung disease, and (5) interaction with other pollutants (ARB 1992, Appendix A, p. 5).

Several groups, which may be especially susceptible to nitrogen dioxide-related health effects have been identified from human studies (ARB 1992, Appendix A, and p. 3). These include asthmatics, persons with chronic bronchitis, infants and young children, cystic fibrosis and cancer patients, people with immune deficiencies, and the elderly.

Studies involving brief, controlled exposures on sensitive individuals have shown an increase in bronchial reactivity or airway responsiveness of some asthmatics, as well as decreased lung function in some patients with chronic obstructive lung disease (ARB 1992, Appendix A, p. 2). In general, bronchial hyper reactivity (an increased tendency of the airways to constrict) is markedly greater in asthmatics than in non-asthmatics upon

exposure to initiating respiratory irritants (ARB 1992a, p. 107). At exposure concentrations of specific relevance to the current one-hour ambient standard, there appears to be little, if any, effect on respiratory symptoms of asthmatics (ARB 1992a, p. 108).

SULFUR DIOXIDE (SO_2)

Sulfur dioxide is formed when any sulfur-containing fuel is burned. SO_2 is highly soluble and consequently absorbed in the moist passages of the upper respiratory system. Exposure to sulfur dioxide can lead to changes in lung cell structure and function that adversely affect a major lung defense mechanism known as mucociliary transport. This mechanism functions by trapping particles in mucus in the lung and sweeping them out via the cilia (fine hair-like structures) also in the lung. Slowed mucociliary transport is frequently associated with chronic bronchitis.

Exposure to sulfur dioxide can produce both short- and long-term health effects. Therefore, California has established sulfur dioxide standards to reflect both short- and long-term exposure concerns. Based on controlled exposure studies of human volunteers, investigators have found that asthmatics comprise the group most susceptible to adverse health effects from exposure to sulfur dioxide (CARB 1994, p. V-1).

The primary short-term effect is bronchoconstriction, a narrowing of the airways, which results in labored breathing, wheezing, and coughing. The short-term (one-hour) standard is based on bronchoconstriction and associated symptoms (such as wheezing and shortness of breath) in asthmatics and is designed to protect against adverse effects from five to ten minute exposures. In the opinion of the California Office of Environmental Health Hazard Assessment, the short-term ambient standard is likely to afford adequate protection to asthmatics engaged in short periods of vigorous activity (CARB 1994, Appendix A, p. 16).

Longer-term exposure is associated with increased incidence of respiratory symptoms (such as coughing and wheezing) or respiratory disease, decreases in pulmonary function, and an increased risk of premature mortality (CARB 1991a, p. 12). The long-term (24-hour) standard is based upon increased incidence of respiratory disease and premature mortality. The standard includes a margin of safety based on epidemiological studies, which have shown adverse respiratory effects at levels slightly above the standard. Some of the studies indicate a sulfur dioxide threshold for effects, suggesting that no significant effects are expected from exposures to concentrations at the state standard (Ibid.).

ATTACHMENT A - REFERENCES

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SOCIOECONOMICS

Jacob Hawkins, M.E.S.M. and Somer Goulet, M.S.E.L.

SUMMARY OF CONCLUSIONS

Staff has determined that the Chula Vista Energy Upgrade Project would not cause significant adverse direct, indirect, or cumulative socioeconomic impacts on the area's housing, schools, police, emergency services, hospitals, and parks and recreation because most of the construction and operation workforce already resides within the local or regional labor market area. Public benefits from the project include capital costs, construction and operations payroll, and annual property and sales taxes.

INTRODUCTION

The California Energy Commission (Energy Commission) staff socioeconomics impact analysis evaluates the project-induced changes on community services and/or infrastructure and related community issues such as Environmental Justice (EJ). Staff also discusses the potential impacts from project construction and operations.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

SOCIOECONOMICS Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Executive Order 12898	"Federal Actions to address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of this mission. The order requires the U.S. Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.
Civil Rights Act of 1964, Public Law 88-352, 78 Stat. 241 (Codified as amended in scattered sections of 42 United States Code)	Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national programs in all programs or activities receiving federal financial assistance.
State	
California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the

	purpose of funding the construction or reconstruction of school facilities.
California Government Code, Sections 65996-65997	These sections include provisions for school district levies against development projects. As amended by Senate Bill (SB) 50 (Statutes of 1998, Chapter 407, § 23), these sections state that except for those fees established under Education Code 17620, public agencies at the state and local level may not impose fees, charges, or other financial requirements to offset the cost for school facilities.
Local	
Chula Vista General Plan, Economic Development Element	Designed to positively influence the types of jobs that will be created and retained and the balance between employment and housing.
Chula Vista General Plan, Policy E 6.4	Avoid siting new or re-powered energy generation facilities and other major toxic air emitters within 1,000 feet of a sensitive receiver, or the placement of a sensitive receiver within 1,000 feet of a major toxic emitter.
Chula Vista Redevelopment Plan	To assist the city in eliminating blight from a designated area and to achieve desired development, reconstruction, and rehabilitation. General Plan Policy E 6.4 - Avoid siting new or re-powered energy generation facilities and other major toxic air emitters within 1,000 feet of a sensitive receiver, or the placement of a sensitive receiver within 1,000 feet of a major toxic emitter.

SETTING

The affected area for socioeconomics as defined by the applicant for the Chula Vista Energy Upgrade Project (CVEUP) in the Application for Certification (AFC), and considered by staff, is the Chula Vista – San Diego area. The selected site for the proposed CVEUP is 3497 Main Street, Chula Vista, California. The proposed project site is currently occupied by MMC Energy Inc.'s (MMC) Chula Vista Power Plant, which would be removed from the southern portion of the proposed project site.

Research has shown that construction workers will commute as much as two hours, one way from their communities rather than relocate (EPRI 1982), although most workers would be drawn from San Diego County. If non-local contractors' staff workers are required for the project, there are approximately 448 hotels/motels with 53,598 rooms in San Diego County (MMC 2007b, p. 5.10–16) to accommodate workers during the construction workweek. Therefore, staff utilized the Chula Vista – San Diego labor market area for its evaluation of construction worker availability and community services and infrastructure impacts from the CVEUP construction.

DEMOGRAPHIC SCREENING

The purpose of an environmental justice screening analysis is to determine whether a below-poverty level and/or minority population exists within the potentially affected area of the proposed site. Staff conducted the demographic screening in accordance with the guidance document, "Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis" (EPA 1998). People of color populations, as defined by this Guidance Document, are identified where either:

- The minority population of the affected area is greater than 50 percent of the affected area's general population; or
- The minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis; or
- One or more census blocks in the affected area have a minority population greater than 50 percent.

In 1997, the President's Council on Environmental Quality issued Environmental Justice Guidance that defines "minority" as individuals who are members of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander; Black not of Hispanic origin; or Hispanic. Low-income populations are identified using the annual statistical poverty thresholds from the U.S. Census Bureau's *Current Population Reports*, Series P-60 on income and poverty (OMB 1978).

Staff has reviewed Census 2000 information which indicates that the minority population by census block (the smallest geographic unit for which the Census Bureau collects and tabulates data) is 73.41 to 81.13 percent within a six-mile and one-mile radius of the proposed CVEUP (see **SOCIOECONOMICS Figure 1**). Census 2000 by census block group (a combination of census blocks and subdivision of a census tract) information shows that the below-poverty population is 13.34 percent within a one-mile radius. Poverty status excluded institutionalized people, people in military quarters, people in college dormitories, and unrelated individuals under 15 years old.

ASSESSMENT OF IMPACTS

Staff reviewed the CVEUP socioeconomic section of the AFC and other socioeconomic data. Staff used socioeconomic data provided and referenced from various governmental agencies, trade associations, and its own independent analysis to form the following socioeconomic analysis and conclusions.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project may have a significant effect on population, housing, and public services if the project will:

- Induce substantial population growth in an area, either directly or indirectly;
- Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere; or

- Adversely impact acceptable levels of service for fire and police protection, schools, parks and recreation, and other public facilities.

A socioeconomic analysis looks at beneficial impacts on local finances from property and sales taxes as well as potential adverse impacts on public services. In order to determine if a project would have any significant impacts, staff analyzes whether the current status of community services and capacities can absorb the project-related impacts in each of these areas. If the project's impacts could appreciably strain or degrade these services, staff considers this to be a significant adverse impact and would propose mitigation. A project's property taxes, sales tax, or local school impact fees or development fees can help local governments to augment public services needed to respond to project needs.

In this analysis, staff used fixed percentage criteria for environmental justice in evaluating potential impacts. For environmental justice, staff uses a threshold of greater than 50 percent for minority/below poverty population as a subset of the total population in the local area. Criteria for subject areas such as utilities, fire protection, water use and wastewater disposal are analyzed in other sections of this staff assessment. Please see the **Soils and Water, Reliability, Hazardous Material Management, and Waste Management** sections of this document. Education impacts are subjectively determined but are moot, as described later. Impacts on housing, parks and recreation, medical services, law enforcement, and parks and recreation and cumulative impacts are based on subjective professional judgments or input from local and state agencies.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Staff reviewed the socioeconomics section of the CVEUP AFC (MMC 2007b). Based on staff's use of the socioeconomic data provided and referenced from governmental agencies, trade associations, and staff's independent analysis, staff completed the socioeconomic analysis and identified conclusions described below.

Population and Employment

The 2000 U.S. census shows that California had a total population of 33,871,648, consisting of a minority (non-white and white-Hispanic) population of 18,054,858 (53.3 percent) and a white population of 15,816,790 (46.7 percent). San Diego County had a total population of 2,941,454 in 2006, which is an increase of 1.0 percent from 2,813,833 in 2000. By 2010, projections show a California population of 39,246,800 and 3,245,300 residents in San Diego County (MMC 2007b, pg. 5.10–1). The applicant has stated that the construction and operation workforce would come primarily from San Diego County. Staff concurs with the applicant's conclusions based on the following.

The unemployment rate for San Diego County was 4 percent (60,500) in 2006 (MMC 2007b, page 5.10–8). This is full employment in San Diego County. Full employment has been defined as 4 to 5 percent unemployment over the last few decades. For California, the unemployment rate was 4.9 percent, or 872,600 people (MMC 2007b, pg. 5.10–8). Given the large number of workers in the trades noted in **SOCIOECONOMICS Table 2**, staff accepts the applicant's assertion that the construction workforce would come primarily from San Diego County and would commute to the job on a daily or weekly basis.

SOCIOECONOMICS Table 2
San Diego County Workers in Trades

Craft	Total Number of Workers in San Diego	Maximum Number of Workers Needed for the Project (%)
Insulation Workers	130	8 (6.0)
Bricklayers/Masons	1,120	0 (0.0)
Carpenters	20,750	120 (0.6)
Electricians	6,000	99 (1.7)
Ironworkers	6,300	51 (0.8)
Laborers	13,140	91 (0.7)
Millwrights	3,500	66 (1.9)
Operating Engineers	3,630	40 (1.1)
Painters	8,100	16 (0.2)
Pipefitters	6,660	64 (1.0)
Sheetmetal Workers	2,520	0 (0.0)
Surveyors	700	8 (1.1)
Welders	2,610	38 (1.5)
Teamsters/Material Moving	310	30 (9.7)
Total Workforce	**75,470**	**633 (0.8)**

Source: State of California, labor market information for the year 2004 and CVEUP.

The peak construction activity (160 workers) for the CVEUP represents approximately 0.2 percent of the total available construction workforce as indicated in **SOCIOECONOMICS Table 2.** Project construction is expected to occur over an eight-month period. The greatest number of construction workers (peak) would occur in the fifth month of construction. There would be an average workforce of approximately 100 personnel and a peak workforce of 160 personnel. As noted previously, the majority of these workers are expected to come from San Diego County (the area within two hours of the site).

During operation of the project, only two workers would be needed to maintain and operate the project. Operation workers are expected to be drawn from the local population (San Diego County). The permanent workforce is expected to commute from within San Diego County (MMC 2007b, pg. 5.10–18). Staff estimates that this increase in employment would not have a significant effect on San Diego County unemployment rates.

Approximately $112,000 per year is expected to be spent in operational payroll. The estimated sales taxes from the operation and maintenance expenditure would be approximately $23,250. Of this amount, the place of sale will receive $3,000 in sales tax revenue. Staff estimates that the city and county revenue from the CVEUP sales tax would not be significant.

Fiscal and Non-Fiscal Effects

Some fiscal (having to do with public treasury) impacts of the CVEUP include:

- Property tax revenue for San Diego County of $855,420, distributed as follows:

  - $226,570 to the county
  - $157,800 to the City of Chula Vista
  - $471,050 to the Chula Vista Redevelopment Agency
- Construction total (state and local) sales tax of $139,500
- Operation total (state and local) sales tax of $23,250
- School impact fee of $344

Non-fiscal (private sector) impacts include:

- Total capital costs of $80 million.
- Construction eight month payroll of $8.9 million; annual operations payroll of $112,000.
- Approximately $14.5 million to be spent on construction materials and supplies and $1.25 million for operation and maintenance supplies.

Housing

Staff does not expect the displacement of any housing from this project. As of January 1, 2007, there were approximately 1,129,749 housing units in San Diego County; 76,838 units were in the City of Chula Vista (City). The vacancy rate is approximately 4.5 percent for San Diego County and 3 percent for the City (based on single-family, multi-family, and mobile homes).

There is an ample supply of hotel/motels in San Diego County. There are approximately 448 hotels/motels with a collective 53,598 rooms in San Diego County (MMC 2007b, pg. 5.10–16). Additionally, there are approximately 40 recreational vehicle parks within 2.5 miles of Chula Vista (MMC 2007b, page 5.10–16).

The construction workforce is anticipated to come primarily from San Diego County and commute daily. While the vacancy rates for housing units in San Diego County and Chula Vista are low, with the large number of units in San Diego County, staff finds the supply of permanent and temporary housing adequate to accommodate the few non-local construction workers who may decide to temporarily relocate to the study area.

The small operational workforce is expected to commute from within San Diego County. Therefore, staff concludes that there would not be a significant adverse socioeconomic impact on housing.

Schools

There are 46 elementary, high school, and unified school districts in San Diego County (MMC 2007b, 5.10–10). The CVEUP would be in the Chula Vista Elementary School District and the Sweetwater Union High School District. Current enrollment for the Chula Vista Elementary School District is 26,891 students and for the Sweetwater Union High School District enrollment is 42,083 students (MMC 2007b, p. 5.10–18). Currently, these two school districts are not considered overcrowded.

Construction workers would most likely commute to the project site. Non-local construction workers would not likely relocate family members for the relatively short duration of construction, choosing instead to commute weekly to the project area and returning home for the weekends. Assuming two operational employees and an average family size of 3.04 persons per household for Chula Vista, the project would add approximately two children to the local schools if both workers relocated (MMC 2007b, p. 5.10–21).

Government Code section 17620 authorizes a school district to levy a fee against any construction within a district. Local and state agencies are precluded from imposing additional fees or other required payments on development projects for the purpose of mitigating possible enrollment impacts to schools. School impact fees to the Chula Vista Elementary School District would include a one-time assessment fee of $0.20 per square foot of principal building area. The Sweetwater Union High School District school impact fee is a one-time payment of $0.23 per square foot of principal building area on 800 square feet of occupied structures. Therefore, the CVEUP would need to pay $160 to the Chula Vista Elementary School District and $184 to the Sweetwater Union High School District for a total of $344 in school impact fees. Staff proposes Condition of Certification **SOCIO-1** as a means of verifying payment of the school impact fees.

Staff concludes that there would not be a significant adverse socioeconomic impact on education during the construction or operation of the CVEUP.

Parks and Recreation

Because the construction labor force is assumed to commute from San Diego County or neighboring counties within a two-hour commute and the operation workforce of two persons would commute from the local area, staff concludes that there would be no significant adverse socioeconomic impacts on parks and recreation.

Law Enforcement

The City of Chula Vista Police Department (CVPD) would provide service for the CVEUP. There is one police department, located at 315 4th Avenue, Chula Vista, that serves the City of Chula Vista. The CVPD consists of 252 authorized officers (MMC 2007b, p. 5.10–11). The average response time to “priority one” emergency calls is approximately 5 minutes and for “priority two” urgent calls is approximately 10 minutes.

The state highways and roads near the CVEUP are also patrolled by the California Highway Patrol (CHP). The CHP provides law enforcement, traffic control, accident investigation, and management of hazardous materials spill incidents.

The CVEUP should not significantly increase the demand for law enforcement, from a population perspective, since most of the construction labor force would commute. For the operational phase, the change in population is minimal (the operations labor force is small and local), so the impact on law enforcement should be correspondingly small. Staff finds no significant adverse socioeconomic impacts associated with law enforcement with the construction and operation of the CVEUP.

Medical Services

The Chula Vista Fire Department (CVFD) has three stations that would serve the CVEUP. Station No. 5, located at 391 Oxford Street, would be the first responder, followed by Station No. 3 at 1410 Brandywine Avenue, and Station No. 9 at 266 E. Oneida Street. The response time from any of the three stations to the project site would be approximately three minutes (MMC 2007b, p. 5.10–12). The CVFD Station No. 3 houses the City's Urban Search and Rescue unit.

Emergency medical service would be provided by the CVFD. CVFD Stations 5, 3, and 9 provide emergency hazmat (hazardous materials) response. In addition, the San Diego County Department of Environmental Health Hazardous Incident Response Team (DEH-HIRT) responds jointly with the San Diego Fire-Rescue Department Hazardous Incident Response Team to investigate and mitigate chemically related emergencies or complaints. The DEH-HIRT provides mitigation, containment, and control actions as well as hazard identification, evaluating the threat to the local populations and the environment (DEH 2007).

The hospital nearest the CVEUP and with an emergency room is Scripps Mercy Hospital Chula Vista (Scripps Mercy). Scripps Mercy is located at 435 H Street in Chula Vista. This facility recently added more than 40,000 square feet. With the addition, the hospital now has a 24-hour emergency department, intensive care unit, and laboratory.

However, Scripps Mercy does not have a trauma center. There are four hospitals with trauma centers within 25 minutes of the CVEUP:

- Sharp Memorial Hospital: 7901 Frost Street, San Diego
- Scripps-Mercy Hospital: 4077 5th Avenue, San Diego
- Children's Hospital & Health Center: 3020 Children's Way, San Diego; and
- University of California San Diego (UCSD) Medical Center: 200 West Arbor Drive, San Diego

Staff finds that the medical services available for the CVEUP would be adequate and that the CVEUP would not cause a significant adverse impact to these services. The CVEUP would not displace significant numbers of people or directly or indirectly induce substantial population growth. Hence, there are no significant socioeconomic impacts that might trigger adverse physical impacts in the provision of emergency medical services. For additional discussion see the **Worker Safety and Fire Protection** and **Hazardous Material Management** sections of this assessment.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (CCR, tit. 14, § 15130).

Cumulative impacts could occur when more than one project has an overlapping construction schedule that creates a demand for workers that cannot be met by local labor, resulting in an influx of non-local workers and their dependents.

The City of Chula Vista has received applications for 26 proposed projects. These are mostly residential development projects, with some commercial developments and one warehouse development and one manufacturing development (MMC 2007b, p. 5.10–22). Although the 26 proposed projects would require a labor supply for construction, staff concludes that there is a sufficient supply of skilled labor in San Diego County (MMC 2007b, p. 5.10–23).

The CVEUP would average approximately 100 workers per month and 160 during the peak month, for eight months of construction. In addition to the CVEUP, there are three other power plants operating or proposed in the greater San Diego area. The following is a discussion of those power plants.

A 100-MW power plant, Orange Grove Energy (OGE), is proposed near the community of Pala, San Diego County. OGE construction is proposed to start during winter 2008 and last six months. The proposed site is off Pala Del Norte Road, approximately 60 miles from the CVEUP.

Another proposed power plant, the 558-MW Carlsbad Energy Center Project (CECP), is proposed for the city of Carlsbad, San Diego County. The earliest construction date for the CECP plant would be fourth quarter of 2008. There are two construction schedules options for the proposed CECP: 1) phased construction of the two units with construction to begin during the fourth quarter of 2008 and lasting 25 months; 2) simultaneous construction of both units with construction to begin in the second quarter of 2010 and lasting 19 months. The CECP would be approximately 47 miles from the CVEUP.

Lastly, the 590-MW Otay Mesa Generating Project (OMGP) is currently under construction in the Otay Mesa area of western San Diego County. The OMGP was approved by the Energy Commission in April 2001; however, construction was suspended, but began again in May 2007. Construction is proposed to be completed in May 2009. The OMGP is approximately 10 miles from the CVEUP.

The CVEUP, OGE, and OMGP power plants are scheduled to complete construction during the second quarter of 2009. The peak labor needed to construct the CVEUP, OGE, CECP, and the OMGP power plants would be 970 construction personnel. The construction workforce of 970 personnel would be 1.3 percent of the available construction workforce in San Diego County. Hence, staff finds no significant adverse socioeconomic cumulative impacts associated with the CVEUP.

NOTEWORTHY PUBLIC BENEFITS

Important public benefits discussed under the fiscal and non-fiscal effects section are capital costs, construction payroll, and annual property taxes and sales taxes.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received three public comments. The following lists verbatim the three comments and staff's response to comments.

1. As you can see there are numerous homes within this circle and five public elementary schools, three high Schools and three Headstarts as well as a pre-K. There are also two Recreation Centers, two middle schools, a private elementary school, a Health Clinic and several private daycares within this circle. Several of the other peakers' reports had maps with one-mile circles. I am sure staff has the resources to do a better, more accurate job than I did. I believe staff's final report absolutely needs a map of this kind.

Please refer to staff's discussion on demographic screening and schools. In this **SOCIOECONOMIC** section, staff has included **SOCIOECONOMICS Figures 2** and **3,** which include all the schools in the Chula Vista Elementary School District and the Sweetwater Union High School District, respectively.

2. We are appalled when we look at the data on line for recently approved plants in southern California and compare their siting with the siting of this peaker plant. Again staff has access to more data not on line, but looking at the plants since 2001 that are on line it is obvious this plant should never have been approved in 2001. This location is totally inappropriate for this kind of a use. The closest residence to any of these other peakers is 1,000 feet. There are over 50 homes closer than this to this peaker! Only one peaker of 14 has an elementary school as close as the Chula Vista peaker plant. Actually this seems to be a violation of Title 5, which requires a 1500-foot buffer for new and proposed schools. Would seem that it should work in reverse as well for new and proposed conflicting uses. This needs to be examined in staff's report as well.

Please refer to staff's discussion on "Demographic Screening" and "Schools" in this section.

3. Environmental justice needs to be considered here also looking at how close these homes are to the Chula Vista peaker compared to the others. I can't help but wonder if, perhaps, the fact that the occupants of these 50 or more homes within 1,000 feet of the Chula Vista plant are over 80% Latino with a few black families and a few Anglo mixed in.

Please refer to staff's"Demographic Screening" discussion in this section.

CONCLUSIONS

Estimated gross public benefits from the CVEUP include increases in property and sales taxes, employment, and income for San Diego County, the City of Chula Vista, and the Chula Vista Redevelopment Agency. For example, there are estimated to be an average of 100 direct project-related construction jobs for eight months of construction. The CVEUP is estimated to have total capital costs of $80 million. The CVEUP construction payroll is estimated at $8.9 million for eight months and the operational payroll is $112,000 annually. Property taxes are estimated at $855,424 for the first year

(2009) for a project life of 30 years. The estimated total annual sales tax during construction is $14.5 million for materials and supplies. The estimated total annual sales tax during operation of the plant is $1.25 million for materials and supplies. Additionally, a one-time school impact fee of $344 would be generated.

Staff concludes that construction and operation of the CVEUP would not cause a significant direct or cumulative adverse socioeconomic impact on the study area's housing, schools, law enforcement, emergency services, hospitals, and parks and recreational facilities. Hence, there are no socioeconomic environmental justice issues related to this project.

With the proposed condition of certification, the project would be consistent with applicable LORS.

Finally, the following **SOCIOECONOMIC Table 3** provides a summary of socioeconomic data and information from this analysis, with emphasis on economic benefits of the CVEUP.

SOCIOECONOMICS Table 3
Data and Information

Estimated Project Capital Cost	$80 million
Estimate of Locally Purchased Materials	
Construction	$14.5 million
Operation (Operation & Maintenance)	$1.25 million
Estimated Annual Property Taxes	$855,424
Estimated School Impact Fees	$344
Estimated Employment	
Construction (average)	100 average jobs per month (total of 633)
Operation	2
Estimated Payroll	
Construction	$8.9 million (estimated)
Operation	$112,000 annually (estimated)
Estimated Total Sales Taxes (Total: Combined State, County and local)	
Construction	$139,000
Operation	$23,250 annually
Existing Unemployment Rates	4% (San Diego County)
Percent Minority Population (6 mile radius)	73.41%
Percent Poverty Population (6 mile radius)	14.12%
Percent Minority Population (1 mile radius)	81.13%
Percent Poverty Population (1 mile radius)	13.34%

PROPOSED CONDITION OF CERTIFICATION

SOCIO-1 The project owner shall pay the one-time statutory school development fee to the School District as required by Education Code Section 17620.

Verification: At least 30 days prior to start of project construction, the project owner shall provide the Compliance Project Manager proof of payment of the statutory development fee.

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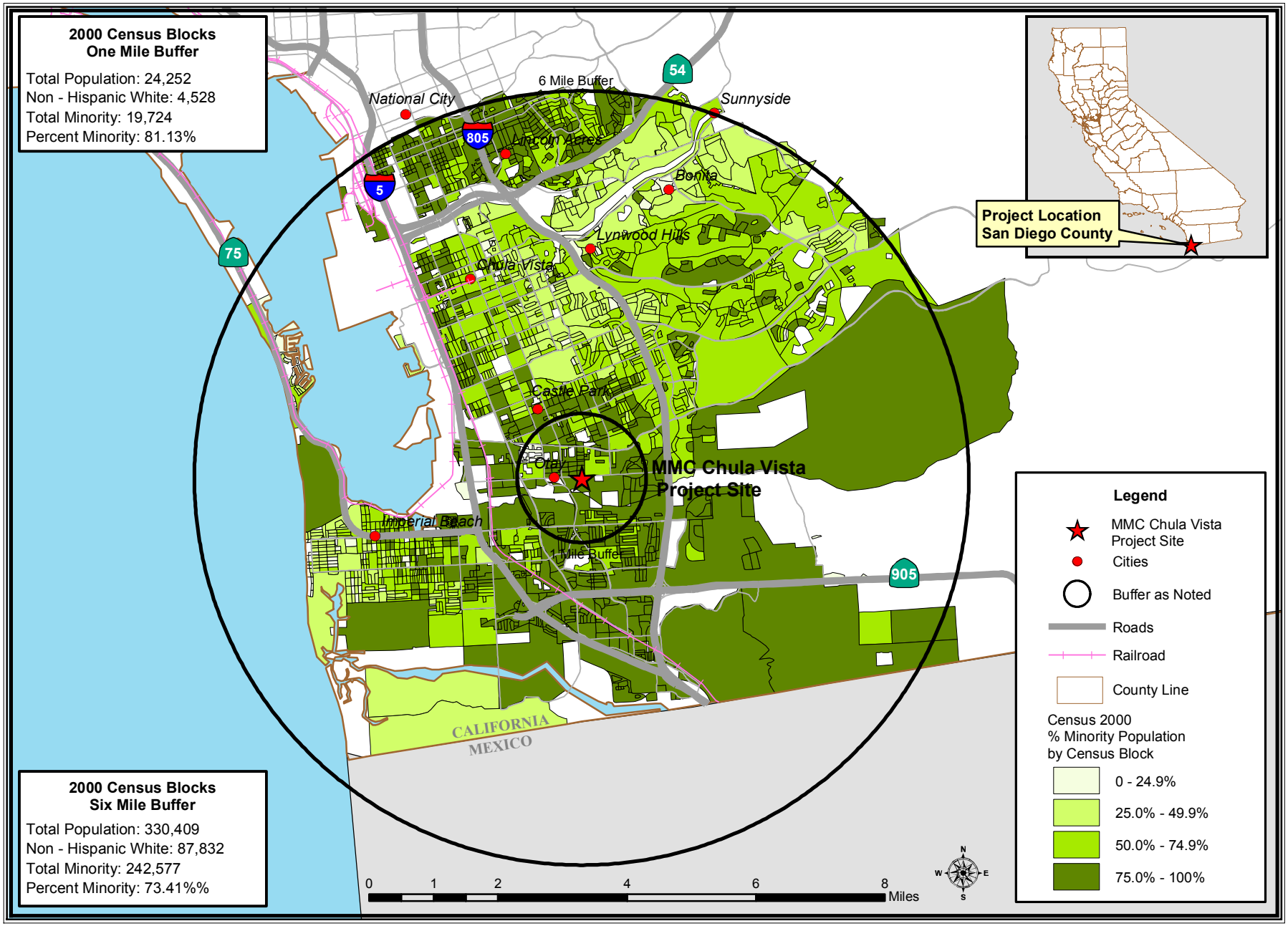
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APRIL 2008

SOCIOECONOMICS - FIGURE 1

MMC Chula Vista Project - Census 2000 Minority Population by Census Block - One and Six Mile Buffer



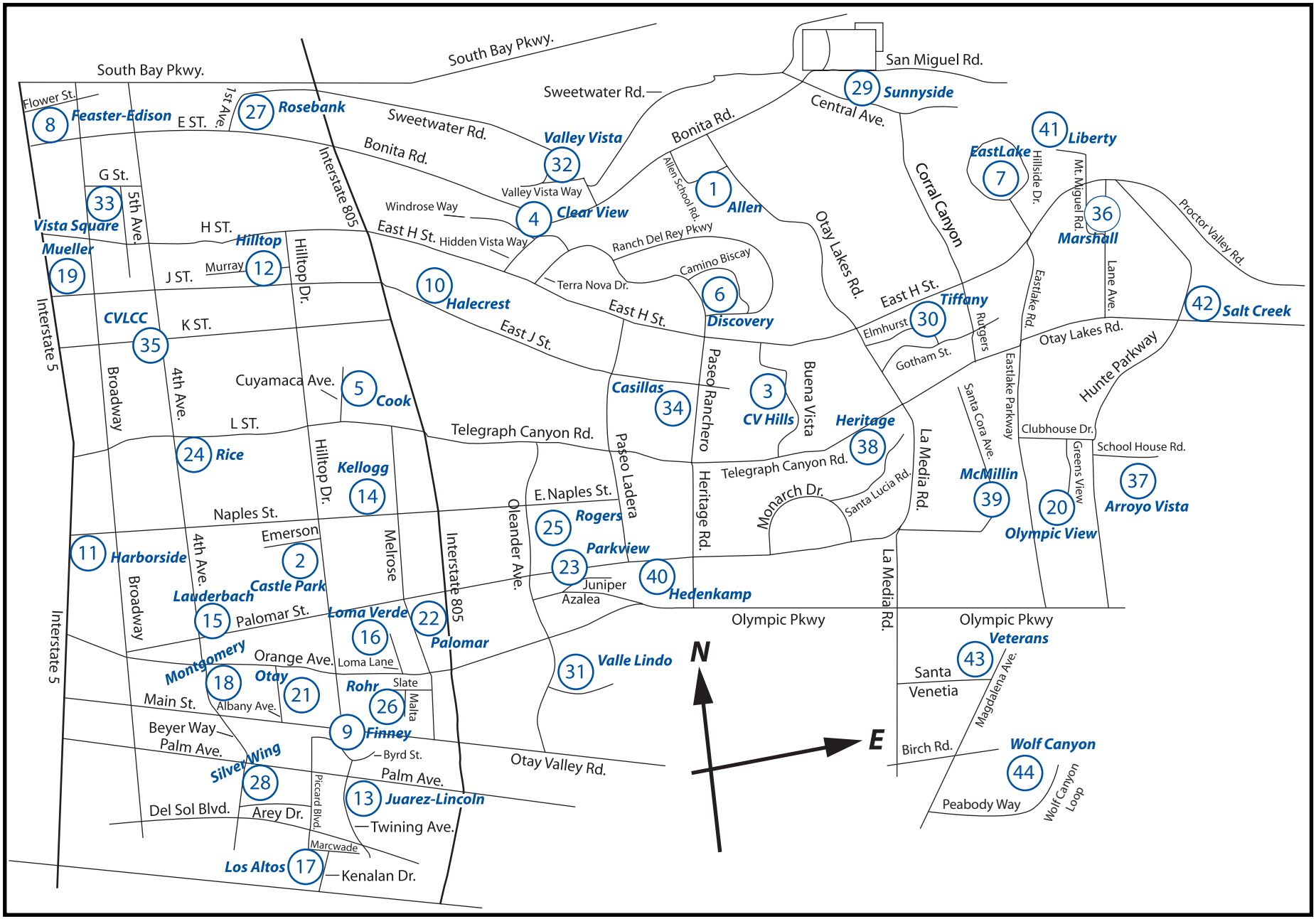
SOCIOECONOMICS

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, SEPTEMBER 2007

SOURCE: California Energy Commission Statewide Power Plant Maps 2006 - Census 2000 PL 94-171 Data - Matrix PL2

SOCIOECONOMICS - FIGURE 2

Chula Vista Energy Upgrade Project - Chula Vista Elementary School District

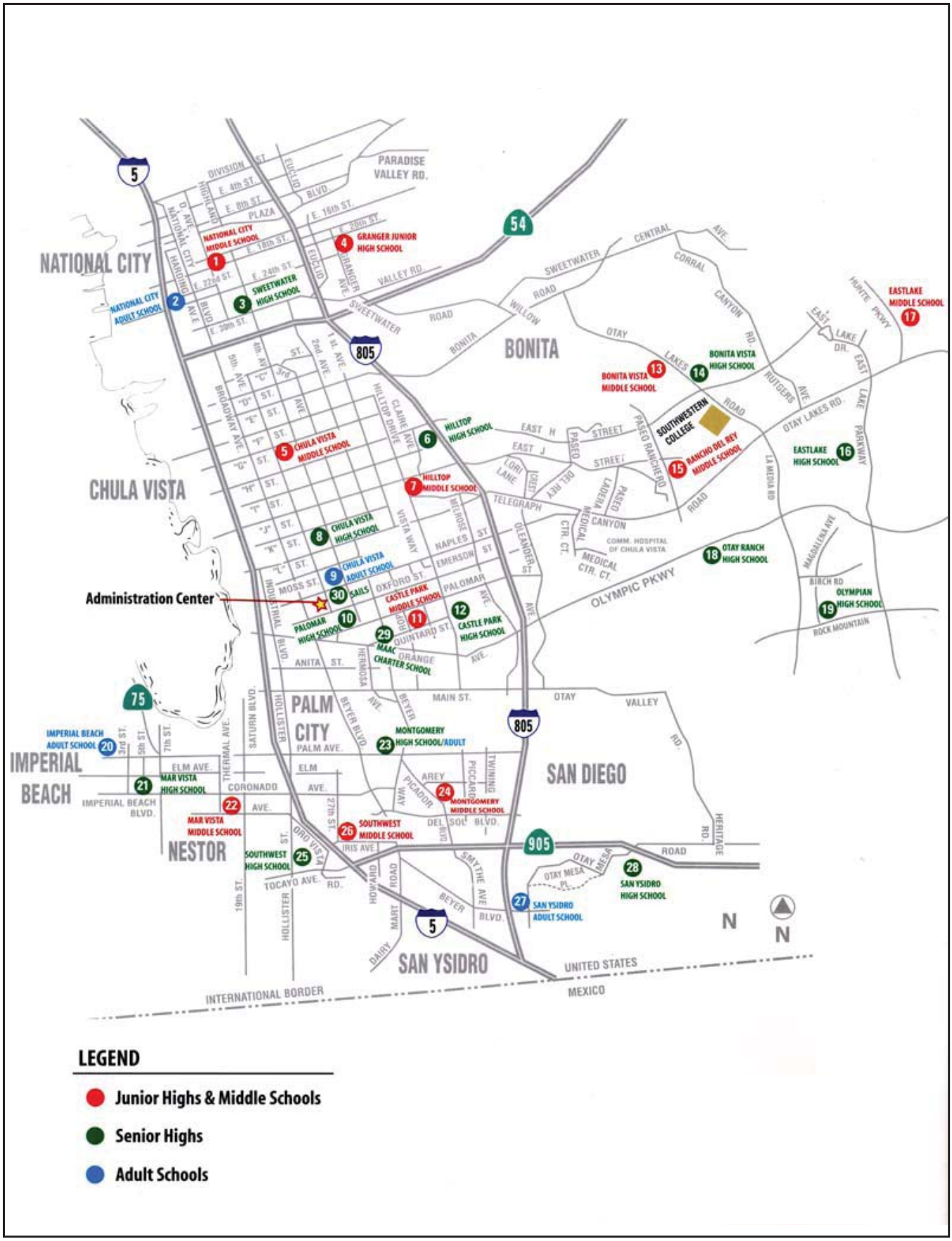


CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, APRIL 2008

SOURCE: Chula Vista Elementary School District

SOCIOECONOMICS - FIGURE 3

Chula Vista Energy Upgrade Project - Sweetwater Union High School District Map



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, APRIL 2008

SOURCE: Sweetwater Union High School District

SOIL AND WATER RESOURCES

Richard Anderson

SUMMARY OF CONCLUSIONS

This section of the Preliminary Staff Assessment analyzes the potential effects on soil and water resources that would occur by construction and operation of the proposed Chula Vista Energy Upgrade Project. Based on its assessment of the proposed Chula Vista Energy Upgrade Project, staff concludes the following:

- Implementation of best management practices during project construction and operation in accordance with effective Storm Water Pollution Prevention Plans and a Drainage, Erosion, and Sedimentation Control Plan would avoid significant adverse effects that could be caused by transport of sediments or contaminants from the project site and the off-site laydown site by wind or water erosion.
- The proposed water supply for the project, potable drinking water from Sweetwater Authority, would not cause a significant adverse environmental impact on current or future users of the drinking water.
- The use of a municipal water supply does not comply with state water policy found in the California Constitution, State Water Resources Control Board Resolution 75-58, and the Energy Commission's *2003 Integrated Energy Policy Report* water policy.
- The applicant has not adequately demonstrated that the use of an alternate water supply or cooling technology is environmentally undesirable or economically unsound.
- The proposed project would be constructed to comply with 100-year flood requirements and would not exacerbate flood conditions in the vicinity of the project.
- The discharge of wastewater to the City of Chula Vista's wastewater discharge system would not degrade surface or groundwater quality. The applicant must provide a letter from the City of Chula Vista stating it will accept the wastewater.
- The proposed project would comply with all applicable federal, state, and local laws, ordinances, regulations, and standards with the adoption of staff's proposed conditions of certification.
- The Chula Vista Energy Upgrade Project would not result in any unmitigated project-specific or cumulative significant adverse impacts to soil or water resources with adoption of staff's proposed conditions of certifications.

Staff concludes that the Chula Vista Energy Upgrade Project will not result in any unmitigated project-specific or cumulative significant adverse impacts to soil or water resources and will comply with all applicable laws, ordinances, regulations, and standards if all of the recommended conditions of certification are adopted by the Energy Commission and implemented by the applicant.

Additionally, staff concludes that the use of potable municipal water as process water in the CVEUP is not consistent with state water policy. Nor has the applicant demonstrated that the use of any other water supply or cooling technology is

environmentally undesirable or economically unsound (*Integrated Energy Policy Report 2003*) or offered mitigation for the use of municipal water.

INTRODUCTION

This section of the Preliminary Staff Assessment (PSA) analyzes the potential effects on soil and water resources by the Chula Vista Energy Upgrade project (CVEUP). This analysis specifically focuses on the potential for CVEUP to:

- cause accelerated wind or water erosion and sedimentation;
- exacerbate flood conditions in the vicinity of the project;
- adversely affect surface or groundwater supplies;
- degrade surface or groundwater quality; and
- comply with all applicable laws, ordinances, regulations, and standards (LORS) and state policies.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

SOIL AND WATER RESOURCES Table 1
Laws, Ordinances, Regulations, and Standards (LORS) and Policies

Applicable LORS	Description
Federal	
Clean Water Act (CWA) (33 United States Code section 1251 et seq.)	The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non point source discharges to surface water. This includes regulation of stormwater discharges during construction and operation of a facility normally addressed through a general National Pollutant Discharge Elimination System (NPDES) permit.
CWA section 401	Section 401 of the CWA requires that any activity that may result in a discharge into a water body must be certified by the Regional Water Quality Control Board (RWQCB)
CWA section 404	Section 404 of the CWA authorizes the U.S. Army Corps of Engineers to regulate the discharge of dredged or fill material to the waters of the U.S. and adjacent wetlands. The Corps issues site specific or general (nationwide) permits for such discharges.
Resource Conservation and Recovery Act (40 Code of Federal Regulations Part 260, et seq.)	The act seeks to prevent surface and groundwater contamination, sets guidelines for determining hazardous wastes, and identifies proper methods for handling and disposing of those wastes.
State	
California Constitution, Article X, section 2	The State Constitution requires that the water resources of the state be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use, or unreasonable method of use of water is prohibited.
Porter Cologne Water Quality Control Act (Water Code § 13000 et seq.)	The act requires the State Water Resources Control Board (SWRCB) and the nine RWQCBs to adopt water quality criteria to protect state waters. These standards are typically applied to the proposed project through the Waste Discharge Requirements (WDR) permit. These regulations require that the RWQCB issue WDRs specifying conditions

	regarding the construction, operation, monitoring, and closure of waste disposal sites, including injection wells and evaporation ponds for waste disposal.
California Water Code (CWC) section 13550	CWC section 13550 requires the use of reclaimed water for industrial purposes subject to reclaimed water being available and meeting certain conditions such as the quality and quantity of the reclaimed water being suitable for the use, the cost being reasonable, and the use not being detrimental to public health.
California Water Code (CWC) section 13552.6	CWC section 13552.6 prohibits the use of domestic water for cooling towers if suitable recycled water is available.
The California Safe Drinking Water and Toxic Enforcement Act (California Health & Safety Code § 25249.5 et seq.)	The California Safe Drinking Water and Toxic Enforcement Act prohibits actions contaminating drinking water with chemicals known to cause cancer or possessing reproductive toxicity.
Recycling Act of 1991 (Water Code § 13575 et seq.)	The Water Recycling Act of 1991 encourages the use of recycled water for certain uses and establishes standards for the development and implementation of recycled water programs.
California Code of Regulations, Title 22	Under Title 22 of the California Code of Regulations, the California Office of Environmental Health Hazard Assessment (OEHHA) reviews and approves wastewater treatment systems to ensure they meet tertiary treatment standards allowing use of reclaimed water for industrial processes such as steam production and cooling water. OEHHA also specifies secondary drinking water standards in terms of consumer acceptance contaminant levels, including total dissolved solids ranging from a recommended level of 500 milligrams per liter (mg/l), an upper level of 1,000 mg/l and a short-term level of 1,500 mg/l.
Warren-Alquist Act Public Resources Code section 25500 et seq.	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 applications for certification 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]).
State Policies	
Energy Commission *2003 Integrated Energy Policy Report (IEPR)*	Consistent with State Water Resources Control Board Policy 75-58 and the Warren-Alquist Act, the Energy Commission will approve the use of fresh water for cooling purposes by power plants it licenses only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.” “Additionally, the Energy Commission will require zero liquid discharge technologies unless such technologies are shown to be “environmentally undesirable” or “economically unsound.”
State Water Resources Control Board (SWRCB) Policies: Resolution 75-58 & Resolution 88-63	The principal policy of the SWRCB that addresses the specific siting of energy facilities is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (adopted by SWRCB on June 19, 1976, by Resolution 75-58). This policy states that use of fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. Resolution 75-58 defines fresh inland waters as those “which are suitable for use as a source of domestic, municipal, or agricultural water supply and which provide habitat for fish and wildlife.” Resolution 88-63 defines suitability of sources of drinking water. The total dissolved solids must exceed 3,000 mg/l for it to be considered unsuitable, or potentially unsuitable, for municipal or domestic water

	supply.
Local	
City of Chula Vista General Plan, rev. 2005 Ord. 3005 § 1, 2005; Ord. 1797 § 1, 1978; Chula Vista Municipal Code (CVMC) 15.04.015	The City of Chula Vista regulates activities associated with excavation, grading, clearing, grubbing, filling, and erosion control.
City of Chula Vista General Plan, rev. 2005 Ord. 3005 § 1, 2005; Ord. 2678 § 2, 1996; Ord. 2128 § 3, 1985; Ord. 1797 § 1, 1978; CVMC 15.04.040	The purpose of these ordinances is to help control stormwater run-off through the use of ground cover plantings.
City of Chula Vista, Wastewater Ordinance (2466 § 7, 1991)	Regulates connections to the City of Chula Vista's sewer system.

REGIONAL SETTING

The CVEUP is situated on the margin of a densely developed industrial and residential area approximately 3.7 miles south-southeast of downtown Chula Vista. It is bordered on the north, east, west, and southeast sides by commercial and industrial properties. The CVEUP will be constructed on the undeveloped northern portion of a property, the southern portion of which has already been developed for the Chula Vista Power Plant (CVPP).

The CVEUP property is bordered on the south side by an undeveloped natural area (Otay Valley Regional Park) through which the Otay River flows. The Otay River is a dryland, ephemeral wash that drains from east to west into the southern portion of San Diego Bay. The Otay River Valley is confined on the south side by the Otay Mesa, which forms an elevated ridge. There are no agricultural land uses in the proposed CVEUP site or vicinity.

In addition to the Otay River, there are several surface water bodies present within two miles of the CVEUP site. Surface water bodies include the San Diego Bay, Telegraph Canyon Creek, and the Tijuana River. Precipitation in San Diego County is infrequent and highly variable. Most precipitation occurs between the months of October and April. Precipitation data are available from the meteorological station at the San Diego International Airport.

SOIL AND WATER RESOURCES Table 2 provides average historical rainfall from the meteorological station at the San Diego International Airport.

SOIL AND WATER RESOURCES Table 2
Rainfall Near the Proposed Project Site (1914-2005)

Rainfall	Annual	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Average	10.22	0.5	.95	1.76	2.06	2.00	1.70	0.79	0.21	0.06	0.02	0.06	0.18
Maximum	24.93	4.98	5.82	9.26	9.09	7.65	6.96	5.37	2.54	0.87	0.24	2.13	3.14

Source: WRCC, 2005.

The mean annual precipitation (January 1914 to December 2005) is 10.22 inches per year. The minimum and maximum annual precipitation for the period of record is 3.41 inches and 24.93 inches respectively.

The CVEUP site is within the Sweetwater Valley Groundwater Basin. The Sweetwater Valley Groundwater Basin underlies an alluvial valley that empties into San Diego Bay. The basin is bordered by San Diego Bay on the west, Pliocene to Pleistocene semi-permeable terrestrial deposits on the north and south, and impermeable Santiago Peak volcanic rocks on the east. Quaternary alluvium and the San Diego Formation are the two major water-bearing formations in the basin.

PROJECT, SITE, AND VICINITY DESCRIPTION

The proposed CVEUP would be a nominal 100-megawatt (MW) peaking facility. Primary equipment for the generating facility would include two General Electric (GE) LM6000PC SPRINT combustion turbine generators and associated equipment (MMC 2007b, AFC Figure 2.1-4) The SPRINT model is enhanced by the incorporation of spray intercooling (thus the name, SPRay INTercooling). By spraying water into the airstream between the two compressor stages, the partially compressed air is cooled, reducing the amount of work that must be performed by the second stage compressor. The project site is located on a 3.8-acre parcel in the City of Chula Vista. The CVEUP would replace the existing older and less efficient power plant with newer, more efficient equipment. As part of the CVEUP, the existing power plant would be removed from the southern portion of the project parcel. The proposed CVEUP would be constructed on vacant land in the northern portion of the parcel. Some of the facilities that serve the existing plant would be reused for the new power plant. These facilities include the water, sanitary sewer pipelines, and the stormwater runoff retention basin. The proposed project would have no new off-site linear facilities (CH2MHill 2007a).

A portion of the power block will be paved to provide internal access to all project facilities and on-site buildings. The areas around equipment, where not paved, will have gravel surfacing.

Each combustion turbine generator (CTG) system consists of a stationary CTG, supporting systems, and associated auxiliary equipment. The CTGs will be equipped with the following required accessories to provide safe and reliable operation:

- inlet air filters
- inlet air foggers
- metal acoustical enclosure

- redundant lube oil cooler
- water injection or dry low NOx combusters for NOx control
- compressor wash system
- fire detection and protection system

WATER RESOURCES

The CVEUP will use the existing 4-inch water supply pipeline from the City of Chula Vista (Sweetwater Authority) that serves the site. This supply will provide water for drinking, safety showers, fire protection, process water, and sanitary uses.

Process Water

Part of the incoming water from the City of Chula Vista (Sweetwater Authority) will be treated by a truck-mounted demineralizer and then stored in a demineralized water storage tank.

Demineralized water will be required for SPRINT water injection, fogger inlet cooling, water wash of the combustion turbine compressor section, and water injection for NOx control. Rental demineralizer equipment such as trailers or portable demineralizer skids would be used to supply demineralized water for the plant. The equipment would include a number of cation, anion, and mixed bed ion exchanger vessels. The demineralizer equipment would not include reverse osmosis units, and all demineralizer equipment would have off-site regeneration; therefore, there would be no demineralizer waste stream.

Demineralized water quality will meet the water purity requirements shown in **SOIL AND WATER RESOURCES Table 3**.

SOIL AND WATER RESOURCES Table 3
Demineralized Water Purity Requirements

Parameter	Units	Value
Total dissolved solids	ppm	5
Silica as SiO2	ppm	0.1
Conductivity	Micro mho per centimeter	<0.1 at 25°C
pH	Standard unit	6.0-8.0
Sodium + potassium max	ppm	TBD
Chlorides max	mg/L	0.5
Sulfates max	mg/L	0.5

°C = degrees Celsius
mg/L = milligrams per liter
ppm = parts per million
TBD = to be determined

The product water from the demineralizer system would be stored in a bolted, carbon steel, field-erected, factory-epoxy-coated, demineralized water tank. The tank would be sized for 100,000 gallons, which is nominally 12 hours of plant demineralized water usage.

SOIL AND WATER RESOURCES TABLE 4 shows the water quality of the Sweetwater Authority's domestic water.

SOIL AND WATER RESOURCES Table 4

Sweetwater Authority Water Quality Data				
Secondary Aesthetic Standards – Results January1, 2006 to December 31,2006				
INORGANIC CONTAMINANTS	**MCL** (MRDL)	**PHG** (MCLG)	**RANGE**	**AVERAGE**
Aluminum (ppb)	200	600	ND	ND
Iron (ppb)	300	NA	ND	ND
Manganese (ppb)	50	500	ND	ND
Specific Conductance (microsiemens per centimeter)	1600	NA	645-859	751
Total Dissolved Solids (ppm)	1000	NA	270-516	383
Chloride (ppm)	500	NA	82-180	134
Sulfate (ppm)	500	NA	15-173	88
OTHER PARAMETERS				
Sodium (ppm)	NA	NA	73-117	97
Total Hardness (ppm)	NA	NA	46-270	137
ICH (Standard Units)	NA	NA	7.5-8.9	8.1
Total Organic Carbon (ppm)	NA	NA	1.8-6.4	4.1

MCL = Maximum Contaminant Level
MCLG = Maximum Contaminant Level Goal
MRDL = Maximum Residual Disinfection Level
MRDLG= Maximum Residual Disinfection Level Goal
NA = Not Applicable
ND = Non-Detect
PHG = Public Health Goal

The CVEUP could use a maximum of 28 million gallons per year (86 acre-feet per year) of water for plant processes, assuming 4,000 hours per year of operation. At a more realistic operating scenario of 600 hours per year, the CVEUP would use about 4.2 million gallons per year (12.8 acre-feet per year). A will-serve letter from the Sweetwater Authority indicating that this amount of water will be available to the project is included in Appendix 2A of the application for certification (AFC) (MMC 2007b).

CVEUP has elected to use potable water for the project for two reasons: (1) reclaimed water is not available from the Sweetwater Authority or any other source that is near enough to the project that constructing a pipeline to serve the project would be

economical; and (2) as a simple cycle peaking power plant, the project will operate only a small percentage of the time and the project's water use will be relatively modest (MMC 2007b).

Domestic and Sanitary Water Use

Potable water will be used for eye-wash stations and sanitary facilities. It is expected that bottled water will be made available for drinking water.

Water Supply during Construction

During construction of the project, water will be required primarily for dust suppression. Water available on site from Sweetwater Authority will be used for construction activities. The duration of construction activities is relatively short and the water requirements (less than 200 gallons per minute per hour for dust control and soil compaction, at peak use) are minor.

Wastewater Collection, Treatment, Discharge, and Disposal

Process wastewater will be routed to the existing retention basin for testing before discharge to the Chula Vista city wastewater system. Sanitary wastewater from sinks, toilets, showers, and other sanitary facilities will be discharged via Chula Vista's sanitary sewer system.

Plant Drain and Oil/Water Separator

General plant drains will collect containment area washdown, sample drains, and drainage from facility equipment drains. Water from these areas will be collected in a system of floor drains, hub drains, sumps, and piping and routed to the retention basin.

Drains that could contain oil or grease will first be routed through an oil/water separator and then discharged to the sanitary sewer. Wastewater from combustion turbine water washes will be collected in holding tanks or sumps and will be trucked off site for disposal at an approved wastewater disposal facility.

Due to the relatively modest quantities of wastewater from the project, the City of Chula Vista has agreed to accept the project's discharge, other than that hauled off for disposal at an approved disposal facility. A will-serve letter from the City indicating its willingness to accept the project's wastewater (other than that which will be hauled off to an approved disposal site) will be provided to Energy Commission staff as soon as it is available from Sweetwater Authority.

Stormwater Runoff and Drainage

The existing site was designed with a slope of 0.5 to 1.0 percent. The proposed site will be graded so that flows to existing discharge points are unchanged or only minimally affected. The majority of the site runoff leaves the site through two discharge points: one in the southwest area and one in the southeast corner of the site. These discharge points will be reused for the CVEUP. A minimal amount of runoff leaves through a third point, which is not affected by development and was not used in any calculations.

During construction, a retention basin will be used to catch all construction stormwater until the permanent stormwater drainage system is installed and operational.

The grading and drainage of the proposed plant was designed in accordance with the City of Chula Vista's stormwater quality requirements manual, *Development and Redevelopment Projects Storm Water Management Standards Requirements.* The manual requires that the *County of San Diego Hydrology Manual* be used for rainfall data and hydrological information for calculations. Appendix 5.15A of the AFC contains the Preliminary Stormwater Management Design for the project, which includes stormwater calculations and the pre- and post-development drainage plans (MMC 2007b).

Water Requirements

At 62° F the CVEUP will use 116 gallons of water per minute (gpm) for plant processes including fogging and turbine wash. Total water use would be about 116 gpm (average daily use), or about 28 million gallons (3.6 million cubic feet, or 86 acre-feet) per year, assuming operation 4,000 hours per year (45.7 percent capacity factor). A more realistic assumption would be that the plant would run a much lower percentage of the time. The CVEUP more likely will operate around 600 hours in a year (6.8 percent capacity factor), and its annual average water use would more likely be 4.2 million gallons (12.8 acre-feet).

SOIL AND WATER RESOURCES Table 5
Estimated Daily and Annual Water Use for CVEUP Operations

Water Use	Average Daily Use (gpm)	Maximum Daily Use (gpm)	Average Annual Use (afy)**
Process and cooling water:	116	129	
4,000 hours per year:*			85.42 afy
600 hours per year:			12.8 afy
Sanitary and domestic water	0.1	0.1	
4,000 hours per year:*			24,000 gy
600 hours per year:			3,600 gy

* The 4,000 hour-per-year figure represents a hypothetical capacity factor that may never occur; 600 hours per year reflects a more realistic capacity factor for a simple-cycle peaking plant. See the discussion, above.

** afy = acre-feet per year; gy = gallons per year

SOIL RESOURCES

The soil mapping units in the project area are developed soils formed in sandy marine deposits in the northern portion and on alluvial deposits in the southern portion along the Otay River. These soils are all well drained to excessively drained. Due to the developed nature of the project area and vicinity, the soil conditions vary significantly from those mapped. Urban development often entails significant mixing of local soils from grading and the import of construction fill soils beneath foundations and roadways. These imported soils would necessarily have to be suitable for compaction to support structures and roadways and consist of a mixture with a wide range of coarse-textured particle sizes (from silt to gravel sizes). Soil borings at the site confirm this type of imported soil as deep as 20 feet (MMC 2007b).

The Alternative 2 laydown area is approximately 3.1 miles to the east of the CVEUP property. It is located entirely within the Riverwash soil mapping unit [Rm].

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This section provides an evaluation of the expected direct, indirect, and cumulative impacts to soil and water resources that would be caused by construction, operation, and maintenance of the project. The analysis of impacts is conducted pursuant to the California Environmental Quality Act (CEQA), the Warren-Alquist Act, and the Energy Commission siting regulations. Potential impacts to water resources include the effects of project demand on the water supply and existing water users and the effects of construction activities and plant operation on water quality. Potential impacts to soil resources include the effects of construction and operation activities that result in erosion of soils and sediment moving into surface waters off site. The threshold of significance for these impacts is based upon the ability of the project to be built and operated without violating erosion, sedimentation, flood, surface or groundwater quality, water supply, or wastewater discharge standards. The LORS and policies presented in **SOIL AND WATER RESOURCES Table 1** were used to determine the threshold of significance for this assessment.

Mitigation is designed to reduce the effects of potentially significant project impacts to less than significant.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Erosion Control and Stormwater Management

Construction and operation activities for managing erosion and stormwater must be addressed to avoid potential adverse impacts to water quality and soil resources.

Construction

Accelerated wind- and water-induced erosion may result from earth moving activities associated with construction of the proposed project. Alteration of the soil structure leaves soil particles vulnerable to detachment and removal by wind or water. Soil erosion can cause the loss of topsoil and can increase the sediment load in surface receiving waters downstream of areas affected by power plant construction and operations. Increasing the amount of impervious surfaces would increase the amount of runoff and peak discharges. Runoff from stormwater can also convey contaminants to soil, groundwater, and surface water if hazardous materials and waste are not properly stored, handled, and disposed of. The project site currently is disturbed land, the structure of the surface soil has been altered, and fill has been imported and placed on the site.

Construction activities will consist primarily of excavation and construction of foundations, erection of major equipment and structures, and control systems. The only surface materials that will be used at the site are concrete and gravel. Construction

would increase short-term soil erosion. The project site, when completed, will be partially covered with impervious surfaces. During project operation, an increase in the amount of impervious surfaces could increase runoff.

Construction activities would increase short-term soil erosion. With implementation of best management practices, including stabilizing construction entrances; applying water for dust suppression; placement of silt fencing, berms, and hay bales as needed; and conveying all stormwater to the retention basin, erosion would be reduced to less than significant, and water quality would not be affected by any off-site discharges.

Water used for dust control and soil compaction during construction will not result in discharge. During the construction period, sanitary waste will be collected in portable toilets (no discharge) supplied by a licensed contractor for collection and disposal at an appropriate receiving facility. Equipment wash water will be collected and disposed of off site.

Expansive Soils

Soils of the Huerhuero series at the project site have montmorillonitic clays in the subsoil. This is considered to be an expansive clay—that is, it could have a relatively high shrink-swell potential. These soils are mapped as the majority of the northern portion of the CVEUP property and could affect the foundation and roadways for the proposed facility. The geotechnical investigation undertaken for the CVEUP project, however, tested soils on the project site and determined that site soils have low expansion potential (Ninyo & Moore 2006). Soils on site are made up of fill material from elsewhere in the county. Therefore, expansive soils are unlikely to cause a significant problem for construction of foundations or piping.

Laydown Areas

Two alternative construction laydown areas for construction material storage and construction worker parking have been proposed for the site. One site is located adjacent to the project site and is a vacant, former pallet storage yard, and the other site is located approximately three miles from CVEUP. To qualify for the NPDES statewide General Permit for Storm Water Discharges Associated with Construction Activity (General Construction Permit), CVEUP, prior to construction, will be required to develop a Storm Water Pollution Prevention Plan (SWPPP) to prevent the off-site migration of sediment and other pollutants and to reduce the effects of runoff from the laydown sites to off-site areas. Successful implementation of the SWPPP will ensure that construction impacts to water resources are mitigated to a less-than-significant level. SWPPP procedures include submitting a Notice of Intent to the San Diego Regional Water and Quality Control Board (RWQCB) and developing the SWPPP prior to the start of construction activities.

Temporary Erosion Control Measures

Temporary erosion control measures would be implemented at the start of construction, and would be evaluated and maintained during construction. These measures typically include revegetation, mulching, physical stabilization, dust suppression, berms, ditches, and sediment barriers. These measures would be removed from the site after the completion of construction.

During construction of the project, dust erosion control measures would be implemented to minimize the wind-blown loss of soil from the site. Water of a quality equal to or better than existing surface runoff would be sprayed on the soil in construction areas to control dust prior to completion of permanent control measures.

Sediment barriers slow runoff and trap sediment. Sediment barriers include straw bales, sand bags, straw wattles, and silt levees. They are generally placed below disturbed areas, at the base of exposed slopes, and along streets and property lines below the disturbed area. Sediment barriers are often placed around sensitive areas to prevent contamination by sediment-laden water near areas such as wetlands, creeks, or storm drains.

Some sediment barriers would be placed in locations where off-site drainage could occur to prevent sediment from leaving the site. Sediment barriers would be properly installed (staked and keyed), then removed or used as mulch after construction. Any soil stockpiles, including sediment barriers around the base of the stockpiles, would be stabilized and covered.

Operation

During CVEUP operations, industrial stormwater would be conveyed to the retention basin located on site. The retention basin would collect the annual stormwater runoff and would manage the peak storm discharge from the site during runoff from a 100-year 24-hour event. Although CVEUP proposes that stormwater drainage associated with some areas such as parking lots and the switchyard would leave the proposed site as sheet flow, staff recommends that all runoff from the site be treated as industrial stormwater and that it be directed to the municipal storm water system (Condition of Certification **SOIL&WATER-2**)**.**

Operation of the CVEUP would not result in impacts to the soil from erosion or compaction. Routine vehicle traffic during plant operation will be limited to existing roads, all of which are paved or will be graveled, and standard operational activities should not involve the disruption of soil. Therefore, impacts to soil from project operations would be less than significant.

Construction and Operation Erosion Control and Stormwater Management Mitigation

Staff recommends the adoption of three conditions that address mitigation measures designed to reduce any soil erosion and stormwater impacts to less than significant levels.

Condition of Certification **SOIL&WATER-1** requires the project owner to comply with all of the requirements of the General NPDES Permit for Discharges of Storm Water Associated with Construction Activity, including the development and implementation of a Storm Water Pollution Prevention Plan for Construction.

Condition of Certification **SOIL&WATER-2** requires the project owner to obtain Compliance Project Manager approval for a site-specific final Drainage, Erosion and Sedimentation Control Plan (DESCP) that addresses all project elements and ensures protection of water and soil resources for the construction and operational phases of the

project. Condition of Certification **SOIL&WATER-3** requires the project owner to comply with all requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity, including the development and implementation of an operational Storm Water Pollution Prevention Plan. The CVEUP has included design features to isolate stormwater from hazardous materials and equipment. Liquids storage areas are designed with spill containment.

With the implementation of Conditions of Certification **SOIL&WATER-1 through -3**, staff concludes that the CVEUP project site and laydown areas would mitigate any potential significant adverse impacts caused by erosion or stormwater discharge during construction and operation of the project.

Flooding Potential

A portion of the existing plant site is mapped as being within the 100-year flood plain (Zone A) as defined by the Federal Emergency Management Agency (FEMA, 1997). The actual 3.8-acre project site, however, is located on artificial fill that has raised the site above the 100-year floodplain (MMC 2007b).

The laydown area that is approximately 3.1 miles from the CVEUP site currently is used as a laydown area and truck parking area for another project. A portion of this laydown area is located in the 100-year flood zone. Because this area will be used temporarily during construction, and because of the proposed best management practices that will be in place to prevent stormwater runoff, no impacts due to flooding are anticipated.

Groundwater

The CVEUP will not utilize groundwater resources. Water delivered to the project by Sweetwater Authority is derived from the Colorado River. The water delivered by Sweetwater Authority is treated for delivery to all customers. The project would have no direct effect on groundwater quality and quantity.

Water Supply

The applicant proposes to use water from the Chula Vista municipal water system (Sweetwater Authority). The volume of water used per year would vary between 12.8 and 86 acre-feet depending on the amount of time CVEUP operates. CVEUP does not identify an alternative water supply. The applicant proposes to use water that is considered “fresh inland water” within the meaning of Title 22 and the SWRCB Resolution 75-58 because of its high quality and its use as a domestic or municipal water supply. **SOIL AND WATER RESOURCES Table 4** documents water quality of the water supplies.

The use of this water would not cause a significant impact on other water users or on the quality of other waters. However, use of this water source does not comply with state water policy regarding the use of fresh inland water. See the discussion of this issue in the “Compliance with Laws, Ordinances, Regulations, and Standards and State Water Policy” portion of this **Soil and Water Resources** section.

Management of Hazardous Materials

Chemicals will be stored in appropriate chemical storage facilities. Bulk chemicals will be stored in storage tanks, and most other chemicals will be stored in returnable delivery containers. Chemical storage and chemical feed areas will be designed to contain leaks and spills. Concrete containment pits and drain piping design will allow a full-tank capacity spill without overflowing the containment area. For multiple tanks located within the same containment area, the capacity of the largest single tank will determine the volume of the containment area and drain piping. See the **Waste Management** section for more information.

CUMULATIVE IMPACTS AND MITIGATION

Cumulative impacts consist of impacts that are created as a result of the proposed project in combination with impacts from other past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time.

Temporary and permanent disturbances associated with construction of the proposed project will cause accelerated wind- and water-induced erosion. However, staff has concluded that the implementation of proposed mitigation measures; the stormwater pollution prevention plan; and the drainage, erosion, and sediment control plan will ensure that the project will not contribute significantly to cumulative erosion and sedimentation impacts. The stormwater discharge would not exacerbate flooding conditions in the area.

The process wastewater from the CVEUP will be properly disposed. Therefore, no wastewater-related cumulative impacts are expected.

The CVEUP will use a maximum of 86 acre-feet a year of potable water. Staff believes that the use of this water will contribute to the cumulative impacts of scarce water supply for the south state. However, the amount of water is modest. Staff does not consider the use of the water to be a cumulatively significant impact.

No significant cumulative impacts are anticipated.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS AND STATE WATER POLICY

STORMWATER AND WASTEWATER

Clean Water Act

Staff has determined that the CVEUP would satisfy the requirements of the General National Pollutant Discharge Elimination System permit with the adoption of Conditions of Certification **SOIL&WATER-1 and -3**, which require the development and implementation of stormwater pollution prevention plans for construction and industrial activity.

Energy Commission's *2003 Integrated Energy Policy Report*

Based, in part, on the State Constitution and SWRCB Policy 75-58, the Energy Commission adopted its own policy for water conservation in the cooling of power plants and treatment of wastewater. With respect to wastewater, the Energy Commission's *2003 Integrated Energy Policy Report (IEPR)* specifies that "the Energy Commission will require zero liquid discharge technologies unless such technologies are shown to be 'environmentally undesirable' or 'economically unsound.'" The applicant proposes to discharge wastewater to the municipal wastewater system. Staff supports the CVEUP's use of the municipal wastewater system and believes that this action meets the intent of no liquid discharge off site that otherwise could degrade the surface or groundwaters of the state.

WATER SUPPLY AND USE

California Constitution, Article X, Section 2

Article X, section 2 of the California Constitution requires that the water resources of the state be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use, or unreasonable method of use of water is prohibited. The CVEUP project, using municipal water for all process, sanitary, and landscape irrigation purposes will not conserve fresh water. Therefore, staff believes that the CVEUP, using potable water as proposed for all process, sanitary, and landscape irrigation purposes, will be not be consistent with terms of the California Constitution, Article X, section 2. This water source would not comply with the Constitution since fresh inland water would be consumed for process use, rather than being conserved for higher beneficial uses such as domestic and municipal.

Warren-Alquist Act

The Warren-Alquist Act promotes all feasible means of water conservation. The proposed project will use high-quality water instead of conserving high quality water. The project will use up to 86 acre-feet of high quality water per year. Therefore, staff believes that the CVEUP would be inconsistent with terms of the Warren-Alquist Act regarding the use of freshwater.

SWRCB Resolution 75-58 and Energy Commission's *2003 Integrated Energy Policy Report*

LORS and water policies applicable to this project stem from, among other things, Article X, section 2 of the California Constitution, which declares that "the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented…" In order to better define what "unreasonable use" means in terms of power plant cooling, the State Water Resources Control Board (SWRCB) issued Resolution 75-58, "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling" (Resolution 75-58). It sets forth, in priority order, a list of preferable water sources for power plant cooling as follows: (1) wastewater being discharged to the ocean, (2) ocean, (3) brackish water from natural sources or irrigation return flow, (4) inland wastewaters of low total dissolved solids (TDS), and (5) other inland waters.

The resolution also states that fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. Since adopting Resolution 75-58 in 1976, the SWRCB has more recently confirmed the ongoing applicability of its policy for cooling of modern power plants and clarified a basic principle by stating, “The policy requires that the lowest quality cooling water reasonably available from both a technical and economic standpoint should be utilized as the source water for any evaporative cooling process utilized at these facilities” (SWRCB 2002a).

Based, in part, on the State Constitution and SWRCB Policy 75-58, the Energy Commission adopted its own policy for water conservation in the cooling of power plants. The Energy Commission’s *2003 Integrated Energy Policy Report, 2003 (IEPR)* specifies that “the Energy Commission would approve the use of fresh water for cooling purposes by power plants which it licenses only where alternative water supply sources and alternative cooling technologies are shown to be ‘environmentally undesirable’ or ‘economically unsound’”

In general, the use of a municipal water supply does not meet the overall intent of Resolution 75-58 to use the most degraded water source reasonably available. The proposed municipal water supply is high quality freshwater. Therefore, CVEUP’s use of municipal water would not conform to Resolution 75-58.

The proposed water would not comply with the Energy Commission’s *2003 IEPR* water policy because it is high quality freshwater. The *2003 IEPR* states that freshwater should be used only where alternative water supply sources and alternative cooling technologies are shown to be environmentally undesirable or economically unsound. The *2003 IEPR* relies on Resolution 75-58 to define alternative water supplies to freshwater. Staff does not believe the use of municipal water would conform to either Resolution 75-58 or the *2003 IEPR*.

Staff does not believe the applicant has adequately demonstrated that the use of an alternate water supply or cooling technology is environmentally undesirable or economically unsound. There is not enough information in the AFC to make a determination regarding the cost or the environmental impacts of using another water source.

Options that should be analyzed more fully include low quality (brackish) groundwater and recycled water. The use of low quality groundwater would require drilling a well and the installation of additional equipment to clean the water. The use of recycled water would require construction of a pipeline to transport recycled water to the CVEUP site. If these and other options can be shown to be environmentally undesirable or economically unsound, the applicant should consider options to offset the use of municipal water, such as assisting in the expansion of the recycled water delivery system in the Chula Vista area or other actions that can offset the use of municipal water.

NOTEWORTHY PUBLIC BENEFITS

Neither the applicant nor staff has identified any noteworthy benefits to soil or water resources that would be provided by the project.

CONCLUSIONS

Based on its assessment of the proposed Chula Vista Energy Upgrade Project (CVEUP), staff concludes the following:

- Implementation of best management practices during CVEUP construction and operation in accordance with effective Storm Water Pollution Prevention Plans and a Drainage, Erosion and Sedimentation Control Plan would avoid significant adverse effects that could be caused by transport of sediments or contaminants from the CVEUP site and the off-site laydown site by wind or water erosion.
- The proposed water supply for the project, potable drinking water from Sweetwater Authority, would not cause a significant adverse environmental impact on current or future users of the drinking water.
- The use of a municipal water supply does not comply with state water policy found in the California Constitution, State Water Resources Control Board (SWRCB) Resolution 75-58, and the Energy Commission's *2003 Integrated Energy Policy Report (IEPR)* water policy.
- The applicant has not adequately demonstrated that the use of an alternate water supply or cooling technology is environmentally undesirable or economically unsound.
- The proposed project would be constructed to comply with 100-year flood requirements and would not exacerbate flood conditions in the vicinity of the project.
- The discharge of wastewater to the City of Chula Vista's wastewater discharge system would not degrade surface or groundwater quality. The applicant must provide a letter from the city of Chula Vista stating it will accept the wastewater.
- The proposed project would comply with all applicable federal, state, and local laws, ordinances, regulations, and standards with the adoption of staff's proposed conditions of certification.
- The CVEUP would not result in any unmitigated project-specific or cumulative significant adverse impacts to soil or water resources with adoption of staff's proposed conditions of certifications.

Staff concludes that the CVEUP will not result in any unmitigated project-specific or cumulative significant adverse impacts to soil or water resources and will comply with all applicable LORS if all of the recommended conditions of certification are adopted by the Energy Commission and implemented by the applicant.

Additionally, staff concludes that the use of potable municipal water as process water in the CVEUP is not consistent with state water policy. Nor has the applicant demonstrated that the use of any other water supply or cooling technology is environmentally undesirable or economically unsound *(2003 IEPR)* or offered mitigation for the use of municipal water.

PROPOSED CONDITIONS OF CERTIFICATION

SOIL&WATER-1: The project owner shall comply with the requirements of the General National Pollutant Discharge Elimination System (NPDES) permit for discharges of stormwater associated with construction activity. The project owner shall develop and implement a stormwater pollution prevention plan for the construction of the entire Chula Vista Energy Upgrade Project (CVEUP).

Verification: The project owner shall submit copies to the Compliance Project Manager (CPM) of all correspondence between the project owner and the San Diego Regional Water Quality Control Board (RWQCB) regarding the General NPDES permit for the discharge of stormwater associated with construction activities within 10 days of its receipt (when the project owner receives correspondence from the RWQCB) or within 10 days of its mailing (when the project owner sends correspondence to the RWQCB). This information shall include copies of the notice of intent sent to the State Water Resources Control Board and the notice of termination for the project.

SOIL&WATER-2: Prior to site mobilization, the project owner shall obtain CPM approval for a site-specific Drainage, Erosion, and Sedimentation Control Plan (DESCP) that ensures protection of water quality and soil resources of the project site and all linear facilities for both the construction and operation phases of the project. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, meet local requirements, and identify all monitoring and maintenance activities. Monitoring activities shall include routine measurement of the volume of accumulated sediment in the stormwater retention basin. Maintenance activities must include removal of accumulated sediment from the retention basin when an average depth of 0.5 feet of sediment has accumulated in the retention basin. The plan shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1** and may incorporate by reference any stormwater pollution prevention plan developed in conjunction with any NPDES permit. The DESCP shall contain the following elements.

- ***Vicinity Map*** – A map shall be provided indicating the location of all project elements with depictions of all significant geographic features to include watercourses, washes, irrigation and drainage canals, and sensitive areas.
- ***Site Delineation*** – The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.
- ***Watercourses and Critical Areas*** – The DESCP shall show the location of all nearby watercourses including washes, irrigation and drainage canals, and drainage ditches and shall indicate the proximity of those features to the construction site.
- ***Drainage*** – The DESCP shall provide a topographic site map showing all existing, interim, and proposed drainage systems; drainage area boundaries and watershed sizes in acres; and the hydraulic analysis to

support the selection of best management practices to divert off-site drainage around or through the site and laydown areas. Spot elevations shall be required where relatively flat conditions exist. The spot elevations and contours shall be extended off site for a minimum distance of 100 feet in flat terrain.

- ***Clearing and Grading*** – The plan shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography tying in proposed contours with existing topography shall be illustrated. The DESCP shall include a statement of the quantities of material excavated or filled for each element of the project (for example, project site, transmission corridors, and pipeline corridors), whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there will be no clearing and/or grading conducted for each element of the project.
- ***Project Schedule*** – The DESCP shall identify on the topographic site map the location of the site-specific best management practices to be employed during each phase of construction (initial grading, project element excavation and construction, and final grading/stabilization). Separate best management practice implementation schedules shall be provided for each project element for each phase of construction.
- ***Best Management Practices*** – The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control best management practices (BMPs) to be used prior to initial grading, during project element excavation and construction, during final grading/stabilization, and after construction. BMPs shall include measures designed to control dust and stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs applied to disturbed areas following construction.
- ***Erosion Control Drawings*** – The erosion-control drawings and narrative shall be designed and sealed by a professional engineer or erosion-control specialist.

Verification: No later than 90 days prior to start of site mobilization, the project owner shall submit a copy of the plan to San Diego County for review and comment. A copy shall be submitted to the CPM no later than 60 days prior to the start of site mobilization for review and approval. The CPM shall consider comments received from San Diego County. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-, erosion- and sediment-control measures and the results of monitoring and maintenance activities. Once operational, the project owner shall provide in the annual compliance report information on the results of monitoring and maintenance activities.

SOIL&WATER-3: The project owner shall comply with the requirements of the general NPDES permit for discharges of stormwater associated with industrial activity. The project owner shall develop and implement a stormwater pollution prevention plan for the operation of the site.

Verification: At least 30 days prior to commercial operation, the project owner shall submit copies to the CPM of the operational stormwater pollution prevention plan for the CVEUP site. Within 10 days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the RWQCB about the general NPDES permit for discharge of stormwater associated with industrial activity. This information shall include a copy of the notice of intent sent by the project owner to the State Water Resources Control Board and the notice of termination. A letter from the RWQCB indicating that there is no requirement for a general NPDES permit for discharges of stormwater associated with industrial activity will satisfy this condition.

SOIL&WATER-4: Water used for project operation for process, sanitary, and landscape irrigation purposes shall be municipal water from Sweetwater Authority. Water use shall not exceed the annual water-use limit of 86 acre-feet without prior approval by the CPM. The project owner shall monitor and record the total water used on a monthly basis.

Verification: The project owner, in the annual compliance report, shall provide a water-accounting summary that states the source and quantity of water used on a monthly basis in units of gallons and on an annual basis in units of acre-feet. If the amount of water that is to be used will exceed 86 acre-feet per year during any single annual reporting period, the project owner shall provide a written request and explanation for the anticipated water-use increase to the CPM 60 days prior to the date when the water-use limit is expected to be exceeded. The CPM shall review the request and may approve an increase in the water-use limit for the period requested.

SOIL&WATER-5: The project owner shall comply with the San Diego County Ordinance regarding flood hazard and base flood elevation.

Verification: The project owner will submit a letter from the county in which it is stated that the project has complied with the county's flood-elevation requirements. Proof of compliance must be provided to the CPM prior to the start of site mobilization.

SOIL&WATER-6: The project owner will provide a letter indicating that Sweetwater Authority is willing to accept wastewater from the CVEUP project.

Verification: The project owner will submit a letter from the Sweetwater Authority in which it is stated that it will accept wastewater from the CVEUP project. Proof of compliance must be provided to the CPM prior to the start of site mobilization.

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TRAFFIC AND TRANSPORTATION

Jason Ricks

SUMMARY OF CONCLUSIONS

Staff has analyzed the traffic-related information provided in the Application for Certification and other sources to determine the potential for the Chula Vista Energy Upgrade Project to have significant adverse traffic and transportation-related impacts. Staff has also assessed the availability of mitigation measures that could reduce or eliminate the significance of these impacts.

The project would not have a significant adverse impact on the local and regional road/highway network. Neither construction nor operation-related traffic resulting from the daily movement of workers and materials would increase traffic volume on local roadways and highways beyond significance thresholds established by the City of Chula Vista. Nevertheless, to ensure adverse impacts would not occur and to facilitate safety during construction, the applicant has proposed to prepare a Traffic Management Plan. Staff has incorporated the proposed Traffic Management Plan into Condition of Certification **TRANS-1**. Staff has also recommended additional conditions of certification to prevent significant adverse traffic and transportation-related impacts, including **TRANS-2 and TRANS-3.** The parking area located adjacent to the Chula Vista Energy Upgrade Project site entrance may result in potential conflicts with the turning movements of trucks and construction equipment. Therefore, staff has proposed **TRANS-4** to reduce the potential for conflicts to occur.

The Chula Vista Energy Upgrade Project as proposed would be consistent with all applicable laws, ordinances, regulations, and standards, including the Land Use and Transportation Element of the City of Chula Vista City General Plan.

If the California Energy Commission elects to grant certification for this project, staff is proposing four conditions of certification.

INTRODUCTION

In the **Traffic and Transportation** analysis, staff addresses the extent to which the project may impact the transportation system in the local area. This analysis focuses on whether construction and operation of the Chula Vista Energy Upgrade Project (CVEUP) would cause traffic and transportation impact(s) under the California Environmental Quality Act (CEQA) and whether the project would be in compliance with applicable laws, ordinances, regulations, and standards (LORS). This analysis includes the identification of: (1) the roads and routings that are proposed for use for construction and operation; (2) potential traffic-related problems associated with the use of those routes by construction workers and truck deliveries; (3) the anticipated encroachment upon public rights-of-way during the construction of the proposed project and associated facilities; (4) the frequency of trips and probable routes associated with the delivery of hazardous materials; and (5) the possible effect of project operations on local airport flight traffic.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

TRAFFIC AND TRANSPORTATION Table 1 provides a general description of adopted federal, state, and local LORS pertaining to traffic and transportation relevant to the proposed project.

TRAFFIC AND TRANSPORTATION Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Code of Federal Regulations (CFR), Title 14 Aeronautics and Space, Part 77 Objects Affecting Navigable Airspace (14 CFR 77)	This regulation establishes standards for determining physical obstructions to navigable airspace; sets noticing and hearing requirements; and provides for aeronautical studies to determine the effect of physical obstructions to the safe and efficient use of airspace.
CFR, Title 49, Subtitle B	49 CFR Subtitle B includes procedures and regulations pertaining to interstate and intrastate transport (including hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles that operate on public highways.
State	
California Vehicle Code (CVC), Division 2, Chapter 2.5, Div. 6; Chap. 7, Div. 13; Chap. 5, Div. 14.1; Chap. 1 & 2, Div. 14.8, Div. 15	This code includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.
California Streets and Highway Code, Division 1 & 2, Chapter 3 & Chapter 5.5	This code includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits.
Local	
San Diego Association of Governments (SANDAG) Regional Transportation Plan	The plan includes public policies and strategies for the transportation system in the San Diego County region.
Chula Vista General Plan	This plan establishes regional transportation objectives, policies, and implementation measures for various modes of transportation.
Chula Vista Threshold Standard Policy	The policy requires maintenance of Level of Service (LOS) “C” or better as measured by observed average travel speed on all signalized arterial streets, except that during peak hours, an LOS “D” can occur for no more than any two hours of the day.

SETTING

The proposed project site is located at 3497 Main Street, Chula Vista, in San Diego County, California, and is occupied by the existing 3.8-acre Chula Vista Power Plant. The project site is located approximately 1.75 miles east of Interstate 5 (I-5) and 1.25 miles west of Interstate 805 (I-805) within the City of Chula Vista's Main Street Industrial Corridor (light industrial zoning district). The proposed project site is located south of Main Street (at the intersection with Albany Avenue, which runs in a north-south orientation) with a setback of approximately 835 feet. Access to the site is provided via an easement along the eastern perimeter of the proposed site (MMC 2007b, p. 5.12-1).

Surrounding land uses include light industrial and commercial businesses, including: a new business park (staff observed offices to be under final construction and unoccupied at time of the site visit) immediately adjacent to the east of the site, on the east side of the site access road; a storage warehouse to the west; a salvage yard to the north; and the Otay Valley Regional Park to the south.

Parking for construction workers would be provided at an off-site laydown area located on Heritage Road, just south of Main Street, about three miles east of the CVEUP site (MMC 2007b, p. 5.12-13).

CRITICAL ROADS AND FREEWAYS

TRAFFIC AND TRANSPORTATION Figure 1 and Figure 2 show the regional and local transportation features as described in the Application for Certification (AFC).

The roadways discussion below is based on information contained in the Traffic and Transportation section of the AFC (MMC 2007b), City of Chula Vista General Plan, as well as traffic data from the California Department of Transportation (Caltrans).

Interstate 5

I-5 is a north-south freeway that links Chula Vista with central San Diego to the north and Otay Mesa and Mexico to the south. Access from I-5 east to the site is provided via Main Street; I-5 in this location has four lanes in each direction. Caltrans reports that I-5 carries approximately 160,000 average daily vehicle trips near the CVEUP site.

Interstate 805

I-805 is a north-south freeway that provides access to the center of the Chula Vista residential and commercial areas. This freeway connects the inland portions of Chula Vista with communities to the north and south. Access from I-805 west to the site is provided via Main Street. This section of I-805 has four lanes in each direction. Caltrans reports that I-805 carries approximately 165,000 average daily vehicle trips near the CVEUP site.

Main Street

Main Street is an east-west major arterial according to the City of Chula Vista's General Plan and is considered a gateway access facility to the Auto Park and commercial recreation venues within the Otay Valley. Main Street, an undivided arterial with two lanes in each direction, connects the project site to I-5 on the west side and to I-805 on the east side of the CVEUP site.

LEVEL OF SERVICE

"Level of service" (LOS) is a qualitative measure describing operational conditions within a traffic stream. LOS is a term used to describe and quantify the congestion level on a particular roadway or intersection and generally describes these conditions in terms of such factors as speed, travel time, and delay. The Highway Capacity Manual[1] defines six levels of service for roadways or intersections ranging from LOS A, which represents the best operating conditions, to LOS F, which represents the worst. A more detailed description of LOS is found in **TRAFFIC AND TRANSPORTATION APPENDIX A.**

The City of Chula Vista uses the LOS criteria, as defined by the 2000 Highway Capacity Manual, to assess the performance of its street and highway system and the capacity of roadway segments. The City of Chula Vista's Threshold Standards Policy requires that LOS C or better be maintained on all signalized arterial streets, except that during peak hours LOS D can occur for no more than two hours (COCV 2008).

TRAFFIC AND TRANSPORTATION Table 2 summarizes the existing LOS for intersections that may be affected in the project area. LOS A represents free-flowing traffic; whereas, LOS F represents overcapacity operation. The only intersection that operates below an acceptable LOS is the I-5 northbound ramp/Main Street intersection, which currently operates at a LOS F.

TRAFFIC AND TRANSPORTATION Table 2
Existing Intersection Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (Seconds)	LOS	Delay (Seconds)	LOS
I-5 southbound ramps/Main St	11.1	B	17.9	C
I-5 northbound ramps/Main St	27.0	**D**	>50.0	**F**
Broadway/Main St	29.8	C	33.3	C
Fourth Avenue/Main St	24.9	C	25.1	C
Third Ave.-Beyer Way/Main St	29.5	C	31.5	C
Albany Avenue/Main St	11.8	B	9.5	A
Hilltop Drive/Main St	18.5	B	17.9	B
I-5 southbound ramps/Main St	25.1	C	30.9	C
I-5 northbound ramps/Main St	24.6	C	35.7	**D**

Source: CVEUP 2007a, page 5.12-9

[1] The *Highway Capacity Manual* is the most widely used resource for traffic analysis. The Highway Capacity Manual is prepared by the Transportation Research Board, Committee on Highway Capacity and Quality of Service. The current edition was published in 2000.

TRAFFIC AND TRANSPORTATION Table 3 summarizes the existing volume-to-capacity (V/C) ratios and LOS for roadway segments in the project vicinity that may be affected by the project during construction and/or operation.

TRAFFIC AND TRANSPORTATION Table 3
Level of Service Summary for Existing Conditions

Name	Segment	Hourly Design Capacity	Volume	V/C*	LOS*
Main Street	I-5 NB ramps and Broadway	30,000	21,259	0.71	C
Main Street	Broadway and Fourth Ave.	30,000	22,665	0.76	C
Main Street	Fourth Ave. and Third Ave.-Beyer Way	30,000	19,446	0.65	B
Main Street	Third Ave.-Beyer Way and Albany Ave.	30,000	20,975	0.70	B
Main Street	Albany Ave. and Hilltop Dr.	30,000	21,028	0.70	B
Main Street	Hilltop Dr. and I-805 ramps	30,000	23,832	0.79	C
Main Street	I-805 ramps and Heritage Road	50,000	28,392	0.57	A

Source: CVEUP, page 5.12-8
V/C = volume-to-capacity ratio; LOS = level of service

RAILWAYS

The Metropolitan Transit System (MTS), part of San Diego Area Governments (SANDAG), owns the San Diego & Arizona Eastern (SDAE) Railway from the interchange with Burlington Northern Santa Fe in National City to the Mexico border. MTS operates a freight service on the SDAE Railway. Freight hauling occurs during nighttime hours when the San Diego Trolley is not in service. The SDAE Railway is approximately 1.4 miles from the CVEUP site.

PUBLIC TRANSPORTATION

Public transportation in the CVEUP area is provided by Chula Vista Transit and San Diego Trolley, Inc. Chula Vista Transit operates routes 701, 702, 703, and 712 near the CVEUP site. Routes 701, 702, and 703 connect the Palomar Trolley Station to the H Street Trolley Station and areas north, east, and south of the project site. Route 712 connects the Palomar Trolley Station and areas to the east of the project site (MMC 2007b, p. 5.12-10).

The San Diego Metropolitan Transit Service operates the San Diego Trolley which has a Blue Line that runs from Old Town in San Diego to San Ysidro south of Chula Vista. The Blue Line has two trolley stops near the project site. One trolley stop is at Palomar Street, approximately two miles northwest of the project site. The second trolley stop is at Palm Avenue in Palm City, approximately 2.5 miles southwest of the CVEUP site.

The Sweetwater Union High School District has three school bus routes that run along Main Street between I-5 and I-805. Staff spoke with the Sweetwater Union High School District Transportation Supervisor, Jim Chinnery, regarding school bus stops. Mr. Chinnery confirmed that there are no school bus stops in the immediate vicinity of Main Street and Albany Avenue. The closest school bus stop to the project site is at Third Avenue and Montgomery Street, approximately one-half mile northwest of the CVEUP site. Additionally, staff spoke with Veronica Lopez, Sweetwater Union High School District Volunteer, regarding school bus stops near the construction worker parking and laydown at Heritage Road. Ms. Lopez informed staff that school buses do commute near the laydown area; however, no school bus stops are located on Heritage Road. The closest school bus stop to the laydown area is at Brandywine Avenue and Sequoia Street.

Chula Vista Elementary School District has three bus stops on Main Street near the CVEUP site. Chula Vista Elementary School District buses stop at Main Street and 7th Avenue, Main Street and Del Monte Avenue, and Main Street and Mace Street.

BICYCLE ROUTES

The City of Chula Vista Bikeway Master Plan identifies existing facilities and bicycle deficiencies throughout the City, evaluates the existing bikeway system's relationship with other mobility systems, and provides cost estimates to make improvements. City bike paths include some Class I facilities (bike lane separated from traffic), but virtually all arterial roadways east of Interstate 805 have Class II facilities (on-street bike lanes marked at the curb or in the parking lane). There is also a significant amount of Class III bikeway facilities (signage, no paint in right-of-way), primarily within western Chula Vista.

There are several existing bicycle paths within two miles of the CVEUP site. A Class II bicycle path runs along Main Street approximately two miles east of the project site at Oleander Avenue. Additionally, a Class III bicycle path runs across Main Street at Oleander Avenue, Melrose Avenue, Hilltop Drive, 4th Avenue, and Broadway in the project vicinity (MMC 2007b, p. 5.12-10). The bicycle path at Melrose Avenue is approximately one mile from the project site. The Hilltop Drive bicycle path is 0.39 miles from the CVEUP site; the 4th Avenue bicycle path, 0.64 miles; and the Broadway bicycle path, approximately one mile from the CVEUP site. Additionally, a Class II bicycle path runs along Heritage Road in the immediate vicinity of the off-site laydown area as well as along Main Street from Heritage Road to Brandywine Avenue.

AIRPORTS

There are four public airports and two Naval Air Stations within 20 miles of the CVEUP site. **TRAFFIC AND TRANSPORTATION Table 4** summarizes information on these six airports.

TRAFFIC AND TRANSPORTATION Table 4
Airports within 20 Miles of CVEUP

Name	Miles from CVEUP	Public/Private	Flights per day	Runways
Ream Naval Air Station	4 Miles	Private/ Military	N/A	2
North Island Naval Air Station	10 Miles	Private/ Military	N/A	2
Brown Field	4 Miles	Public/ General	277[1]	2
San Diego International-Lindbergh Field	12 Miles	Public/ Commercial	605[2]	1
Montgomery Field	16 Miles	Public/ General	671[3]	3 + 2 heli pads
Gillespie Field Airport	20 Miles	Public/ General	699[4]	3

Source: www.airnav.com
N/A = Not Available
[1] For 12-month period ending December 31, 2004; [2] For 12-month period ending December 31, 2006; [3] For 12-month period ending March 31, 2000; [4] For 12-month period ending December 31, 2005

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

To determine whether there is a potentially significant impact generated by a project, staff reviewed the project using the criteria found in the CEQA Guidelines Appendix G Environmental Checklist and applicable LORS utilized by other governmental agencies. Specifically, staff analyzed whether the proposed project would do the following:

- cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);
- exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;
- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access;
- result in inadequate parking capacity, and;
- conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Although not included as Appendix G Traffic and Transportation items, staff also discussed potential traffic and transportation impacts pertaining to nearby school operations and the transportation of hazardous materials.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Construction Impacts and Mitigation

Construction Workforce Traffic

Facility construction is projected to take place over eight months from September 2008 to April 2009. The maximum number of construction workers commuting to the project site during peak hours is estimated to be 160 daily workers. However, the construction workers would be shuttled from an off-site laydown area to the CVEUP site. The applicant has proposed to use six buses to provide round trip shuttles between the laydown area on Heritage Road and the CVEUP site. The shuttles would commute during the morning and afternoon peak hours for a total of 24 bus trips per day.

The construction workforce (boilermakers, carpenters, electricians, ironworkers, millwrights, etc.) is expected to come from within San Diego County. The workforce is expected to use I-805 to commute to the construction laydown area (MMC 2007b, p. 5.12-14). The maximum expected traffic volume from construction workers commuting to and from the project site would be 160 vehicles commuting via I-805 and accessing the laydown area on Heritage Road. Workers would be bused from the laydown area to the CVEUP site by six buses provided by the applicant. Each of the six buses would commute between the laydown area on Heritage Road and the project site via Main Street. There would be two shuttle trips (i.e. one roundtrip) by each bus in the morning and another two shuttle trips by each bus in the afternoon for a total of 24 worker bus trips per day (MMC 2007b, p. 2-28).

Construction Truck Traffic

Truck traffic for the CVEUP would originate from the north of the project site equally distributed between I-5 and I-805. Construction trucks would use the southbound ramps on I-5 and I-805 to get onto Main Street and then use the northbound ramps to return to their origin. Approximately 15 construction-related truck deliveries to the CVEUP site and haul trips from the CVEUP site would occur per day during construction. Only three of these trips are expected to occur during peak hours. Therefore, construction-related truck traffic (3 daily trips at peak hours, 12 daily trips at non-peak hours) is not expected to reduce LOS or substantially increase congestion. However, the potential exists for construction truck traffic to result in unexpected damage to roads within the project area. Therefore, staff is proposing Condition of Certification **TRANS-3** which would require that any road damaged by project construction be repaired to its original condition. This will ensure that any damage to local roadways will not be a safety hazard to motorists.

Total Construction Traffic

Construction activities would generally occur from Monday through Saturday between the hours of 6 a.m. and 7 p.m. However, additional hours may be necessary to compensate for schedule deficiencies or to complete critical construction activities. **TRAFFIC AND TRANSPORTATION Table 5** lists average and peak construction traffic estimates for the CVEUP.

TRAFFIC AND TRANSPORTATION Table 5
Estimated Construction Trip Generation

Trip Type	ADT	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Delivery/Haul Trucks	15	3	3	6	-	-	-
PCE* (2.5)	**38**	**8**	**8**	**16**	**-**	**-**	**-**
Employee Shuttle (bus)	24	6	6	12	6	6	12
PCE* (2.0)	**48**	**12**	**12**	**24**	**12**	**12**	**24**
Workers	320	160	-	160	-	160	160
PCE* (1.0)	**320**	**160**	**-**	**160**	**-**	**160**	**160**
Total Construction Traffic in PCE*	**406**	**180**	**20**	**200**	**20**	**172**	**184**

Source: CVEUP 2007a p. 5.12-13 ADT: Average Daily Trips
* PCE: passenger car equivalent.
Note: Bolded values represent total trips identified for impact analysis.

TRAFFIC AND TRANSPORTATION Table 6 shows the predicted change to critical road segment LOS levels during construction of the CVEUP. As shown below, project-related construction traffic would not cause the LOS on project area roadway segments to decline. All roadway segments would continue to operate at LOS C or better.

TRAFFIC AND TRANSPORTATION Table 6
Roadway Sections LOS Analysis with Project Construction Traffic

Roadway Segment on Main Street	Capacity (vehicle/ day)	Existing			Construction Traffic (vehicle/day)	With Project		
		Volume (vehicle/ day)	V/C	LOS		Volume (vehicle/ day)	V/C	LOS
Between I-5 NB ramps and Broadway	30,000	21,559	0.71	C	38	21,297	0.71	C
Between Broadway and 4th Avenue	30,000	22,665	0.76	C	38	22,703	0.76	C
Between 4th Avenue and 3rd Avenue-Beyer Way	30,000	19,446	0.65	B	38	19,484	0.65	B
Between 3rd Avenue-Beyer Way and Albany Avenue	30,000	20,975	0.70	B	38	21,013	0.70	B
Between Albany Avenue and Hilltop Dr.	30,000	21,028	0.70	B	86	21,114	0.70	B
Between Hilltop Dr., and I-805 ramps	30,000	23,832	0.79	C	86	23,918	0.80	C
Between I-805 ramps and Heritage Road	50,000	28,392	0.57	A	368	28,760	0.58	A

Source: CVEUP 2007a p. 5.12-14
V/C = volume-to-capacity ratio; LOS = level of service

TRAFFIC AND TRANSPORTATION Table 7
Intersection LOS Analysis with Project Construction Traffic

Intersection	Existing				With Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
I-5 SB ramps/Main Street	11.1	B	17.9	C	11.2	B	17.9	C
I-5 NB ramps/Main Street	27.0	D	>50.0	**F**	27.3	D	>50.0	**F**
Broadway/Main Street	29.8	C	33.3	C	29.8	C	33.3	C
Fourth Avenue/Main Street	24.9	C	25.1	C	24.9	C	25.1	C
Third Ave.-Beyer Way/Main Street	29.5	C	31.5	C	29.4	C	31.5	C
Albany Avenue/Main Street	11.8	B	9.5	A	13.0	B	10.2	B
Hilltop Drive/Main Street	18.5	B	17.9	B	18.4	B	17.8	B
I-805 SB ramps/Main Street	25.1	C	30.9	C	29.1	C	31.9	C
I-805 NB ramps/Main Street	24.6	C	35.7	D	24.8	C	39.0	D

Source: CVEUP 2007a, p. 5.12-21
Bold text = Unacceptable LOS

As shown in **TRAFFIC AND TRANSPORTATION Table 7,** all study area intersections except one would continue to operate at an acceptable LOS (LOS D or better) in the morning and afternoon peak hour with the addition of project-related construction traffic. The intersection of I-5 northbound ramps and Main Street, which currently operates at a LOS F during afternoon peak hours, would continue to operate at an unacceptable LOS (MMC 2007b, p. 5.12-21). Although the traffic study prepared for this project anticipated that no construction traffic would occur at the intersection of the I-5 northbound ramps and Main Street during afternoon peak hours, staff has proposed Condition of Certification **TRANS-1** to ensure that construction related traffic would not contribute to the unacceptable LOS F on I-5 northbound ramps.

Construction Workforce Parking and Laydown Area

The approximately 160 construction workers commuting to the CVEUP area during the peak construction period would park at the 2.75-cre laydown site located on Heritage Road, about three miles east of the CVEUP site (MMC 2007b, p. 5.12-13). Construction workers would be shuttled to the CVEUP construction site from the laydown area. The precise number of parking spaces at the proposed construction laydown area is unknown. However, using a conservative assumption of 10 feet by 20 feet of area for one parking space, the applicant would need an approximate area of at least 32,000 square feet (0.74 acres) to accommodate 160 vehicles. The laydown area comprises an area of approximately 2.75 acres, which is 119,790 square feet, which would comprise adequate space for 160 vehicles.

A Class II bicycle path runs along Heritage Road in the immediate vicinity of the off-site staging area as well as along Main Street from Heritage Road to Brandywine Avenue. Project construction traffic would traverse this stretch of roadway when traveling between the off-site laydown area and the project site. Construction worker vehicles, delivery trucks, and construction shuttle buses could present potential conflicts with bicyclists riding past the laydown area. Therefore, staff has proposed Condition of Certification **TRANS-1**, which would require the applicant to provide adequate signage, lighting, and traffic control device placement at the project construction site and laydown areas to decrease the potential for hazards to bicyclists in the vicinity of the laydown area.

Hazards Due to a Street Design Feature

Primary access to the CVEUP site would be from Main Street along a north/south oriented easement from Main Street to the CVEUP site. The entrance to the CVEUP site is approximately 60 feet wide at its intersection with the easement, but narrows by 15 feet inside the CVEUP site boundary to a width of approximately 35 feet. To the east of the CVEUP site is a business park with parking spaces located directly across from the CVEUP site entrance. Due to the close proximity of these parking spaces to the CVEUP site entrance, potential conflicts between trucks and/or construction equipment turning into or out of the CVEUP site could occur with cars parked at the business park, as northbound and southbound trucks may need to swing into this parking area to make the turn from/into the CVEUP site. Therefore, staff is recommending Condition of Certification **TRANS-5** which requires the applicant to coordinate temporary closures of the parking spaces located immediately east of the CVEUP site access in order to

facilitate truck turning movements and/or schedule delivery of materials and large construction equipment to and from the CVEUP site when the adjacent parking spaces would be vacant.

Linear Facilities

The CVEUP would connect to the San Diego Gas & Electric (SDG&E) Otay Substation using the electrical transmission system existing on the project site. Therefore, no new rights-of-way or widening of roadways would be required, and no traffic delays are expected.

The CVEUP would use process water from the existing water supply pipeline. The existing water pipeline would provide the CVEUP with water for domestic, sanitary, and service needs. No new rights-of-way or widening of roadways would be required; therefore, no traffic delays are expected from linear water facilities.

The CVEUP would connect to the existing 8-inch diameter natural gas pipeline. Therefore, no new rights-of-way or widening of roadways would be required, and no traffic delays are expected.

Proximity to Schools

The Chula Vista Elementary School District and the Sweetwater Union High School District serve the CVEUP area. There are six elementary schools, two middle schools, two high schools, and one charter school within one mile of the CVEUP site.

TRAFFIC AND TRANSPORTATION Table 8 lists the schools located within one mile of the CVEUP.

TRAFFIC AND TRANSPORTATION Table 8
Schools within One Mile of the CVEUP

School Name	School Address
Otay Elementary School	1651 Albany Avenue, Chula Vista
Montgomery Elementary School	1601 4th Avenue, Chula Vista
Loma Verde Elementary School	1450 Loma Lane, Chula Vista
Finney Elementary School	3950 Byrd Street, San Diego
Silver Wing Elementary School	3730 Arey Drive, San Diego
Pence Elementary School	877 Via Tonga Court, San Diego
Castle Park Middle School	160 Quintard Street, Chula Vista
Montgomery Middle School	1051 Picador Boulevard, San Diego
Montgomery High School	3250 Palm Avenue, San Diego
Castle Park High School	1395 Hilltop Drive, Chula Vista
Maac Community Charter School	1385 3rd Avenue, Chula Vista

Source: CVEUP 2007a, Figure 5.6-1

The proposed construction travel route would traverse I-5, I-805, and Main Street and would not pass any of the above schools. However, both the Chula Vista Elementary School District and the Sweetwater High School District have school bus routes along Main Street, although no school bus stops are in the immediate vicinity of the CVEUP

site access at Main Street and Albany Avenue or near the construction laydown area on Heritage Road. Therefore, construction traffic would not present a safety hazard to students waiting at or walking to or from a school bus stop.

Operation Impacts and Mitigation

Operation Workforce Traffic

Operation of the CVEUP would require two employees. The operational workforce is expected to commute from within San Diego County (MMC 2007b, p. 5.10-18). The applicant did not provide information on on-site parking for the two operational employees. Staff has proposed Condition of Certification **TRANS-2**, which would require the applicant to provide adequate parking as needed for operational and maintenance staff. **TRANS-2** would demonstrate coordination with the City of Chula Vista for on-site parking.

Truck Traffic

The average daily vehicle trips to the CVEUP site would be approximately four trips per day under normal operating conditions (MMC 2007c, DA-35). In addition, operation of the CVEUP would require weekly transportation of hazardous materials to the CVEUP site. The relatively low number of vehicle trips to the CVEUP site during operation would not increase the LOS on roadways near the CVEUP site. Staff agrees with the applicant that the existing roadway and intersection LOS conditions would remain the same during project operation. The service water would be divided into treated and untreated supplies. The untreated incoming city water would be treated by a truck-mounted demineralizer and then stored in a demineralized water storage tank.

Airports

Staff's experience is that the hot exhaust generated by a power plant can disturb atmospheric stability above a power plant up to 1,000 above ground level, resulting in turbulence with the potential to affect aircraft maneuverability.

The closest airports to the CVEUP are the Brown Field Airport and Ream Field (Imperial Beach Naval Air Station), both located approximately four miles from the CVEUP. Brown Field Airport is a public general-aviation airport with two runways designated for powered aircraft. There are, on average, 277 flights per day from the Brown Field Airport. Brown Field is heavily used by military and law enforcement agencies. The city of San Diego owns Brown Field (Federal Aviation Administration identifier “SDM”).

Ream Field is a private military airport for helicopters with two runways (FAA identifier “NRS”). The United States Navy owns the Ream Field. The average flights per day were not made available to staff.

The closest commercial airport to the CVEUP site is San Diego International-Lindbergh Field. Facilities at San Diego International-Lindbergh Field are over 10 miles northwest of the CVEUP site.

Staff concludes that, due to the distance of the airports from the proposed site, hot exhaust from the CVEUP would not affect maneuverability of aircraft from area airports.

According to the guidelines of the Federal Aviation Administration (FAA), construction of a project could potentially have a significant impact on aviation activities if a structure or any equipment is positioned in such a way that it would be more than 200 feet above the ground. The CVEUP does not have any structure exceeding 200 feet in height; therefore, staff concludes the CVEUP would not impact aviation activities and FAA notification is not required.

Emergency Services Vehicle Access

The Chula Vista Fire Department (CVFD) has three stations that would serve the CVEUP. Station No. 5, located at 391 Oxford Street, would be the first station to provide service to the CVEUP. Station No. 5 would be followed by Station No. 3 at 1410 Brandywine Avenue and Station No. 9 at 266 East Oneida. The response time from any of the three stations to the project site would be approximately three minutes (MMC 2007b, p. 5.10-12). The CVFD Station No. 3 houses the city's Urban Search and Rescue unit. All three stations are staffed by a captain, an engineer, and one firefighter (CVFD, 2008). CVFD Stations 5, 3, and 9 provide emergency hazardous materials response.

In the event of an emergency at the CVEUP site, emergency vehicles would enter the project site via Main Street. However, the California Fire Code requires an alternative access point into and out of the facility. Therefore, staff has proposed a condition of certification in the **Worker Safety & Fire Protection** section of the PSA which addresses emergency service access.

For a more detailed discussion of emergency services serving the facility, refer to the **Worker Safety and Fire Protection** section in this Preliminary Staff Assessment (PSA).

Transportation of Hazardous Materials

Operation of the CVEUP would result in weekly transportation of hazardous materials such as aqueous ammonia. Staff has addressed this issue in the **Hazardous Materials Management** section of this PSA. The applicant does not estimate a maximum number of truck deliveries to the CVEUP per month for hazardous materials. The primary designated hazardous materials route for the CVEUP would be either I-5 to the Main Street exit or I-805 to the Main Street exit. From either exit (I-5 or I-805) the hazardous materials route would continue on Main Street to the CVEUP site. Staff agrees with the applicant that this route is suitable and would minimize off-freeway travel and avoid passing directly by any local schools. However, as discussed above, school buses travel along Main Street past the project site. Therefore, to avoid potential conflicts or accidents between school buses and vehicles transporting aqueous ammonia, staff has proposed a condition of certification in the **Hazardous Materials Management** section of this PSA, which requires the applicant to restrict delivery to avoid coinciding with school bus schedules. Please see the **Hazardous Materials Management** section of this PSA for more information.

Although the transportation and handling of hazardous materials (i.e. aqueous ammonia) can increase roadway hazard potential, impacts associated with the hazardous materials can be mitigated to a level of insignificance by compliance with existing federal and state standards established to regulate the transportation of hazardous substances. These standards constitute a comprehensive regulatory program whose purpose is to ensure the safety of hazardous materials transportation. Staff has assessed the efficacy of these standards and finds that they are successful in minimizing the risks associated with hazardous materials transportation. The applicant stated that delivery of hazardous materials will comply with Caltrans, California Highway Patrol (CHP), and California Vehicle Code (CVC) (MMC 2007b, p. 5.12-22).

Specific sections of the CVC and the California Streets and Highways Code ensure that the transportation and handling of hazardous materials is done in a manner that protects public safety. Enforcement of these statutes is under the jurisdiction of the CHP. Staff recommends Condition of Certification **TRANS-4,** which requires written notification to the CHP's Border Division informing it of the start of commercial operation and advising that hazardous materials will be transported.

The California Department of Motor Vehicles specifically licenses all drivers who carry hazardous materials. Drivers are required to check weight limits and conduct periodic brake inspections. Commercial truck operators handling hazardous materials are required to take instruction in first aid and procedures on handling hazardous waste spills. Drivers transporting hazardous waste are required to carry a manifest, which is available for review by the CHP at inspection stations along major highways and interstates.

The applicant would be required to comply with all LORS governing the transport, storage, and use of hazardous materials. For a more detailed discussion on the handling and disposal of hazardous substances, see the **Hazardous Materials Management** section of this PSA.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulation, Title 14, section 15130).

Applications for 26 proposed projects have been filed in the City of Chula Vista. These are mostly residential development projects, with some commercial developments, one warehouse development, and one manufacturing development. One of these projects, a proposed sewing manufacturing and wholesale sales business, is located within 1,000 feet of the CVEUP. In addition, the Palomar Gateway District and Bayfront developments will likely generate high volumes of construction and, later, residential and other traffic. It is unlikely that construction of the Palomar Gateway District and Bayfront projects will coincide with the proposed construction of the CVEUP, however. Generally, it can be assumed that the majority of traffic related to Palomar Gateway District project will use I-5 and Palomar Street to access the area. Bayfront development

will likely generate traffic along I-5, J Street, and adjacent I-5 ramps. Since none of the CVEUP construction traffic would use the same roadways, it is anticipated that the CVEUP traffic would not conflict with the Palomar Gateway District and Bayfront construction or residential traffic. Details such as number of workers, number of residents and other occupants, and construction commencement and duration are not available for Palomar Gateway District and Bayfront projects (MMC 2007b, p. 5.12-23).

The exact extent of cumulative impacts cannot be determined at this time, but some estimate of the effects can be made. For the construction of the CVEUP, there will be no temporary changes in LOS associated with construction traffic on any of the roadway segments and intersections within the study corridor. Since the Palomar Gateway District and Bayfront projects will involve high volumes of construction and delivery traffic (likely more than the CVEUP project), it is reasonable to expect some degradation in LOS, but those impacts would occur on different roads. Thus, even if the construction activities are simultaneous, the cumulative impacts would not increase (MMC 2007b, pp. 5.12-23 and 5.12-24).

Operation of the CVEUP would only require two full-time staff and would thus result in the addition of two peak hour round trips on local roadways. Construction of the CVEUP would result in the addition of 184 peak hour trips on area roadways. Since the addition of CVEUP construction traffic would not result in decreased LOS for any of the study area roadways or intersections, it is reasonable to assume the effects of the addition of two operation trips to the same roadways would be negligible. Future growth and development will result in increased trips on area roadways. Specifically, the new office park located adjacent to the CVEUP will add operational traffic to the same roadways that CVEUP operational traffic would presumably use. Although the exact number and timing of trips of future tenants of the adjacent office park are unknown, based on the size of the parking area of the adjacent office park it is reasonable to assume that the number would be less than that associated with construction of the CVEUP. Therefore, even when combined with future traffic generated by the adjacent office complex, the two trips attributable to the CVEUP would still be negligible and would not contribute to a significant cumulative impact.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

TRAFFIC AND TRANSPORTATION Table 8 provides a general description of applicable statutes, regulations, and standards adopted by the federal government, the State of California, San Diego County, and the City of Chula Vista pertaining to traffic and transportation with which the project is required to comply. Conditions of certification have been proposed to ensure project consistency with a law, ordinance, regulation, or standard where it was not already mandated by federal or state regulations.

TRAFFIC AND TRANSPORTATION Table 7
Project Compliance with Adopted Traffic and Transportation LORS

Applicable Law	LORS Description and Project Compliance Assessment
Federal	
Code of Federal Regulations (CFR), Title 14, section 77 (14 CFR 77)	Includes standards for determining physical obstructions to navigable airspace. Sets forth requirements for notice to the Federal Aviation Administration of certain proposed construction or alteration. Also provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace (including temporary flight restrictions).
	The project does not have any structures exceeding 200 feet in height and is beyond restricted airspace of airports in the region; therefore no notification to the FAA is required.
CFR, Title 49, Subtitle B	Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures) and specifies safety measures for motor carriers and motor vehicles that operate on public highways.
	Enforcement is conducted by state and local law enforcement agencies and through state agency licensing and ministerial permitting (e.g., California Department of Motor Vehicles licensing, Caltrans permits), and/or local agency permitting.
State	
California Vehicle Code, Division 2, Chapter. 2.5; Div. 6, Chap. 7; Div. 13, Chap. 5; Div. 14.1, Chap. 1 & 2; Div. 14.8; Div. 15	Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.
	Enforcement is provided by state and local law enforcement agencies and through ministerial state agency licensing and permitting and/or local agency permitting.
California Streets and Highway Code, Division 1 & 2, Chapter 3 & Chapter 5.5	Includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits.
	Enforcement is provided by state and local law enforcement and through ministerial state agency licensing and permitting and/or local agency permitting.
Local	
SANDAG Regional Transportation Plan	Identifies public policies and strategies for the transportation system in the San Diego County region.
	Enforcement is provided by CHP, local law enforcement, and through ministerial state agency licensing and permitting and/or local agency permitting.
Chula Vista Threshold Standard Policy	Requires maintenance of level of service (LOS) C or better as measured by observed average travel speed on all signalized arterial streets, except that during peak hours, an LOS D can occur for no more than any two hours of the day.
	The CVEUP would comply with Chula Vista's minimum LOS C standards.
Chula Vista	Establishes regional transportation objectives, policies, and

General Plan	implementation measures for various modes of transportation.
	Project construction and operation traffic would comply with the general plan because the project would not cause LOS to drop below Chula Vista's minimum criteria.

NOTEWORTHY PUBLIC BENEFITS

Neither the applicant nor staff has identified any traffic-related benefits associated with the CVEUP.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received no comments related directly to traffic and transportation. However, staff received comments regarding the transportation of hazardous materials to the project site. These comments have been addressed in the **Hazardous Materials Management** section of this PSA.

CONCLUSIONS

Staff has analyzed the project's potential construction and operational impacts related to the regional and local traffic and transportation system and concludes the following:

1. During construction, since project-related construction traffic would not result in an unacceptable level of service along study area roadway segments or intersections, potential impacts created by workforce traffic and truck traffic would be less than significant.
2. During construction and operation, the project would not generate commuter or truck traffic trips through a residential area or directly adjacent to a school facility or school bus stop. However, staff has proposed Condition of Certification **TRANS-1** to avoid construction traffic conflicts with pedestrians and bicyclists.
3. The parking spaces located directly across from the CVEUP site entrance may present a conflict to truck and construction equipment turning movements to and from the CVEUP site. Staff has proposed Condition of Certification **TRANS-5** to ensure that the project owner coordinates with the tenants of the adjacent business park to develop a delivery schedule that would avoid conflicts between construction equipment and the tenant parking area.
4. During operation, workforce and truck traffic to and from the facility would not result in a substantial increase in congestion, deterioration of the existing level of service, or creation of a traffic hazard during any time in the daily traffic cycle and would have a less than significant adverse impact along the routes or roadway intersections that would be used to access the CVEUP site.
5. The project would not adversely affect aircraft operations associated with any aircraft flight traffic.
6. The construction and operation of the CVEUP as proposed, with the effective implementation of staff's recommended conditions of certification below, would

ensure that the project's direct adverse traffic and transportation impacts are less than significant.

7. The construction of the CVEUP along with the Palomar Gateway District and the Bayfront projects would not result in new cumulative impacts to the local area. The CVEUP would result in no temporary changes to the level of service on CVEUP project roadways and the CVEUP construction traffic would not use the same roadways as the Palomar Gateway District and the Bayfront projects.
8. Staff has determined that all significant direct or cumulative impacts specific to traffic and transportation resulting from the construction or operation of the project would be mitigated to less than significant. Therefore, the proposed project does not introduce traffic and transportation-related environmental justice issues.

If the Energy Commission elects to grant certification for this project, staff is proposing four conditions of certification.

PROPOSED CONDITIONS OF CERTIFICATION

TRAFFIC CONTROL AND IMPLEMENTATION PLAN

TRANS-1 Prior to construction of the CVEUP, the project owner shall prepare and implement a traffic control and implementation plan for the CVEUP construction traffic, containing:

1. a Traffic Management Plan addressing the movement of vehicles and materials, including arrival and departure schedules, designated workforce and delivery routes, delivery schedules outside peak travel periods and school bus pick-up/drop-off, and coordination with Caltrans and other traffic-related activities and resulting impacts during both construction and operation of the proposed facility.
2. redirection of construction traffic with a flag person.
3. signage, lighting, and traffic control device placement at the project construction site and laydown areas.
4. a Heavy Haul Plan addressing the transport and delivery of heavy and oversized loads requiring permits from Caltrans or other state and federal agencies.
5. a Parking Plan to ensure that designated parking areas and shuttle buses are adequate to accommodate construction workforce and parking.

The project owner shall consult with the City of Chula Vista and Caltrans in the preparation and implementation of the traffic control and implementation plan and shall submit the proposed traffic control plan to the City of Chula Vista and Caltrans in sufficient time for review and comment and to the Energy Commission Compliance Project Manager (CPM) for review and approval prior to the proposed start of construction and implementation of the

plan. The project owner shall provide a copy of any written comments from the City of Chula Vista or Caltrans and any changes to the traffic control plan to the CPM prior to the proposed start of construction.

Verification: At least 90 calendar days prior to the start of construction, including any grading or site remediation on the power plant site or its associated easements, the project owner shall submit the proposed traffic control and implementation plan to the City of Chula Vista and Caltrans for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the City of Chula Vista and Caltrans requesting review and comment.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from either the City of Chula Vista or Caltrans, along with any changes to the proposed development plan to the CPM for review and approval.

OPERATIONS PARKING

TRANS-2 Prior to operation of the CVEUP, the project owner shall prepare and implement an Operational Staff Parking Plan, which shall designate operational staff parking on site. The applicant shall comply with the City of Chula Vista's minimum parking standards.

Verification: At least 90 calendar days prior to the start of operation, the project owner shall submit the proposed Operational Staff Parking Plan to the City of Chula Vista for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the City of Chula Vista requesting review and comment. At least 30 calendar days prior to the start of operations, the project owner shall provide copies of any comment letters received from the City of Chula Vista to the CPM for review and approval.

REPAIR OF PUBLIC RIGHT-OF-WAY

TRANS-3 The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities to original or near-original condition in a timely manner.

Prior to the start of site mobilization, the project owner shall consult with the City of Chula Vista and Caltrans (if applicable) and notify them of the proposed schedule for project construction. The purpose of this notification is to request that the local jurisdiction and Caltrans consider postponement of public right-of-way repair or improvement activities in areas affected by project construction until construction is completed and to coordinate with the project owner regarding any concurrent construction-related activities that are planned or in progress and cannot be postponed.

Verification: At least 30 days prior to the start of mobilization, the project owner shall photograph or videotape all affected public roads, easements, and right-of-way segment(s) and/or intersections and shall provide the CPM, the affected local jurisdiction(s) and Caltrans (if applicable) with a copy of these images.

Within 60 calendar days after completion of construction, the project owner shall meet with the CPM, the affected local jurisdiction(s) and Caltrans (if applicable) to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public right-of-way repairs, the project owner shall provide a letter signed by the affected local jurisdiction(s) and Caltrans stating their satisfaction with the repairs to the CPM.

COORDINATION WITH ADJACENT BUSINESS PARK

TRANS-4 The project owner shall coordinate with the tenants of the business park located immediately east of the CVEUP site to accommodate truck and construction equipment turning movements into and out of the CVEUP site. Such coordination may require compensation (such as provision of alternate parking spaces) for coordinated temporary closure of the parking spaces located along the eastern boundary of the access road and/or delivery of construction materials and equipment to the CVEUP site when the adjacent parking area would be vacant.

Verification: At least 60 days prior to start of construction, the project owner shall contact in writing the business park tenants to develop a delivery schedule. The applicant must provide evidence to the CPM that demonstrates the delivery schedule is satisfactory for all parties. The submittal to the CPM for review and approval shall include evidence of review and approval by the business owners.

REFERENCES

CCR 2006. California Code or Regulations, Chapter 3 (CEQA Guidelines), Article 17, §§ 15250-15253 as amended on July 11, 2006.

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HIGHWAY CAPACITY MANUAL

The *Highway Capacity Manual* is prepared by the Transportation Research Board, Committee on Highway Capacity and Quality of Service. It represents a concentrated, multi-agency effort by the Transportation Research Board, the Federal Highway Administration, the American Association of Highway and Transportation Officials, and other traffic/transportation related agencies. It is the most widely used resource for traffic analysis. Several versions of the Highway Capacity Manual have been published. The current edition was published in 2000. It contains concepts, guidelines, and computational procedures for computing the capacity and quality of service of various highway facilities, including freeways, signalized and unsignalized intersections, rural highways, and the effects of transit, pedestrians, and bicycles on the performance of these systems.

LEVEL OF SERVICE

The description and procedures for calculating capacity and level of service are found in the *Highway Capacity Manual 2000*. The *Highway Capacity Manual 2000* represents the latest research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with level of service A representing the best operating conditions and level of service F the worst. Each level of service represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish service levels. A general description of service levels for various types of facilities is shown in **Table A-1**.

TRAFFIC AND TRANSPORTATION Table A-1
Level of Service Description

Facility Type	Uninterrupted Flow	Interrupted Flow
	Freeways Multi-Lane Highways Two-Lane Highways Urban Streets	Signalized Intersections Unsignalized Intersections - Two-Way Stop Control - All-Way Stop Control
Level of Service		
A	Free-flow	Very low delay
B	Stable flow. Presence of other users noticeable.	Low delay
C	Stable flow. Comfort and convenience starts to decline.	Acceptable delay
D	High density stable flow	Tolerable delay
E	Unstable flow	Limit of acceptable delay
F	Forced or breakdown flow	Unacceptable delay

Source: *Highway Capacity Manual 2000*

Interrupted Flow

One of the more important elements limiting, and often interrupting, the flow of traffic on a highway is the intersection. Flow on an interrupted facility is usually dominated by points of fixed operation such as traffic signals and stop and yield signs. These all operate quite differently and have differing impacts on overall flow.

Signalized Intersections

The capacity of a highway is related primarily to the geometric characteristics of the facility, as well as to the composition of the traffic stream on the facility. Geometrics are a fixed, or non-varying, characteristic of a facility.

At the signalized intersection, an additional element is introduced into the concept of capacity: time allocation. A traffic signal essentially allocates time among conflicting traffic movements seeking use of the same physical space. The way in which time is allocated has a significant impact on the operation of the intersection and on the capacity of the intersection and its approaches.

Level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions (i.e., in the absence of traffic control, geometric delay, any incidents, and any other vehicles). Specifically, level of service criteria for traffic signals is stated in terms of average control delay per vehicle, typically for a 15-minute analysis period. Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the ratio of green time to cycle length and the volume-to-capacity ratio for the lane group.

For each intersection analyzed, the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection. A level of service designation is given to the control delay to better describe the level of operation. Descriptions of levels of service for signalized intersections can be found in **Table A-2**.

TRAFFIC AND TRANSPORTATION Table A-2
Description of Level of Service for Signalized Intersections

Level of Service	Description
A	Very low control delay, up to 10 seconds per vehicle. Movement forward (progression) is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	Control delay greater than 10 and up to 20 seconds per vehicle. There is good progression or short cycle lengths or both. More vehicles stop causing higher levels of delay.
C	Control delay greater than 20 and up to 35 seconds per vehicle. Higher delays are caused by fair progression or longer cycle lengths or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase does not serve a waiting line of vehicles, and overflow occurs. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	Control delay greater than 35 and up to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Control delay greater than 55 and up to 80 seconds per vehicle. The limit of acceptable delay. High delays usually indicate poor progression, long cycle lengths, and high volumes. Individual cycle failures are frequent.
F	Control delay in excess of 80 seconds per vehicle. Unacceptable to most drivers. Oversaturation and arrival flow rates exceed the capacity of the intersection. Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay.

Source: *Highway Capacity Manual 2000*

The use of control delay, often referred to as signal delay, was introduced in the 1997 update to the *Highway Capacity Manual*. It represents a departure from previous updates. In the third edition of the *Highway Capacity Manual*, published in 1985 and the 1994 update to the third edition, delay only included stop delay. Thus, the level of service criteria listed in Table B differs from earlier criteria.

Unsignalized Intersections

The current procedures on unsignalized intersections were first introduced in the 1997 update to the *Highway Capacity Manual* and represent a revision of the methodology published in the 1994 update to the 1985 *Highway Capacity Manual*. The revised procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, frustration, fuel consumption, and

increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions (i.e., in the absence of traffic control, geometric delay, any incidents, and any other vehicles). Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.

Two-Way Stop Controlled Intersections

Two-way stop controlled intersections in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At two-way stop-controlled intersections, the stop-controlled approaches are referred as the minor street approaches and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the major street approaches.

The capacity of movements subject to delay is determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. A level of service designation is given to the expected control delay for each minor movement. Level of service is not defined for the intersection as a whole. Control delay is the increased time of travel for a vehicle approaching and passing through an all-way, stop-controlled intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection. A description of levels of service for two-way stop-controlled intersections is found in **Table A-3**.

TRAFFIC AND TRANSPORTATION Table A-3
Description of Level of Service for Two-Way Stop Controlled Intersections

Level of Service	Description
A	Very low control delay less than 10 seconds per vehicle for each movement subject to delay.
B	Low control delay greater than 10 and up to 15 seconds per vehicle for each movement subject to delay.
C	Acceptable control delay greater than 15 and up to 25 seconds per vehicle for each movement subject to delay.
D	Tolerable control delay greater than 25 and up to 35 seconds per vehicle for each movement subject to delay.
E	Limit of acceptable control delay greater than 35 and up to 50 seconds per vehicle for each movement subject to delay.
F	Unacceptable control delay in excess of 50 seconds per vehicle for each movement subject to delay.

Source: *Highway Capacity Manual 2000*

REFERENCE

Transportation Research Board. Highway Capacity Manual 2000. Washington, D.C.

TRAFFIC AND TRANSPORTATION - FIGURE 1
Chula Vista Energy Upgrade Project - Regional Transportation



CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, APRIL 2008
SOURCE: 07 - AFC - 4 - Figure 5.12-1

TRAFFIC AND TRANSPORTATION - FIGURE 2
Chula Vista Energy Upgrade Project - Local Transportation



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, APRIL 2008
SOURCE: California Energy Commission and DOQQ Imagery

TRANSMISSION LINE SAFETY AND NUISANCE

Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

The California Energy Commission staff concludes that the transmission line upgrades proposed for Chula Vista Energy Upgrade Project will not pose an aviation hazard according to the current FAA criteria. In addition, compliance with the requirements outlined in the proposed conditions of certification would minimize the potential for nuisance and hazardous shocks, and maintain the generated field to levels not associated with radio-frequency interference or audible noise. The proposed line's design and operational plan would be adequate to ensure that the generated electric and magnetic fields are managed to an extent the California Public Utilities Commission considers appropriate in light of the available health effects information. The transmission line upgrades for the project would comply with all federal, state, and local laws, ordinances, regulations, and standards relating to transmission line safety and nuisance if staff's conditions of certification are adopted and implemented.

INTRODUCTION

The purpose of this analysis is to assess the proposed Chula Vista Energy Upgrade Project transmission line's design and operational plan to determine whether its related field and non-field impacts would constitute a significant environmental hazard in the area around the route. All related health and safety laws, ordinances, regulations, and standards are currently aimed at minimizing such hazards. Staff's analysis focuses on the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety,
- interference with radio-frequency communication,
- audible noise,
- fire hazards,
- hazardous shocks,
- nuisance shocks, and
- electric and magnetic field (EMF) exposure.

The following federal, state, and local laws and policies apply to the control of the field and non-field impacts of electric power lines. Staff's analysis examines the project's compliance with these requirements.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

TRANSMISSION LINE SAFETY AND NUISANCE (TLSN) Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR),"Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, "Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, Section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
San Diego County General Plan, Noise Element	**References the County's Ordinance Code for noise limits.**
City of Chula Vista Municipal Code, Chapter 13.01.	**Sets noise limits according to land use zoning and time of day.**
Hazardous and Nuisance Shocks	
State	
CPUC GO-95, "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
Title 8, California Code of Regulations (CCR) section 2700 et seq. "High Voltage Safety Orders"	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	

Applicable LORS	Description
Institute of Electrical and Electronics Engineers (IEEE) 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
CPUC GO-131-D, "Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California"	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR sections 1250–1258, "Fire Prevention Standards for Electric Utilities"	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

SETTING

As noted in the **Project Description** section, the site for the proposed CVEUP is a 3.8-acre parcel currently occupied by MMC's Chula Vista Power Plant in the City of Chula Vista in San Diego County. The site is located within the City's industrial corridor zoned for industrial use and with fencing on all sides. The proposed project line is the same 69-kilovolt (kV) single-circuit line currently connecting the existing plant to San Diego Gas & Electric's (SDG&E) Otay Substation 1,020 feet north of the site. Once the proposed CVEUP is built, the existing plant will be dismantled and removed. This project line is located entirely within the existing plant's fenced-in boundaries (with no nearby residences) as it runs within a SDG&E easement (of mostly open ground with brush and small trees) to the connection point within the Otay Substation (MMC 2007b, pp. 2-1 and 2-2 and pp. 3-1 through 3-9).

PROJECT DESCRIPTION

The proposed project's line would consist of the following segments:

- The existing overhead, single-circuit 69-kV line on wooden poles and extending approximately 1,020 feet from the project's on-site switchyard to SDG&E's Otay Substation to the north;

- The project's on-site 69-kV switchyard from which the conductors would extend to the connection points on the SDG&E transmission grid; and
- Reliability upgrades on the existing line and at the Otay Substation to accommodate the power from CVEUP.

The proposed line would be owned, operated, and maintained by SDG&E so the necessary upgrade would be in keeping with SDG&E guidelines that ensure line safety and efficiency together with reliability and maintainability.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

The potential magnitude of the line impacts of concern in this staff analysis depends on compliance with the listed design-related LORS and industry practices. These LORS and practices have been established to maintain impacts below levels of potential significance. Thus, if staff determines that the project would comply with applicable LORS, we would conclude that any transmission line-related safety and nuisance impacts would be less than significant. The nature of these individual impacts is discussed below together with the potential for compliance with the LORS that apply.

DIRECT IMPACTS AND MITIGATION

Aviation Safety

Any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace. The related requirements in **TLSN Table 1** establish the standards for assessing the potential for obstruction hazards within the navigable space and establish the criteria for determining when to notify the FAA about such hazards. As noted by the applicant (MMC 2007b, p. 3-12), these regulations require FAA notification in cases of structures over 200 feet from the ground. Notification is also required if the structure is to be below 200 feet in height but would be located within the restricted airspace in the approaches to public or military airports. For airports with runways longer than 3,200 feet, the restricted space is defined by the FAA as an area extending 20,000 feet (3.98 miles) from the runway. For airports with runways of 3,200 feet or less, the restricted airspace would be an area that extends 10,000 feet from this runway. For heliports, the restricted space is an area that extends 5,000 feet.

As noted by the applicant (MMC 2007b, pp. 3-13 and 3-14), the nearest public airport to the CVEUP site is Brown Field Municipal Airport whose nearest runway of approximately 3,180 feet in length is 3.98 miles (21,015 feet) away, potentially placing the project's line outside the applicable restricted airspace as determined by FAA.

The nearest military airport is Naval Outlying Field, Imperial Beach. This airport has a runway 5,022 long as well as a heliport. The nearest distance between the runway and CVEUP is 3.39 miles (17,900 feet), placing CVEUP within the applicable restricted space and thus requiring FAA notification. Since, as noted by the applicant (MMC 2007b, p. 3-14) the proposed line structures would be much less than the 200 feet the FAA regards as triggering the concern about aviation safety, staff does not consider the

line as posing an aviation hazard. Furthermore, the proposed line is of similar structural dimensions as the other area transmission lines that are connected to the same SDG&E Otay Substation without posing an aviation hazard. The applicant intends to notify the FAA as required (MMC 2007b, p. 3-14).

Interference with Radio-Frequency Communication

Transmission line-related radio-frequency interference is one of the indirect effects of line operation and is produced by the physical interactions of line electric fields. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as “corona discharge,” but is referred to as “spark gap electric discharge” when it occurs within gaps between the conductor and insulators or metal fittings. When generated, such noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication. Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration, and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such interference usually depends on the magnitude of the electric fields involved and the distance from the line. The potential for such impacts is therefore minimized by reducing the line electric fields and locating the line away from inhabited areas.

The proposed line would be an upgraded line built and maintained in keeping with standard SDG&E practices that minimize surface irregularities and discontinuities. Moreover, the potential for such corona-related interference is usually of concern for lines of 345-kV and above, and not for 69-kV lines such as the proposed line. The line’s proposed low-corona designs are used for all SDG&E lines of similar voltage rating to reduce surface-field strengths and the related potential for corona effects. Since the line does not currently generate corona-related complaints in its current state, staff does not expect any corona-related radio-frequency interference or related complaints in the general project area after modification according to SDG&E guidelines. However, staff recommends Condition of Certification **TLSN-2** to ensure mitigation as required by the FCC in the unlikely event of complaints.

Audible Noise

The noise-reducing designs related to electric field intensity are not specifically mandated by federal or state regulations in terms of specific noise limits. As with radio noise, such noise is limited instead through design, construction, or maintenance practices established from industry research and experience as effective without significant impacts on line safety, efficiency, maintainability, and reliability. Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line electric field, the potential for perception can be assessed from estimates of the field strengths expected during operation. Such noise is usually generated during rainfall, but mainly from overhead lines of 345-kV or higher. It is, therefore, not generally expected at significant levels from lines of less than 345-kV as proposed for CVEUP. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing the

fair-weather audible noise from modern transmission lines to be generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. Since the low-corona designs are also aimed at minimizing field strengths, staff does not expect the proposed line operation to add significantly to current background noise levels in the project area. For an assessment of the noise from the proposed line and related facilities, please refer to staff's analysis in the **Noise and Vibration** section.

Fire Hazards

The fire hazards addressed through the related LORS in **TLSN Table 1** are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between the line and nearby trees and other combustible objects.

Standard fire prevention and suppression measures for similar SDG&E lines would be implemented for the proposed project line (MMC 2007b, p.3-14). The applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an important part of this mitigation approach. Condition of Certification **TLSN-4** is recommended to ensure compliance with important aspects of the fire prevention measures.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. Safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

The applicant's stated intention to implement the GO-95-related measures against direct contact with the energized line (MMC 2007b, p. 3-11) would serve to minimize the risk of hazardous shocks. Staff's recommended Condition of Certification **TLSN-1** would be adequate to ensure implementation of the necessary mitigation measures.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields.

There are no design-specific federal or state regulations to limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers

(IEEE). For the proposed project line, the project owner will be responsible in all cases for ensuring compliance with these grounding-related practices within the right-of-way.

The potential for nuisance shocks around the proposed line would be minimized through standard industry grounding practices (MMC 2007b, p. 3-13). Staff recommends Condition of Certification **TLSN-5** to ensure such grounding for CVEUP.

Electric and Magnetic Field Exposure

The possibility of deleterious health effects from EMF exposure has increased public concern in recent years about living near high-voltage lines. Both electric and magnetic fields occur together whenever electricity flows and exposure to them together is generally referred to as EMF exposure. The available evidence as evaluated by the CPUC, other regulatory agencies, and staff has not established that such fields pose a significant health hazard to exposed humans. There are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. Most regulatory agencies believe, as staff does, that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

Staff considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Staff, therefore, considers it appropriate in light of present uncertainty, to recommend feasible reduction of such fields without affecting safety, efficiency, reliability, and maintainability.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

- Any exposure-related health risk to the exposed individual will likely be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns are about the magnetic field.
- There are measures that can be employed for field reduction, but they can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

State

In California, the CPUC (which regulates the installation and operation of many high-voltage lines owned and operated by investor-owned utilities) has determined that only no-cost or low-cost measures are presently justified in any effort to reduce power line fields beyond levels existing before the present health concern arose. The CPUC has further determined that such reduction should be made only in connection with new or modified lines. It requires each utility within its jurisdiction to establish EMF-reducing measures and incorporate such measures into the designs for all new or upgraded power lines and related facilities within their respective service areas. The CPUC further established specific limits on the resources to be used in each case for field reduction. Such limitations were intended by the CPUC to apply to the cost of any redesign to

reduce field strength or relocation to reduce exposure. Publicly owned utilities, which are not within the jurisdiction of the CPUC, voluntarily comply with these CPUC requirements. This CPUC policy resulted from assessments made to implement CPUC Decision 93-11-013.

In keeping with this CPUC policy, staff requires a showing that each proposed overhead line would be designed according to the EMF-reducing design guidelines applicable to the utility service area involved. These field-reducing measures can impact line operation if applied without appropriate regard for environmental and other local factors bearing on safety, reliability, efficiency, and maintainability. Therefore, it is up to each applicant to ensure that such measures are applied in ways that prevent significant impacts on line operation and safety. The extent of such applications would be reflected by ground-level field strengths as measured during operation. When estimated or measured for lines of similar voltage and current-carrying capacity, such field strength values can be used by staff and other regulatory agencies to assess the effectiveness of the applied reduction measures. These field strengths can be estimated for any given design using established procedures. Estimates are specified for a height of one meter above the ground, in units of kilovolts per meter (kV/m), for the electric field, and milligauss (mG) for the companion magnetic field. Their magnitude depends on line voltage (in the case of electric fields), the geometry of the support structures, degree of cancellation from nearby conductors, distance between conductors and, in the case of magnetic fields, amount of current in the line.

Since most new lines in California are currently required by the CPUC to be designed according to the EMF-reducing guidelines of the electric utility in the service area involved, their fields are required under this CPUC policy to be similar to fields from similar lines in that service area. Designing the proposed project line according to existing SDG&E field strength-reducing guidelines would constitute compliance with the CPUC requirements for line field management.

The CPUC has recently revisited the EMF management issue to assess the need for policy changes to reflect the available information on possible health impacts. The findings did not point to a need for significant changes to existing field management policies. Since there are no residences in the immediate vicinity of the proposed project line, there would not be the long-term residential EMF exposures mostly responsible for the health concern of recent years. The only project-related EMF exposures of potential significance are the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the vicinity of the line. These types of exposures are short term and well understood as not significantly related to the health concern.

Industry's Approach to Reducing Field Exposures

The present focus is on the magnetic field because unlike electric fields, it can penetrate the soil, buildings, and other materials to produce the types of human exposures at the root of the health concern of recent years. The industry seeks to reduce exposure, not by setting specific exposure limits, but through design guidelines that minimize exposure in each given case. As one focuses on the strong magnetic fields from the more visible high-voltage power lines, staff considers it important, for perspective, to note that an

individual in a home could be exposed to much stronger fields while using some common household appliances than from high-voltage lines (National Institute of Environmental Health Services and the U.S. Department of Energy, 1998). The difference between these types of field exposures is that the higher-level, appliance-related exposures are short-term, while the exposure from power lines is lower level, but long term. Scientists have not established which of these types of exposures would be more biologically meaningful in the individual. Staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than around high-voltage power lines.

As with similar SDG&E lines, specific field strength-reducing measures would be incorporated into the proposed line upgrade to ensure the field strength minimization currently required by the CPUC in light of the concern over EMF exposure and health.

The field reduction measures to be applied include the following:

1. Increasing the distance between the conductors and the ground to an optimal level;

2. Reducing the spacing between the conductors to an optimal level;

3. Minimizing the current in the line; and

4. Arranging current flow to maximize the cancellation effects from interacting of conductor fields.

The fenced-in route of the proposed project line has no nearby residences, thereby eliminating the potential for the residential field exposures at the root of the health concern of recent years. The strengths of the line's fields along the route would depend on the effectiveness of the field-reducing measures incorporated into the upgrade. These fields should be of the same intensity as SDG&E lines of the same voltage and current-carrying capacity. The requirements in Condition of Certification **TLSN-3** for field strength measurements are intended to validate the applicant's assumed reduction efficiency.

CUMULATIVE IMPACTS AND MITIGATION

When field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore, cumulative effects of fields from all contributing conductors. This interaction could be additive or subtractive depending on prevailing conditions. Since the proposed project transmission line would be upgraded according to applicable field-reducing SDG&E guidelines as currently required by the CPUC for effective field management, any contribution to cumulative area exposures should be at levels expected for SDG&E lines of similar voltage and current-carrying capacity. It is this similarity in intensity that constitutes compliance with current CPUC requirements on EMF management. The actual field strengths and contribution levels for the proposed 69-kV line design would be assessed from the results of the field strength measurements specified in Condition of Certification **TLSN-3**.

COMPLIANCE WITH LORS

As previously noted, current CPUC policy on safe EMF management requires that any high-voltage line within a given area be designed to incorporate the field strength-reducing guidelines of the main area utility lines to be interconnected. The utility in this case is SDG&E. Since the proposed project line upgrade and related switchyard would be designed according to the respective requirements of the LORS listed in **Table 1**, and operated and maintained according to current SDG&E guidelines on line safety and field strength management, staff considers the proposed design and operational plan to be in compliance with the health and safety requirements of concern in this analysis. The actual contribution to the area's field exposure levels would be assessed from results of the field strength measurements required in Condition of Certification **TLSN-3**.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received no public or agency comments on the transmission line nuisance and safety aspects of the proposed CVEUP.

CONCLUSIONS

Since staff does not expect the proposed transmission line upgrade to pose an aviation hazard according to current FAA criteria, staff does not consider it necessary to recommend location changes on the basis of a potential hazard to area aviation.

The potential for nuisance shocks would be minimized through grounding and other field-reducing measures to be implemented in keeping with current SDG&E guidelines (reflecting standard industry practices). These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise.

The potential for hazardous shocks would be minimized through compliance with the height and clearance requirements of PUC's General Order 95. Compliance with Title 14, California Code of Regulations, section 1250, would minimize fire hazards, while the use of low-corona line design, together with appropriate corona-minimizing construction practices would minimize the potential for corona noise and its related interference with radio-frequency communication in the area around the route.

Since electric or magnetic field health effects have neither been established nor ruled out for the proposed CVEUP and similar transmission lines, the public health significance of any related field exposures cannot be characterized with certainty. The only conclusion to be reached with certainty is that the proposed line's design and operational plan would be adequate to ensure that the generated electric and magnetic fields are managed to an extent the CPUC considers appropriate in light of the available health effects information. The long-term, mostly residential magnetic exposure of health concern in recent years would be insignificant for the proposed line given the general absence of residences along the proposed route. On-site worker or

public exposure would be short term and at levels expected for SDG&E lines of similar design and current-carrying capacity. Such exposure is well understood and has not been established as posing a significant human health hazard.

Since the proposed project line would be operated to minimize the health, safety, and nuisance impacts of concern to staff and would remain in its present route without nearby residences, staff considers the proposed design, maintenance, and construction plan as complying with the applicable laws. With the conditions of certification proposed below, any such impacts would be less than significant.

PROPOSED CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the proposed transmission lines according to the requirements of California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2, High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, and San Diego Gas & Electric's EMF-reduction guidelines.

Verification: At least 30 days before starting the upgrade of the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall ensure that every reasonable effort will be made to identify and correct, on a case-specific basis, any complaints of interference with radio or television signals from operation of the project-related lines and associated switchyards. The project owner shall maintain written records, for a period of five years, of all complaints of radio or television interference attributable to line operation together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action or for which there was no resolution should be noted and explained. The record shall be signed by the project owner and also the complainant, if possible, to indicate concurrence with the corrective action or agreement with the justification for a lack of action.

Verification: All reports of line-related complaints shall be summarized for the project-related lines and included during the first five years of plant operation in the Annual Compliance Report.

TLSN-3 The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity along the route. The measurements shall be made before and after energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed not later than six months after the start of operations.

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.

TLSN-4 The project owner shall ensure that the rights-of-way of the proposed transmission line are kept free of combustible material, as required under the provisions of section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report.

TLSN-5 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards regardless of ownership. In the event of refusal by any property owner to permit such grounding, the project owner shall so notify the CPM. Such notification shall include, when possible, the owner's written objection. Upon receipt of such notice, the CPM may waive the requirement for grounding the object involved.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

REFERENCES

(EPRI). Electric Power Research Institute. 1982. Transmission Line Reference Book: 345 kV and Above.

MMC 2007b. – Application for Certification for the Chula Vista Energy Upgrade Project, Volumes 1 and 2. Submitted to the California Energy Commission, August 10, 2007.

National Institute of Environmental Health Services 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields. A Working Group Report, August 1998.

VISUAL RESOURCES

Martha A. Goodavish

SUMMARY OF CONCUSIONS

Staff analyzed visual resource-related information pertaining to the proposed Chula Vista Energy Upgrade Project. The analysis found the project would not introduce an adverse "Aesthetic" impact under the California Environmental Quality Act and Guidelines and that with the incorporation of all staff-recommended conditions of certification, it would comply with applicable state and local laws, ordinances, regulations, and standards pertaining to aesthetic and visual resources.

The Chula Vista Energy Upgrade Project would be a simple cycle, air-cooled project with no cooling tower. Therefore, no vapor plumes or associated visual impacts are anticipated.

INTRODUCTION

Visual resources are the visible natural and man-made features and attributes of the proposed project setting or viewshed. The following analysis evaluates potential impacts to visual and aesthetic resources from the construction and operation of the Chula Vista Energy Upgrade Project (CVEUP) under criteria of the California Environmental Quality Act (CEQA) Guidelines and the consistency of project construction and operation with applicable state and local laws, ordinances, regulations, and standards (LORS).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following discussion describes applicable laws, ordinances, regulations, and standards. Project conformance with these standards is discussed in the Compliance with Applicable LORS section of Impacts, below.

VISUAL RESOURCES Table 1
Laws, Ordinances, Regulations, and Standards

Applicable LORS Documents and Policies	Objectives and Policy Discussion
Federal	
Transportation Equity Act for the 21st Century of 1998 and Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2005	There are no federal lands within the region of potential visual effect, nor are there any recognized National Scenic Byways, or All American Roads within the project vicinity.
State	
California Streets and Highways Code, sections 260 through 263 – Scenic Highways	There are no state-eligible or designated scenic highway corridors within the effective viewshed of the project. The nearest scenic highways are State Routes (SRs) 5 and 94. Both are eligible scenic highways. SR 5 is almost 4 miles west of

	the project, and SR 94 is more than 10 miles east of the project.
Local	
City of Chula Vista Vision 2020 General Plan, adopted December 13, 2005. Chapter 5, Land Use and Transportation (LUT) Element, section 7.0, Planning, Factors, Objectives and Policies.	
Policy LUT 6.1: Ensure through adherence to design guidelines and zoning standards, that the design review process guarantees excellence in design and that new construction and alterations of existing buildings are compatible with the best character elements of the area.	*Objective – LUT 6:* Ensure adjacent land uses are compatible with one another.
Policy LUT 7.4: Require landscape and/or open space buffers to maintain a naturalized or softer edge for proposed private development directly adjacent to natural and public open space areas.	*Objective – LUT 7:* Provide appropriate transitions between land uses.
Policy – LUT 9.1: Create consistent entry features for City entryways and gateways so people recognize that they are entering Chula Vista.	*Objective – LUT 9:* Create enhanced gateway features for City entry points and other important areas, such as special districts.
Policy – LUT 9.3: As part of the approval process for projects within designated City entryway/gateway areas, the City shall confirm that the design conforms to applicable entryway/gateway design guidelines and standards.	*Discussion of Policies LUT 9.1 and 9.3:* There are three categories of entryways and gateways into the city: (1) overall entryways, (2) primary entryways, and (3) secondary gateways. There are no overall entryways or primary entryways within the effective viewshed of the project. However, a secondary gateway area is located on Beyer Way at the southern city boundary, less than one mile from the project site. While the project could be seen from this gateway, the project is not within the secondary gateway area as shown on Figure 5-6 of the Chula Vista General Plan.
Policy – LUT 11.1: Promote development that creates and enhances positive spatial attributes of major public streets; open spaces; cityscape; mountain and bay sight	*Objective – LUT 11:* Ensure that buildings and related site improvements for public and private development are well designed and compatible with surrounding

lines; and important gateways into the City. **Policy – LUT 11.2**: Promote and place a high priority on quality architecture, landscape, and site design to enhance the image of Chula Vista, and create a vital and attractive environment for businesses, residents, and visitors. **Policy – LUT 11.3**: The City shall, through the development of regulations and guidelines, ensure that good project landscape and site design creates places that are well planned; attractive; efficient; safe; and pedestrian-friendly. **Policy LUT 11.4**: Actively promote architectural and design excellence in buildings, open space and urban design. **Policy LUT 11.5**: Require a design review process for all public and private discretionary projects (which includes architectural, site plan, landscape and signage design) to review and evaluate projects prior to issuance of building permits to determine whether compliance with the objectives and specific requirements of the City's Design Manual, General Plan, and appropriate zone or Area Development plans.	properties and districts.
Policy LUT 13.1: Identify and protect important public viewpoints and viewsheds throughout the Planning Area, including features within and outside the planning area such as: mountain; native habitat areas; San Diego Bay; and historic resources.	*Objective LUT* – 13: Preserve scenic resources in Chula Vista, maintain the City's open space network, and promote beautification of the City.
Policy LUT 13.4: Any discretionary projects proposed adjacent to scenic routes, with the exception of single-family dwellings, shall be subject to design review to ensure that the design of the development proposal will enhance the scenic quality of the route.	*Discussion of Policy 13.4*: There are 14 road segments within the City that are classified as "Scenic Roadways." Except for Marina Parkway, all of the scenic roadways are located east of Interstate 805. None of the roadways are within the effective viewshed of the project.

Policy LUT 45.4: Continue ongoing code enforcement efforts to ensure acceptable property maintenance standards.	*Objective LUT – 45*: Provide for and enhance a strong business district along Main Street that can be balanced between meeting the community's economic needs and establishing a strong open space connection with the nearby neighborhoods.
Policy LUT 45.5: The City shall prepare, or cause to have prepared, a specific plan or plans, for the Main Street District area that address an increase in depth of Limited Industrial designated land uses on the north side of Main Street back to Zenith Street; establishes design and landscape guidelines and zoning-level standards; and addresses the interface of the Otay Valley Regional Park with land uses on or near Main Street. The City will prepare an Implementation Program to define logical planning units within the overall Main Street District, and to assure establishment of the above plans/regulations for the overall District and the identified planning units. The Implementation Program will also include interim provisions for consideration of any projects within this area prior to completion and adoption of the applicable plans/regulations.	*Discussion of Policy LUT 45.5:* There are two areas of Chula Vista identified as "Focused Areas of Change" where plans are for more development, revitalization, and/or redevelopment. One of these areas is the "Southwest Focus Area," which includes plans for the Main Street District. This district encompasses the project site and extends west to Industrial Boulevard, east to Hilltop Drive, south to the city boundary, and one block north of Main Street to the boundary of the Otay Town neighborhood.

SETTING

REGIONAL LANDSCAPE SETTING

The proposed CVEUP is located at the southern end of the City of Chula Vista (City), next to the city boundary with the City of San Diego, and within 4 miles of the Mexico border. The project regional landscape is that of a coastal plain with a flat-to-gently rolling terrain, bisected into upland mesas by broad river washes formed by the Otay and Sweetwater Rivers flowing out of the San Miguel Mountains into San Diego Bay and the Pacific Ocean.

The project site is located on a 3.8-acre parcel within Chula Vista's Main Street activity corridor within the Limited Industrial zoning district. MMC Energy Incorporated's (MMC) Chula Vista Power Plant currently occupies the site. The Main Street activity corridor is heavily developed with a combination of old and new light industrial, commercial, and

residential land uses. To the east of the project site, across the private lane to be used for access to the project, is a newly developed commercial office building; to the west is a meat packing warehouse facility; and to the north is a car salvage lot. To the south of the project site is open space land associated with the Otay River Valley.

The nearest residential areas are to the north and west of the project. Both areas are part of the *Otay Town* neighborhood. One area lies one block north of Main Street; the other is immediately west of the warehouse that abuts the CVEUP western site boundary. Otay Town is a well-established neighborhood consisting of primarily single-family homes. This neighborhood includes several community uses (Otay Park, Otay Elementary School, and the Otay Recreation Center) clustered near Main Street and Albany Avenue near the Otay Substation, which is about 1,000 feet north of the CVEUP site.

The Otay Valley Regional Park is a major urban park and open space area. The greenbelt is an east-west-oriented, roughly quarter-mile-wide swath of hilly river wash formed by the Otay River floodplain. Some areas within the wash have been mined and natural contours are disturbed. On the north side of the wash, eucalyptus trees and willows dominate. On the south side, chaparral and scrub dominate. The river wash is bounded on the south side by steep cliffs more than 100 feet in height. Residences on the cliff edge north of Lindbergh Street overlook the proposed project site and low-lying greenbelt. The General Plan for Chula Vista describes the regional park concept plan for the greenbelt as follows:

> The Otay Valley Regional Park (OVRP) Concept Plan, adopted in May 2001, establishes a plan for multi-jurisdictional regional open space of 8,700 acres that will contain a substantial preserve area, active recreation, and passive park opportunities. Equestrian, hiking and biking trails are anticipated. The park will extend through the Otay River Valley, from San Diego Bay to the Upper and Lower Otay Lakes. While the park is regional in scope, the provision of certain park and recreational facilities will effectively serve as local neighborhood and/or community parks for Chula Vista Residents (City of Chula Vista, 2005, p. LUT-12).

VISUAL RESOURCES Figure 1: Landscape Character and Key Observation Point (KOP) Location Map depicts the location and orientation of the camera from which photographs were taken of the characteristic landscape that surrounds the project and the view of the project site from designated key observation points (KOPs). **VISUAL RESOURCES Figure 2: Existing Landscape Character Photographs** depicts the existing visual character in the project vicinity.

PROJECT DESCRIPTION

The 3.8-acre project site is currently occupied by MMC's Chula Vista Power Plant. The CVEUP will be developed within the 3.8-acre property of MMC Energy, Incorporated.

Demolition

Once construction of the CVEUP is completed, the existing power plant and pollution control equipment will be removed. The 3.8-acre project site is currently occupied by MMC's Chula Vista Power Plant, a 44.5-megawatt (MW) plant and associated equipment, which occupies the southern portion of the project site.

On-Site Project Features

The CVEUP will be a nominal 100-MW peaking facility with associated equipment. The facility will be located in the City of Chula Vista. Access to the site is via an access easement and private access lane that is within the adjacent property. Access to the lane is at the intersection of Main and Albany Streets.

The new CVEUP plant will be constructed on vacant land in the northern portion of the parcel. Some of the facilities that serve the existing plant will be reused for the new power plant. These facilities include the existing transmission connection; natural gas, water, and sanitary sewer pipelines; fencing and sound attenuation wall; utility/control building; stormwater runoff retention basin; and the 12,000-gallon aqueous ammonia storage tank and tank refilling station.

The most prominent visual features of the CVEUP include those facilities that would extend above the 6-foot fence and 18-foot sound attenuation wall. As described in the Application for Certification (AFC) (section 5.13.2.3.1 Project Structures and Dimensions), the tallest built features of the CVEUP would be the two exhaust stacks. The stacks would have a top elevation of 70 feet and a diameter of 10 feet. The metal structures would be 70 feet apart and are located at the front (north end) of the site. As described in the AFC the stacks would be metal, gray in color, with a flat or un-textured finish. Other less visually prominent features would be the gas turbine generator and the selective catalytic reduction unit (SCR), which would be 34 and 31 feet tall, respectively. Like the stacks, both would be metal structures, gray in color, with flat/untextured finishes. The remaining features range in height between 9.5 and 21 feet. **VISUAL RESOURCES Table 2** below, summarizes the description of the dimensions, colors, materials, and finishes of the major project features. See **VISUAL RESOURCES Figures 3 and 4,** which depict the general arrangement and plant elevations for the CVEUP (AFC Figures 2.1-1 and 2.1-2).

VISUAL RESOURCES Table 2
Major Project Feature Descriptions

	Feature Height (feet)	Width (feet)	Length (feet)	Diameter (feet)	Color	Materials	Finish
Gas Turbine Generator	34	45	35	-	Gray	Metal	Flat/Untextured
Black Start Generator	10	10	29	-	Gray	Metal	Flat/Untextured
Stacks	70	-	-	10	Gray	Metal	Flat/Untextured
Demineralized Water Tank	21	-	-	29	Gray	Metal	Flat/Untextured
Demineralized Water Trailers	12	40	10	-	Gray	Metal	Flat/Untextured
Selective Catalytic Reduction Unit	31	52	18	-	Gray	Metal	Flat/Untextured
Fuel Gas Recycle Cooler	9.5	15	15	-	Gray	Metal	Flat/Untextured
Electrical Control Building	15	30	60	-	Gray	Metal	Flat/Untextured
Electrical Take off & Stepup Transformer	17.5	13	17	-	Gray	Metal	Flat/Untextured

Source: AFC Table 5.13-2.

Plant Night Lighting

According to the AFC (AFC, section 5.13.2.3.6), operational night lighting would be restricted to areas required for safety, security, and operation. Exterior lighting would be directionally oriented and hooded, and low-pressure sodium lamps and fixtures of a non-glare type would be used to minimize off-site migration of light.

Construction activities are planned to occur from 6:00 a.m. to 7:00 p.m., Monday through Saturday. However, during some construction periods, and during the start-up phase of the project, some activities will continue 24 hours a day, 7 days a week. To the extent possible, during these times, lighting would be pointed downward toward the center of the site where activities are occurring, and task-specific lighting would be used to the extent practical while complying with federal and state worker safety regulations.

Landscaping

The AFC depicts the vacant, northern portion of the project site to be the location for the CVEUP facilities. Currently, this portion of the site is mostly grass with a dirt access road around the perimeter. Several trees have been planted on the project site near the northern boundary. See **VISUAL RESOURCES Figure 5: Site Photographs** (AFC Figure 2.1-3).

The AFC proposes that areas with no structures will be either roads (asphalt and gravel) or grass (see **VISUAL RESOURCES Figure 3**). No areas of landscaping are proposed within the fenced and walled area of the site. It is not clear from the AFC whether the existing trees near the northern fence line would be removed. However, the AFC does state that the “perimeter of the project site will be planted with trees and shrubs” and that “a detailed landscape plan consistent with the City of Chula Vista’s specific site plan and landscaping requirements will be submitted to the City with the Development Plan” (AFC, section 5.13.2.3.5).

As stated in the AFC, the existing sound attenuation wall and fence would remain as part of the CVEUP. An existing 18-foot sound attenuation wall borders the southeast, south, and southwest portions of the site; consists of corrugated metal; and is reflective gray in texture and color. A 6-foot high gray chain link fence laced with brown wooden slats encloses the majority of the site on the remaining east, north, and west sides. Landscaping on the east side consists of a landscape border outside the fence that is about 10 feet wide and supports a combination of coniferous and deciduous trees and shrubs ranging in height from about 2 to 20 feet. At the south end of the site, there is a similar landscape border, except here the landscaped trees merge with the established native vegetation (mostly trees) of the Otay Valley Regional Park. The area outside the fence on the west side was not accessible. From aerial photography (Google 2008), it appears to be landscaped similarly to that observed on the east side of the site.

Off-Site Project Features

The CVEUP will reuse the existing electrical transmission, natural gas, water service, and sanitary sewer pipelines, and existing facilities on the site will be used for all connections of the CVEUP to the linear facilities. Therefore, the CVEUP does not

include new off-site linear appurtenances, and there will be no visual changes associated with electrical transmission, natural gas, water service, and sanitary sewer pipelines.

Construction Laydown Site

According to the AFC, construction of the CVEUP project, from site preparation and grading to commercial operation, is expected to take 8 months. During this time, one of two potential construction laydown sites would be used for construction worker parking and laydown of equipment (**VISUAL RESOURCES Figure 6: Alternate Construction Laydown and Parking Areas** [AFC Figure 2.1-7])**.** One of the potential laydown areas (5.0 acres) is immediately to the southeast of the project site and is a former pallet storage yard. The other 2.75-acre laydown area is 3.4 miles east of the project site, on Heritage Road near Main Street in Chula Vista. The laydown areas are fenced with chain link and wooden slats. During the construction period, construction materials, construction equipment, trucks, and construction worker vehicles would be on these sites.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

To determine whether there is a potentially significant visual resources impact generated by a project, Energy Commission staff reviews the project using the 2006 CEQA Guidelines Appendix G Environmental Checklist pertaining to “Aesthetics.” The checklist questions include the following:

A. Would the project have a substantial adverse effect on a scenic vista?

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition to the 4 CEQA questions above, another visual issue pertaining to aesthetics addressed by staff in this report is the visual impact associated with vapor plumes emitted from the cooling tower of a gas-fired power plant.

Staff evaluates the existing visible physical environmental setting from representative fixed vantage points, called *key observation points* (KOP). Staff uses a KOP[1] to represent a location(s) from which to conduct detailed analyses of the proposed project and to obtain existing condition photographs and prepare photo simulations. KOPs are

[1]The use of KOPs or similar view locations is common in visual resource analysis. The U.S. Bureau of Land Management (USDI BLM 1986a, 1986b, 1984) and the U.S. Forest Service (USDA Forest Service 1995) use such an approach.

selected to be representative of the most critical viewshed locations from which the project would be seen. Because it is not feasible to analyze all the views in which a proposed project would be seen, it is necessary to select KOPs that would most clearly represent the major visual effects of the proposed project as they would be experienced by key sensitive viewing groups. In addition to the KOP photograph(s), staff reviews landscape character photos that help provide a visual overview of a project site, its vicinity, and the selected KOP area.

Impacts are identified by staff where the level of visual change caused by the project would exceed acceptable levels in the context of a KOP's overall visual sensitivity, a measure that reflects the anticipated sensitivity of the viewing public to visual effects. Please refer to **APPENDIX VR-1** for a complete description of staff's visual resources evaluation process. **APPENDIX VR-2** provides terms defined by staff for the purpose of this analysis.

Staff also reviews federal, state, and local LORS and their policies or guidelines for aesthetics or preservation and protection of sensitive visual resources that may be applicable to the project site and surrounding area. These LORS include local government land use planning documents (e.g., General Plan, zoning ordinance).

VISUAL RESOURCES Figure 1 shows the location of the five KOPs used in this analysis:

- KOP 1 – Main Street near Banner Avenue looking Southeast;
- KOP 2 – Teena Drive at Ancurza Way looking Southeast;
- KOP 3 – Cochran Avenue near Lindbergh Street looking North;
- KOP 4 – Albany Avenue at Anita Street looking South;
- KOP 5 – Beyer Way at Southern City Boundary looking East.

Staff's analysis of the project's effect on each KOP is presented under "Operation Impacts."

DIRECT/INDIRECT IMPACTS AND MITIGATION

The impact discussion is presented under the following topics as listed in the CEQA Guidelines Appendix G: scenic vistas, scenic resources, visual character or quality, and light or glare.

Scenic Vistas

"Would the project have a substantial adverse effect on a scenic vista?"

A scenic vista for the purpose of this analysis is defined as a distant view through or along a corridor or opening that exhibits a high level of visual quality, particularly including viewpoints identified as having scenic value in public documents. There are no specific scenic vista points of notable importance in the KOP 1, KOP 2, KOP 3, KOP 4, and KOP 5 viewsheds. None of the KOPs would experience substantial view intrusion or obstruction as a result of the project, as discussed further under each individual KOP in the section, "Operation Impacts," below.

Scenic Resources

"Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway corridor?"

A scenic resource for the purpose of this analysis includes a unique water feature (waterfall, transitional water, part of a stream or river, estuary); a unique physical geological terrain feature (rock masses, outcroppings, layers or spires); a tree having a unique visual/historical importance to a community (a tree linked to a famous event or person, an ancient old growth tree); historic building; or a designated federal scenic byway or state scenic highway corridor.

There are no scenic highways within the effective viewshed of the project. The nearest scenic highways to the CVEUP are State Routes (SRs) 5 and 94. SR 5 is almost 4 miles west of the project, and SR 94 is more than 10 miles east of the project, both far outside the range of visibility of the project. No scenic resources are located on the project site, which is currently an industrial site. Thus, no resources would be affected.

Visual Character or Quality

"Would the project substantially degrade the existing visual character or quality of the site and its surroundings?"

The project aspects evaluated under this criterion are broken down into two categories: Construction Impacts and Operation Impacts.

Construction Impacts

The CVEUP will reuse the existing electrical transmission, natural gas, water service, and sanitary sewer pipelines, and existing facilities on the site will be used for all connections of the CVEUP to the linear facilities. Therefore, the CVEUP does not include new off-site linear appurtenances, and there will be no visual changes associated with electrical transmission, natural gas, water service, and sanitary sewer pipelines.

Construction activities for the project would occur over an approximate 8-month period. Public visibility of the construction site and activities would be limited due to the 6-foot-high fencing that surrounds the site. The location of the site at the end of a private access lane also limits pedestrian traffic to people entering buildings from the parking area. Workers in the three-story commercial light-industrial building across the private access lane (to the east) would have views over the fence into the site. As the project is built, facilities higher than the 6-foot fence and 18-foot attenuation wall would be visible from the project site.

Project construction activity is proposed to occur from 6:00 a.m. to 7:00 p.m. Monday through Saturday, although construction periods of 24 hours a days, 7 days a week would occur during the start-up phase of the project, according to the AFC (AFC, section 5.13.2.3.6). During nighttime construction periods, illumination that meets state and federal worker safety regulations will be required. As a result, there would be limited

times during the construction period that the project site would be brightly illuminated at night. Night lighting from the project would be noticeable from the surrounding area to varying degrees.

Impact Significance

Night lighting associated with project construction would result in a potentially significant visual impact. The AFC addresses potential light and glare impacts in relation to KOP 3 only. The AFC finds such impacts to be less than significant based on various lighting design features. Staff is concerned that night lighting impacts could potentially affect all foreground residential viewpoints. Adverse light impacts could potentially occur from bright facility night lighting, particularly as seen from nearby residences within a foreground distance zone: KOP 2, KOP 3, and KOP 4.

Mitigation

Staff recommends adoption of Condition of Certification **VIS-2** to reduce perimeter and exterior night lighting associated with construction activities at the project site and construction laydown areas.

Residual Impact Significance after Mitigation with Staff-Recommended Measures

Residents are considered to have high sensitivity to night lighting impacts. Typical bright industrial lighting could result in a highly dominant, strongly contrasting element in the nighttime landscape. Under worst-case conditions with bright, industrial lighting left on throughout the night, significant adverse impacts could be anticipated on at least those residents nearest the project site.

As described under staff-recommended Condition of Certification **VIS-2**, the project site and construction laydown areas would be of minimal brightness consistent with safety; lighting would be shielded and directed to eliminate all direct off-site illumination and all upward (backscatter) illumination; and lighting for maintenance purposes would be kept off when not needed. With these measures, the facility would impart a somewhat industrial character to the nighttime viewshed within the foreground of the project site. With adoption of this staff-recommended measure, the nighttime level of anticipated visual change would be low, resulting in impacts to residences that would range from less-than-significant to insignificant.

Operation Impacts

Operational impacts are assessed from the three KOPs identified by the applicant in the AFC and from the two additional KOPs identified by staff through field reconnaissance of the project area.

Staff concurs with many of the specific evaluations and rationales underlying the AFC's conclusions on potential visual impacts to the three KOPs, as presented in section 5.12 of the AFC. However, staff field reconnaissance to the project area identified two additional KOPs to be addressed in this visual resource assessment:

- KOP 4 – Albany Avenue at Anita Street, looking south, representative of the Otay Town viewshed north of Main Street; and

- KOP 5 – Beyer Way near the crossing of the Otay River, looking northeast, representing motorists on the bridge over the Otay River.

Simulations prepared by the applicant from the three KOPs addressed in the AFC provide adequate information on the project's visual effects not only from the three KOPS addressed in the AFC, but also from the two additional KOPs identified by staff, thus eliminating the need for preparation of additional simulations for the two staff-identified KOPS.

Staff also notes that landscape screening depicted in the simulation of KOP 3 in the AFC depicts perimeter landscape screening at a highly unrealistic height and scale, representing a level of screening which would not be attainable in less than 10 to 20 years and which might not be feasible under recommended Conditions of Certification **VIS-3** and **BIO-10**.

KOP 1 − View from Main Street Near Banner Avenue

VISUAL RESOURCES Figure 7 presents a photo simulation of the project structures that would be visible from KOP 1 after completion of project construction. KOP 1 is located on Main Street, midway between Banner and Albany Avenues. KOP 1 is approximately 1,000 feet northwest of the CVEUP site. KOP 1 provides the most unobstructed view of the project from Main Street, the nearest major public roadway. Main Street is at approximately the same elevation as the project site.

Visual Sensitivity

The overall visual sensitivity of KOP 1 is considered to be *Moderate.* Visual sensitivity is a composite evaluation of existing visual quality, anticipated viewer concern with visual resources, and viewer exposure, each of which is discussed below.

Visual Quality

The existing views from KOP 1 are predominantly commercial and industrial in character. The foreground is dominated by Main Street (with five lanes of traffic). Immediately across Main Street from KOP 1 is an auto salvage yard surrounded by chain link fence and billboards. To the east is a vacant lot, also enclosed with chain link fence. To the west is an attractive two-story commercial office development with defined parking and attractive landscaping (see **VISUAL RESOURCES Figure 2,** photograph 2d). Beyond the street-front development on Main Street, a variety of trees, power lines, buildings, and billboards fill the view. Views do not extend beyond the immediate foreground.

The visual quality of the view from KOP 1 is *Moderately Low*. This area is in transition with older commercial and light industrial uses being replaced with well-designed and landscaped commercial and light industrial office parks. Visual intactness and unity are low, primarily due to the transitional nature of the disparate old and new land uses that detract from a coherent view. The character of Main Street and the presence of billboards and power lines contribute to the low visual intactness. The industrial character of the area dominates the landscape, which otherwise has no vivid features.

Viewer Concern

Viewer concern from KOP 1 is *Moderate* for the approximately one dozen residents in the homes on and adjacent to Main Street in the Otay Town neighborhood north of Main Street. Concern of motorists on Main Street is considered to be *Moderate*. Due to the heavy industrial nature of the project, and the close proximity of workers associated with light industrial and commercial land uses, the concern of workers adjacent to the project site would be *Moderate*, especially in the development across the private lane where the second story of the building would provide views directly into the project site.

Viewer Exposure

Factors that determine viewer exposure are number of viewers, duration of view, and visibility of the project. The project site is within the immediate foreground of KOP 1, but cannot be seen due to intervening land uses and trees. The viewers from KOP 1 include residents, motorists, and workers, and the number of viewers is moderately high. The duration of viewing toward the project site would be long term for residents along Main Street and for workers in the development across the private lane from the project site. Motorists and other workers and pedestrians would have short-term views. Visibility of the project would be limited to the upper portion of the exhaust stacks. Overall viewer exposure is considered to be *Moderate* due to the limited long-term number of viewers and the intervening land uses and trees that would screen most of the project from this KOP.

Visual Change

As seen from KOP 1 (**VISUAL RESOURCES Figure 7**), the project would introduce into the viewshed two 70-foot-tall, 10-foot-wide, gray-colored cylindrical exhaust stacks. Other project features would not be seen from this location. The overall visual change that would occur to the KOP 1 viewshed would be *Low*. Visual change is a composite evaluation of visual contrast, project dominance, and view blockage and/or disruption, each of which is discussed below.

Visual Contrast

The visual contrast introduced by the two exhaust stacks, as seen from KOP 1, would be *Low*. The cylindrical form and vertical lines created by the stacks would be similar in structure to that of the trees that currently provide partial screening of the site from this KOP. The stacks would extend above the height of the trees that provide screening, but the difference in height would not be substantial enough to create a strong degree of contrast. The gray color of the stacks would be in contrast with the newer, light-colored buildings that are being developed in the area. The gray color may add a heavy industrial character to the stacks which could make them more noticeable. The flat unfinished texture of the stacks would be in contrast to the highly textured quality of the trees, but the overall degree of contrast with the existing setting would be *Low*.

Project Dominance

The apparent size and scale of the project as seen from KOP 1 would not dominate the view. The combination of existing trees, power lines, and billboards that are part of the

skyline would minimize the visual dominance of the CVEUP features. Project dominance is thus *Low*.

View Blockage/Disruption

There are no scenic views or vistas within the viewshed of KOP 1. The two exhaust stacks that would be seen from KOP 1 would not block or disrupt a scenic view or vista.

Impact Significance

Staff concludes the introduction of project structures would not substantially degrade the existing viewshed of KOP 1. The *Moderate* overall visual sensitivity, combined with the *Low* overall visual change would result in a less than significant visual impact. The only portion of the CVEUP that would be visible would be the two exhaust stacks. While the stacks would introduce a feature of heavy industrial character to an area that is light industrial-commercial, and under revitalization, the size and scale of the exhaust stacks would not dominate the view nor would the stacks block or disrupt any scenic views or vista. There would be no substantial change in visual quality since the limited visibility of the project would not result in substantial alteration of the composition, vividness, unity, or intactness of the landscape setting.

KOP 2 – Ancurza Way at Teena Drive Looking Southeast

VISUAL RESOURCES Figure 8 presents a photo simulation of the project structures that would be visible from KOP 2 after completion of project construction. KOP 2 is located at the intersection of Teena Drive and Ancurza Way, approximately 800 feet northwest of the CVEUP site, in the small residential neighborhood that is part of Otay Town, off Del Monte Avenue, south of Main Street. This neighborhood is at approximately the same elevation as the project site.

Visual Sensitivity

The overall visual sensitivity of KOP 2 is considered to be *Moderate* Visual sensitivity is a composite evaluation of existing visual quality, anticipated viewer concern with visual resources, and viewer exposure, each of which is discussed below.

Visual Quality

The existing views from KOP 2 are predominantly residential in character. Views in this area are confined to the immediate foreground which is dominated by neighborhood views of streets, front yards, and homes. Looking toward the project site, one can see a 6-foot fence, landscaped buffer area, and a 6-foot-high concrete-block wall that separate the residential area from the adjacent warehouse. From Alcova Street, the tops of trucks can be seen over the wall.

The visual quality of the view from KOP 2 is *Moderate*. The residential character of the neighborhood has intactness and unity due to a similar density of development and architectural character of the homes. However, there are no vivid landscape features or scenic views that can be experienced from this KOP, and vividness is *Low*.

Viewer Concern

KOP 2 is within a residential neighborhood, but considering the moderate visual quality, viewer concern is *Moderately High.*

Viewer Exposure

The project site is within the immediate foreground of KOP 2, but the existing power plant cannot be seen due to intervening land uses and trees. The duration of viewing toward the project site could be long term for residents and could include views from within their homes and yards and from streets and walkways. Overall viewer exposure is considered *Moderate*–the site itself and any structures within it below a certain height would not be visible from this viewing area, but the tallest features, notably the proposed exhaust stacks, would be visible.

Visual Change

As seen from KOP 2, the project would introduce into the viewshed two 70-foot-tall, gray-colored cylindrical exhaust stacks. Other project features would not be seen from this location. The overall visual change that would occur to the KOP 2 viewshed would be *Low*. Visual change is a composite evaluation of visual contrast, project dominance, and view blockage and/or disruption, each of which is discussed below.

Visual Contrast

The visual contrast introduced by the two exhaust stacks, as seen from KOP 2, would be *Low*. The cylindrical form and vertical lines created by the stacks would be similar in structure to that of the trees that currently provide partial screening of the site from this KOP. The stacks would extend above the canopies of trees that provide screening, but the visible portion of stacks would not be substantial enough to create a strong degree of contrast. The gray color of the stacks would be in contrast with the newer, light-colored building warehouse adjacent to the neighborhood. The gray color and metallic texture of the stacks may add a heavy industrial character to the view which could make them more noticeable.

Project Dominance

The apparent size and scale of the project as seen from KOP 2 would not dominate the view. The narrowness of the two exhausts stacks (10 feet in diameter) in combination with the viewing of trees and other foreground visual features, including residences, would minimize the visual dominance of these features.

View Blockage/Disruption

There are no scenic views or vistas within the viewshed of KOP 2. The two exhaust stacks that can be seen from KOP 2 would not block or disrupt a scenic view or vista.

Impact Significance

Staff concludes that the introduction of project structures would not substantially degrade the view from KOP 2. The *Moderate* overall visual sensitivity, combined with the *Low* overall visual change, would result in a less than significant visual impact. The

only portions of the CVEUP that would be visible would be the two exhaust stacks. While the stacks would introduce views of a heavy industrial character, the size and scale of the visible portion of the stacks would not dominate the view nor would they block or disrupt any view. There would thus be no substantial change in visual quality as a result of project construction since the limited visibility of the project would not substantially alter the composition, vividness, unity, or intactness of the view.

KOP 3 – Cochran Avenue Near Lindbergh Street Looking North

VISUAL RESOURCES Figure 9 presents a photo simulation of the project structures that would be visible from KOP 3 after completion of project construction. KOP 3 is located on Cochran Avenue where it dead-ends above the Otay Valley Regional Park. This KOP is about 120 feet above the elevation of the project site and is located approximately 1,400 feet to the south in a residential neighborhood that is part of the Otay Mesa area of the city of San Diego. KOP 3 is representative of the views toward the project site that could be experienced by as many as 20 residents along Lindbergh Avenue from their homes and yards (Cochran Avenue is the only public street that abuts the open space in this neighborhood). KOP 3 should be representative of the worst-case scenario for residents of this area since it is a view that is not obstructed by a backyard fence, whereas nearly all the homes along Lindbergh Avenue have fences in their backyards due to the steep slope that drops off into the greenbelt area at their back lot lines.

From KOP 3, the project site can be identified in the center of the middle-ground view. The existing power plant appears as a gray rectangular structure with grid lines. To the west is a large light-colored warehouse, and to the east is a newly constructed commercial development. In the foreground is an exposed hillside that descends to the riparian corridor of the Otay River where a combination of evergreen and deciduous trees and shrubs dominate the view. Distant views from KOP 3 extend north across the City of Chula Vista.

Visual Sensitivity

The overall visual sensitivity of KOP 3 is considered to be *Moderately High.* Visual sensitivity is a composite evaluation of existing visual quality, anticipated viewer concern with visual resources, and viewer exposure, each of which is discussed below.

Visual Quality

The visual quality of the view from KOP 3 is *Moderately High*. The view from KOP 3 is expansive and transitions from a foreground view of open space to middle-ground views of large, prominent industrial development to distant background views of the urbanized landscape of Chula Vista. The dominance of the foreground open space/vegetation and the panoramic views over the City provide these views with a moderately high level of visual quality.

Viewer Concern

Viewer concern from KOP 3 is *High.* There are 20 or more residences along Lindbergh Street that could have foreground views (under one-half mile) down onto the project site from their homes and/or yards. Residents typically have high levels of viewer concern.

Viewer Exposure

Viewer exposure is *Moderately High.* The project site could be viewed clearly from elevated positions within foreground distance for long durations from the 20 or more homes and/or yards facing the site along Lindbergh Street. While the degree of visibility is high, however, the number of affected viewers is relatively low.

Visual Change

VISUAL RESOURCES Figure 9 depicts trees that partially screen the project along the southern boundary of the site. However, the trees are depicted at a height that would likely not be attained for a long period of time. In the simulation, they appear to be comparable in height to the exhaust stacks, or in the range of 50 to 70 feet high. Regardless of species selected, no trees would attain this height in less than 10 to 20 years. Further, it is unclear whether trees of the stature depicted in the simulation would conform with the requirement for appropriate native species near the greenbelt, as called for in staff Conditions of Certification **VIS-3** and **BIO-10**. The level of landscape screening depicted in the simulations is thus considered by staff to be unrealistic.

Nevertheless, the simulation does depict the two 70-foot-tall, gray cylindrical exhaust stacks and suggests the visual prominence of the facility. Other project features would appear similar to those on the existing project site.

The overall visual change that would occur to the KOP 3 viewshed as a result would be *Low*. Visual change is a composite evaluation of visual contrast, project dominance, and view blockage and/or intrusion, each of which is discussed below.

Visual Contrast

The visual contrast introduced by the project, as seen from KOP 3 would be *Low*. While the cylindrical forms of the two exhaust stacks would rise above the surrounding buildings by 30 or more feet, from these elevated viewpoints on the mesa, they would be viewed against the highly textured background of the urbanized city landscape and within the foreground context of the surrounding commercial and industrial development, which strongly dominate the view. In that context, the new stacks and other power plant structures would remain visually subordinate to the more prominent existing industrial and commercial development, would represent a low level of contrast in form and line, and would consequently not strongly alter the existing visual character of the scene.

In the photo simulation, the stacks appear a light beige color, in contrast to the gray color described in the AFC and depicted on the other project features. The AFC states that all the project features would be a flat untextured gray color. The lighter beige color of the stacks appears to be more harmonious in color with the surrounding development in contrast to the gray color of the other project features. A gray color would appear to accentuate the visual contrast and industrial character of the project compared to the lighter beige color depicted, which is less contrastive and more congruent with the surrounding development. Similarly, if the stacks were unpainted and reflective, they

could potentially greatly increase their level of contrast, drawing the eyes of viewers to them. The use of a less contrastive, non-reflective color is thus called for in staff's Condition of Certification **VIS-1**, described further below.

Project Dominance

The size and scale of the project as seen from KOP 3 does not dominate the view from KOP 3. The exhaust stacks are not massive in size or scale and do not extend above the backdrop of the cityscape. As viewed from this location, they appear as a minor intrusion; remain visually subordinate to the adjacent, existing development; and blend moderately well into the surrounding landscape since they do not project above the horizon line into the sky.

View Blockage/Disruption

There are no scenic views or vistas within the viewshed of KOP 3, although the landscape of the Otay Valley Regional Park is considered to be of high public value. The two exhaust stacks and other project features do not intrude into or obstruct views of the greenbelt from this location and are similar enough in texture and form to adjacent development that they do not detract additionally from the open space characteristics of the Otay River Valley.

Impact Significance

Staff concludes the introduction of project structures would not substantially degrade the existing viewshed of KOP 3. While the overall visual sensitivity is considered to be *Moderately High,* the overall visual change would *be Low.* The visual effect of the project on this viewshed is minimal since the project would be visually absorbed to a large degree into the existing landscape character as seen from this location. There would be no substantial change in visual quality as a result of the project since the visibility of the project would not substantially alter the composition, vividness, unity, or intactness of the view from KOP 3.

KOP 4 – Albany Avenue Near Anita Street Looking South

VISUAL RESOURCES Figure 10a presents a photograph of the view from KOP 4. There is no photo simulation from this location. Simulations from KOPs 1, 2, and 3 were used to assess visual effects of the project from this location. KOP 4 is located on Albany Avenue near the intersection with Anita Street. This KOP is approximately one-half-mile north of the project site, at the far limit of the visual foreground zone. From this location, one is looking from an elevation approximately 40 feet above the project site. Views toward the site are thus open and unobstructed by intervening foreground development. KOP 4 is representative of the project views that would be experienced by many residents who live within this physically elevated visual foreground zone north of Main Street, in the Otay Town neighborhood.

From KOP 4, the project site cannot be seen, but is located at the end of the road (Albany Avenue) that can be seen in the center of the photograph. The project site is located behind a massing of trees, to the right of Albany Avenue, in the distance. In the immediate foreground between Main Street and Anita Street, residences are visible on the right side of the street. On the left side of the photograph, between the viewpoint

and Main Street, are Otay Park, Otay Elementary School, and the Otay Substation. Homes sit above Otay Park, which is in a bowl, to the north, potentially providing open views toward the project site from the homes that border the park. Across Main Street is a new commercial development that extends southward to the end of the private lane that is proposed as project site access. Distant views from KOP 4 extend across the greenbelt to the mesa on its south side. A lower barren bluff can be seen below the top of the homes that line the edge of the mesa as discussed under KOP 3 above.

Visual Sensitivity

The overall visual sensitivity of KOP 4 is considered to be *Moderately High.* Visual sensitivity is a composite evaluation of existing visual quality, anticipated viewer concern with visual resources, and viewer exposure, each of which is discussed below.

Visual Quality

The visual quality of the view from KOP 4 is *Moderately High*. The view from KOP 4 is of the Otay Town neighborhood and the Otay Valley Regional Park open space and mesa in the background. This is a cohesive residential neighborhood that is visually intact due to the dominance of single-family homes and associated trees and landscaping. The open space of Otay Park and Otay Elementary School is attractive and well maintained and contributes to the unity and intactness of the neighborhood. Views from north-south streets present long, panoramic views of the Otay greenbelt and mesa at the horizon, as depicted in this photograph.

Viewer Concern

Viewer concern from KOP 4 is *High,* due to the combination of residential, school, and open space uses.

Viewer Exposure

Viewer exposure is *Moderately High.* The site itself is not visible in this viewshed; however there are numerous residences in the vicinity of Albany Street and above Otay Park that could have views of stacks or other tall project features within foreground and near-middle-ground distances. Because of the elevated position of much of this neighborhood, tall features of the project would be potentially visible over a wide area.

Visual Change

Currently, the structures (which appear to be have been a car wash) on the vacant lot located at the southwest corner of Main and the private lane, would block views of most of the project features. However, the two 70-foot exhaust stacks would extend above this structure and could be seen amongst the massing of trees to the right of the car wash lot. The top of the stacks would extend upward to near the top of the lower bluff on the other side of the greenbelt in this view. The stacks would be partially screened by the massing of trees.

The overall visual change that would occur to the KOP 4 viewshed would be *Moderate.* The dominant line of Albany Street focuses the view down the street toward the site where the vertical line of the exhaust stacks would contrast with the dominant horizontal lines created by the two- and three-story development surrounding the site. The visual

effect of the stacks would be softened due to the highly textured backdrop of the greenbelt open space. Partial screening of the stacks provided by existing vegetation would also reduce the visual effect of the project. Visual change is a composite evaluation of visual contrast, project dominance, and view blockage and/or disruption, each of which is discussed below.

Visual Contrast

The visual contrast introduced by the project, as seen from KOP 4 would be *Moderate*. The two cylindrical forms of the exhaust stacks would rise above the surrounding buildings by 30 or more feet, and the strong resulting vertical form and line of the exhaust stacks would thus contrast with the lower silhouettes of the surrounding development and the darker color of background tree canopy and mesa vegetation. However, adjacent trees, particularly palm trees, and power lines contribute other vertical elements to the scene. Contrast created by the stacks would be partially screened by the massing of trees near the site and reduced by the Otay Mesa in the background.

Project Dominance

As suggested by the simulation of KOP 3, located roughly one-quarter-mile from the site, the size and scale of the project as seen from KOP 4 at a distance of roughly one-half-mile would be noticeable but visually subordinate in relation to other features of the view, varying somewhat according to distance and exposure. While project contrast would be stronger from KOP 4 than KOP 3 due to silhouetting of the exhaust stacks over other surrounding features, the size and scale of the stacks would not dominate the view. As suggested by the simulation from KOP 1, as distance to the site from views within this area decreases, elevation of the viewpoints would also decrease and visibility of the stacks would correspondingly decrease.

View Blockage/Disruption

There are no scenic views or vistas within the viewshed of KOP 4, although the landscape of the Otay Valley Regional Park is considered to be of high public value. The project exhaust stacks would intrude into the view of the open space to a *Moderate* or *Low* degree, depending on distance, from neighborhoods to the north.

Impact Significance

Staff concludes the introduction of project structures would moderately, but not substantially, degrade the existing viewshed of KOP 4. The overall viewer sensitivity is considered to be *Moderately High* and the overall visual change to be *Moderate*. There would be no substantial change to the visual quality of the setting as a result of the project since the visibility of the project would not substantially alter the composition, vividness, unity, or intactness of the view from KOP 4.

KOP 5 – Beyer Way at the Crossing of the Otay River Looking East

VISUAL RESOURCES Figure 10b presents a photograph of the view from KOP 5. There is no photo simulation from this location. The simulation from KOP 3 was used to assess visual effects of the project from this location. KOP 5 is located on Beyer Way, on the bridge section over the Otay River, near the City of Chula Vista's boundary with

the city of San Diego. This KOP is approximately 700 feet west of the project site. From this location, one is looking slightly up toward the project site, with the site being approximately 20 feet above the KOP elevation.

KOP 5 is representative of the views toward the project that could be experienced by travelers on Beyer Way. The general plan for the City of Chula Vista (City of Chula Vista 2005) identifies Beyer Way as a “Secondary Gateway” and identifies a specific area on Beyer Way for landscape and sign improvements.

Visual Sensitivity

The overall visual sensitivity of KOP 5 is considered *Moderate.* Visual sensitivity is a composite evaluation of existing visual quality, anticipated viewer concern with visual resources, and viewer exposure, each of which is discussed below.

Visual Quality

The visual quality of the view from KOP 4 is *Moderate*. The view from KOP 4 is expansive and transitions from a foreground view of a mosaic of different colored and textured trees, shrubs, and grasses to a middle-ground view dominated by buildings associated with the light industrial and commercial uses that surround the project site. The existing power plant is noticeable due to its gray color and large box-like form. The backdrop to this scene consists of trees and power lines, with a distant view of San Miguel Mountain. The intactness, unity, and vividness of the view from this location is *Moderate* due to the contrast between the components of the foreground scrub vegetation with the highly developed industrial character of the middle ground.

Viewer Concern

Viewer concern from KOP 5 is considered *Moderate.* The predominant viewers are northbound motorists on Beyer Way headed into the City of Chula Vista. Although this general location is identified as a secondary gateway in the general plan, the view toward the site in this location is of compromised visual quality and is not anticipated to be the object of substantial public concern.

Viewer Exposure

Viewer exposure is considered to be *Moderately High.* There is an open, foreground view of the project site from this location, and significant numbers of travelers would experience this view. The duration of the view would be brief and experienced primarily by northbound viewers.

Visual Change

The exhaust stacks would extend above the horizon and would be outlined against the sky from this location. The stacks would project upward about twice as high as the building that can be seen between the existing power plant and the eucalyptus tree to the left of the plant. Other project features would be similar in height to the existing power plant or shorter.

The overall visual change that would occur to the KOP 5 viewshed would be *Moderate*. Visual change is a composite evaluation of visual contrast, project dominance, and view blockage and/or disruption, each of which is discussed below.

Visual Contrast

The visual contrast introduced by the project, as seen from KOP 4, would be *Moderate* with implementation of staff-recommended Condition of Certification **VIS-1**. The cylindrical forms of the two exhaust stacks would rise above the surrounding buildings by 30 or more feet and would be viewed against the background sky from some locations, creating moderately high form and line contrast.

The proposed gray color of the stacks and other project features would tend to accentuate the level of contrast with the adjacent light-colored buildings. Consequently, staff recommends that the stacks and other prominent project structures be painted in a light color that blends with the adjacent beige-colored industrial and commercial structures as described in Condition of Certification **VIS-1**. In addition, the degree of visual exposure of the project to travelers on Beyer Way is relatively high. Staff therefore recommends Condition of Certification **VIS-3**, Perimeter Landscape Screening, to reduce project visual exposure and thus contrast to these viewers. With these measures, potential contrast could be reduced to a moderate level, particularly in the long term with maturation of landscape screening.

Project Dominance

Exhaust stacks outlined against the sky and the project location at foreground distance would both tend to attract the attention of passing viewers. As noted previously, viewer exposure to the project is relatively high in this location, more of the project would be visible from this location compared to other KOPs, and the exhaust stacks would project beyond the horizon line into the sky. However, staff-recommended Conditions of Certification **VIS-1** and **VIS-3** would reduce the overall level of project contrast, particularly in the long term. This in turn would reduce project dominance to a moderate, co-dominant level.

View Blockage/Disruption

This KOP was not considered a scenic view. Although the landscape of the Otay Valley Regioanl Park in general is considered to be of high public value, and there is a distant view to San Miguel Mountain, overall the existing view toward the project site is visually compromised by the prominent existing industrial development. The project features would not intrude into views of the greenbelt in the visual foreground, nor would they block the distant view of San Miguel Mountain from this location for more than a brief moment. This level of view intrusion is considered minor.

Impact Significance

Staff concludes that the overall *Moderately High* level of visual change associated with the project, in combination with the *Moderate* visual sensitivity from KOP 5, could result in a potentially significant visual impact.

Mitigation

Reduction of color contrast of *all* project structures would be an important factor in reducing overall project contrast and dominance from this KOP. Staff thus recommends adoption of Condition of Certification **VIS-1**, surface treatment of all project structures, to ensure the lowest feasible color contrast in the short term.

In addition, screening of the facility's visual clutter with perimeter landscape plantings would further reduce project texture, color, and form contrast in the long term. Staff thus recommends adoption of Condition of Certification **VIS-3**, Perimeter Landscape Screening. This condition of certification would also improve the project's conformance with local community character and open space goals and objectives as discussed below under the discussion of compliance with applicable LORS.

Residual Impact Significance after Mitigation with Staff-Recommended Measures

With recommended Conditions of Certification **VIS-1** and **VIS-3**, the introduction of project structures would *Moderately*, but not substantially, degrade the existing viewshed of KOP 5. The resulting impact would be considered adverse, but *Moderate* and less than significant.

Painting *all* facility structures a non-reflective light color, similar to adjacent buildings, would reduce overall contrast further in the short term, muting the visual clutter of ancillary project structures. Perimeter landscape screening, particularly on the south side of the project, would further reduce facility contrast in the long term by eventually providing partial screening of the exhaust stacks and partial-to-complete screening of other facility structures. With these staff-recommended measures, overall visual change due to the project would be *Moderate* in the short term, and *Low* to *Moderate* in the long term, representing a less than significant impact in both the short and long term.

Light and Glare

"Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? "

According to the AFC, the CVEUP could be operated 24 hours per day, 7 days per week for undefined periods of time (AFC, section 5.13.2.3.6). Project operation during times of darkness will require on-site nighttime lighting for safety and security. Lighting would provide personnel with illumination for operation under normal operating conditions, for egress during emergencies, for emergency lighting to perform manual operations during an outage of the normal power source, and convenience outlets for portable lamps and tools. As a result, night lighting from the project would be noticeable from the surrounding areas to varying degrees.

Impact Significance

Night lighting associated with project operation would result in a potentially significant visual impact. The AFC addresses potential light and glare impacts in relation to KOP 3 only. The AFC finds such impacts to be less than significant based on various lighting design features proposed by the applicant. Staff is concerned that night lighting impacts

could potentially affect all foreground residential viewpoints. Adverse light impacts could potentially occur from bright facility night lighting, particularly as seen from nearby residences within a foreground distance zone: KOP 2, KOP 3, and KOP 4.

Mitigation

Staff recommends adoption of Condition of Certification **VIS-2** to reduce perimeter and exterior night lighting associated with operational activities during hours of darkness at the project site.

Residual Impact Significance after Mitigation with Staff-Recommended Measures

Residents are considered to have high sensitivity to night lighting impacts. Typical bright industrial lighting could result in a highly dominant, strongly contrasting element in the nighttime landscape. Under worst-case conditions with bright, industrial lighting left on throughout the night, significant adverse impacts could be anticipated on at least those residents nearest the project site.

As described under staff-recommended Condition of Certification **VIS-2**, project lighting would be of minimal brightness consistent with safety; would be shielded and directed to eliminate all direct off-site illumination and all upward (backscatter) illumination; and lighting for maintenance purposes would be kept off when not needed. With these measures, the facility would impart a somewhat industrial character to the nighttime viewshed within the foreground of the project site. With adoption of this staff-recommended measure, the nighttime level of anticipated visual change would be low, resulting in impacts to residences that would range from less than significant to insignificant.

Visible Vapor Plumes

The CVEUP project would employ simple cycle generation units with air cooling and no cooling towers. Therefore, no visible vapor plumes are anticipated to occur.

CUMULATIVE IMPACTS AND MITIGATIONS

According to the AFC (AFC, section 5.13.3) there are 26 proposed project applications filed with the City of Chula Vista. Most of these are residential development projects, with some commercial developments, one warehouse development, and one manufacturing development. The proposed manufacturing development would be a sewing manufacturing and wholesale sales business and would be located within 1,000 feet of the CVEUP. None of these, however, would be visible within the same view as the CVEUP.

As discussed above, the CVEUP would not result in significant project-specific adverse visual impacts. There are no known projects that would remove surrounding structures and make the project more visible and no known projects that would be visible within the same view as the CVEUP. For these reasons, the CVEUP would not cause any adverse cumulative visual impacts.

In addition to the referenced project applications above, the Main Street district in which the CVEUP project is located is identified in the City of Chula Vista General Plan as a

"Focused Area of Change" in which revitalization and redevelopment is planned, is currently occurring, and can be anticipated to continue. Such anticipated future improvements to the Main Street commercial area would enhance its visual quality over the long term, and that general improvement would make industrial development, such as the CVEUP, less compatible than it appears at the present time. However, the CVEUP is not anticipated to be a prominent visual feature from Main Street, as depicted in the simulation and analysis of KOP 1, above. Because of the limited anticipated visibility of the project within the Main Street streetscape, the interaction of the CVEUP with future improvements in the Main Street viewshed would be limited, and resulting potential cumulative impacts would be minor.

ENVIRONMENTAL JUSTICE

For all siting cases, staff follows the U.S. Environmental Protection Agency's guidance in conducting a two-step environmental justice analysis. The analysis assesses:

- Whether the potentially affected community has a population that is more than 50 percent minority and/or low-income, or has a minority or low-income population percentage that is meaningfully greater than the percent of minority or low income in the general population, or other appropriate unit of geographic analysis; and
- Whether the environmental impacts are likely to fall disproportionately on the minority and/or low-income population.

Even though low-income and minority populations exist in the immediate project area, staff has not identified any significant unmitigated adverse visual impacts with the proposed project or cumulative impacts; therefore, no significant adverse impacts to minority or low-income populations are expected to occur.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

VISUAL RESOURCES Table 2 provides an analysis of the applicable LORS pertaining to the aesthetics or preservation and protection of sensitive visual resources relevant to the proposed project. Conditions of certification are proposed to make the project conform to the LORS where appropriate.

VISUAL RESOURCES Table 2
Proposed Project Consistency with LORS Applicable to Visual Resources

Source	Policies	Consistency Determination	Basis for Consistency
Chula Vista Vision 2020 General Plan, adopted December 13, 2005	**Section 7.0 Planning, Factors, Objectives and Policies**		
	Policy LUT 6.1: Ensure through adherence to design guidelines and zoning standards, that the design review process guarantees excellence in design and that new construction and alterations of existing buildings are compatible with the best character elements of the area.	YES AS CONDITIONED	Condition of Certification **VIS-1** calls for the development of a surface treatment plan that would minimize the visual intrusion and contrast created by the project. **VIS-1** calls for the surface treatment plan to

			be consistent with local policies and ordinances.
	Policy - LUT 7.4: Require landscape and/or open space buffers to maintain a naturalized or softer edge for proposed private development directly adjacent to natural and public open space areas.	YES AS CONDITIONED	Condition of Certification **VIS-3** calls for the project owner to provide landscaping that will reduce the visibility of the project. **VIS-3** calls for the landscape plan to comply with local policies and ordinances.
	Policy - LUT 9.1: Create consistent entry features for City entryways and gateways so people recognize that they are entering Chula Vista.	NOT APPLICABLE	The project is not located within the secondary gateway area on Beyer Way.
	Policy - LUT 9.3: As part of the approval process for projects within designated entryway/gateway areas, the City shall confirm that the design conforms to applicable entryway/gateway design guidelines and standards.	NOT APPLICABLE	The project is not located within the secondary gateway area on Beyer Way.
	Policy – LUT 11.1: Promote development that creates and enhances positive spatial attributes of major public streets; open spaces…..	YES AS CONDITIONED	The project is not located on the major public street of Main Street and would not be highly visible; therefore, it would not affect the spatial attributes of development associated with Main Street. The project is not located on Beyer Way, another major street, but it would be seen from Beyer Way and the surrounding open space of the Otay River Valley greenbelt. Conditions of Certification **VIS-1, VIS-2,** and **VIS-3** would reduce the visual effects of the project on the positive spatial attributes of the adjacent Otay River Valley open space.
	Policy – LUT 11.2: Promote and place a high priority on quality architecture, landscape, and site design to enhance the image of Chula Vista, and create a vital and attractive environment for businesses, residents, and visitors.	YES AS CONDITIONED	Conditions of Certification **VIS-1, VIS-2,** and **VIS-3** call for the development of plans consistent with local policies and ordinances and would allow the City of Chula Vista to ensure that the project complies with this policy.
	Policy – LUT 11.3: The City shall, through the development of regulations and guidelines, ensure that good project landscape and site design creates places that are well planned; attractive; efficient; safe; and pedestrian-friendly.	YES AS CONDITIONED	Conditions of Certification **VIS-1, VIS-2,** and **VIS-3** call for the development of plans consistent with local policies and ordinances and would allow the City of Chula Vista to ensure that the project complies with this policy.
	Policy LUT 11.4: Actively promote architectural and design excellence in buildings, open space and urban design.	YES AS CONDITIONED	Conditions of Certification **VIS-1, VIS-2,** and **VIS-3 c**all for the development of plans consistent with local policies and ordinances.
	Policy LUT 11.5: Require a design review process for all public and private	YES AS CONDITIONED	Conditions of Certification **VIS-1, VIS-2,** and **VIS-3** call for the

	discretionary projects (which includes architectural, site plan, landscape and signage design) to review and evaluate projects prior to issuance of building permits to determine whether compliance with the objectives and specific requirements of the City's Design Manual, General Plan, and appropriate zone or Area Development plans.		development of plans consistent with local policies and ordinances and would allow the City of Chula Vista to ensure that the project complies with this policy.
	Policy LUT 13.1: Identify and protect important public viewpoints and viewsheds throughout the Planning Area, including features within and outside the planning area such as: mountains; native habitat areas; San Diego Bay; and historic resources.	YES	The project exhaust stacks would be outlined against the sky as seen from northbound Beyer Way. The stacks would momentarily obstruct distant views to San Miguel Mountain as motorists traveled across the Otay River Valley greenbelt.
	Policy LUT 13.14: Any discretionary projects proposed adjacent to scenic routes, with the exception of single-family dwellings, shall be subject to design review to ensure that the design of the development proposal will enhance the scenic quality of the route.	NOT APPLICABLE	The project is not located within the effective viewshed of any scenic route.
	Policy LUT 45.4: Continue ongoing code enforcement efforts to ensure acceptable property maintenance standards.	YES AS CONDITIONED	Conditions of Certification **VIS-1**, **VIS-2,** and **VIS-3** require the project owner to prepare annual status reports for each of the conditions of certification. The status reports are part of an Annual Compliance Report to ensure compliance with the conditions of certification, which call for compliance with local policies and ordinances.
	Policy LUT 45.5: The City shall prepare, or cause to have prepared, a specific plan or plans, for the Main Street District area that address an increase in depth of Limited Industrial designated land uses on the north side of Main Street back to Zenith Street; establishes design and landscape guidelines and zoning-level standards; and addresses the interface of the Otay Valley Regional Park with land uses on or near Main Street. The City will prepare an Implementation Program to define logical planning units within the overall Main Street District, and to assure establishment of the above plans/regulations for the overall District and the identified planning units. The Implementation Program will also include interim provisions for consideration of any projects within this area prior to completion and adoption of the applicable plans/regulations.	UNKNOWN AT THIS TIME	If the project is permitted prior to the City's developing an Implementation Program for the Main Street District, then the project would be an established use and future standards would apply only when new project changes requiring new permits would be required. Since Conditions of Certification **VIS-1**, **VIS-2,** and **VIS-3** call for the development of plans in compliance with local policies and ordinances, these plans would incorporate the most current guidelines and zoning-level standards available from the City of Chula Vista at the time of plan development.

PROPOSED CONDITIONS OF CERTIFICATION

SURFACE TREATMENT OF PROJECT STRUCTURES AND BUILDINGS

VIS-1 The project owner shall treat the surfaces of all project structures and buildings visible to the public so that a) their colors minimize visual intrusion and contrast by blending with adjacent developments in both color and value; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances.

The project owner shall submit to the Compliance Project Manager (CPM) for review and approval, and simultaneously to the City of Chula Vista for review and comment, a specific surface treatment plan that will satisfy these requirements. The treatment plan shall include:

1. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;

2. A list of each major project structure, building, tank, pipe, wall, and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number or according to a universal designation system;

3. One set of color brochures or color chips showing each proposed color and finish;

4. A specific schedule for completion of the treatment; and

5. A written procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by the CPM. Subsequent modifications to the treatment plan are prohibited without CPM approval.

Verification: At least 90 days prior to specifying to the vendor the colors and finishes of the first structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to the CPM for review and approval and simultaneously to the City of Chula Vista for review and comment.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for review and approval and simultaneously to the City of Chula Vista for review and comment.

Prior to the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and they are ready for inspection and shall submit one set of electronic color photographs from the same key observation points (KOPs) analyzed in this report.

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

PERMANENT EXTERIOR LIGHTING

VIS-2 Consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting so that: a) lamps and reflectors are not visible from beyond the project site, including any off-site construction laydown areas and security buffer areas; b) lighting does not cause excessive reflected glare; c) direct lighting does not illuminate the nighttime sky; d) illumination of the project and its immediate vicinity is minimized; e) lighting on the exhaust stacks shall be the minimum needed to satisfy safety and security concerns; and f) the plan complies with local policies and ordinances of the City of Chula Vista.

The project owner shall submit to the CPM for review and approval and simultaneously to the City of Chula Vista for review and comment, a lighting mitigation plan that includes the following:

1. Location and direction of light fixtures shall take the lighting mitigation requirements into account;

2. Lighting design shall consider setbacks of project features from the site boundary and construction laydown areas to aid in satisfying the lighting mitigation requirements;

3. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;

4. Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;

5. All lighting shall be of minimum necessary brightness consistent with operational safety and security; and

6. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

Verification: At least 90 days prior to ordering any permanent exterior lighting, the project owner shall contact the CPM to discuss the documentation required in the lighting mitigation plan.

At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for review and approval and simultaneously to the City of Chula Vista for review and comment, a lighting mitigation plan.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM.

The project owner shall not order any exterior lighting until receiving CPM approval of the lighting mitigation plan.

Prior to commercial operation, the project owner shall notify the CPM that the lighting has been completed and 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 the CPM with a complaint resolution form report as specified in the Compliance General Conditions, including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the CPM within 48 hours after completing implementation of the proposal. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days.

The project owner shall provide a status report regarding permanent exterior lighting in the Annual Compliance Report. The report shall specify a): the condition of the lighting that has been installed under the lighting plan at the end of the reporting year; b) any deviations in lighting from the plan that occurred during the reporting year; and c) any proposed deviations from the lighting plan for the next year.

PERIMETER LANDSCAPE SCREENING

VIS-3 The project owner shall develop a landscape plan that: a) reduces the visibility of the power plant structures; b) avoids species on the California Invasive Plant Council list of invasive species <www.cal-ipc.org>; and c) complies with the local policies and ordinances of the City of Chula Vista.

Trees and other vegetation consisting of informal groupings of fast- to moderate-growing evergreens, shall be strategically placed along the southern, eastern, and northern facility boundaries, as appropriate, and be of sufficient density and height to screen the power plant structures to the greatest feasible extent within the shortest feasible time. The landscaping plan shall exclude non-native species that could invade habitats of the Otay River Preserve.

The project owner shall submit to the CPM for review and approval and simultaneously to the City of Chula Vista for review and comment, a

landscaping plan providing proper implementation that will satisfy these requirements. The plan shall include:

1. A detailed landscape, grading, and irrigation plan, at a reasonable scale. The plan shall demonstrate how the requirements stated above shall be met. The plan shall provide a detailed installation schedule demonstrating installation of as much of the landscaping as early in the construction process as is feasible in coordination with project construction;

2. A list (prepared by a qualified professional arborist familiar with local growing conditions) of proposed species, specifying installation sizes, growth rates, expected time to maturity, expected size at five years and at maturity, spacing, number, availability, and a discussion of the suitability of the plants for the site conditions and mitigation objectives, with the objective of providing the widest possible range of species from which to choose;

3. Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project;

4. A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project; and

5. The plan shall not be implemented until the project owner receives final approval from the CPM.

Verification: The landscaping plan shall be submitted to the CPM for review and approval and simultaneously to the City of Chula Vista for review and comment, at least 90 days prior to installation.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM and simultaneously to the City of Chula Vista a revised plan for review and approval by the CPM.

The planting must occur during the first optimal planting season following site mobilization. The project owner shall simultaneously notify the CPM and the City of Chula Vista 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 vegetation, for the previous year of operation in each Annual Compliance Report.

REFERENCES

COCV (City of Chula Vista). 2003. – Chula Vista Greenbelt Master Plan. Adopted by the Chula Vista City Council, September 16, 2003.

COCV 2005. Chula Vista Vision 2020. – City of Chula Vista General Plan, Adopted December 13, 2005.

Caltrans (California Department of Transportation). 2006. – Scenic Highway Master Plan.

Google. 2008. – Google maps, satellite imagery. Site visited on March 11, 2008. http://maps.google.com/maps?f=s&ie=UTF8&ll=32.59137,-117.060699&spn=0.130456,0.2314&t=h&z=12&om=1).

MMC 2007b. – Application for Certification for the Chula Vista Energy Upgrade Project, Volumes 1 and 2. Submitted to the California Energy Commission, August 10, 2007.

Smardon, R., J. Palmer, and J. Felleman. 1986. Foundations of Visual Project Analysis.

APPENDIX VR-1

STAFF'S VISUAL RESOURCES EVALUATION METHODOLOGY

Staff evaluates the visual characteristics of the existing physical setting, the proposed project, the circumstances affecting the viewer, and the degree of visual change that a proposed project may introduce using the identified elements and generally accepted criteria for determining substantial environmental impact significance identified below.

ELEMENTS OF THE METHODOLOGY

Key Observation Points

Staff evaluates the existing visible physical environmental setting from a fixed vantage point, called a *key observation point* (KOP), that provides a view of the visual change introduced by the proposed project to the view from that KOP. The view as seen from the KOP is referred to as the *viewshed*. Staff uses a KOP[2] to represent a location(s) from which to conduct detailed analyses of the proposed project and to obtain existing condition photographs and prepare photo simulations. KOPs are selected to be representative of the most critical viewshed locations from which the project would be seen. Because it is not feasible to analyze all the views in which a proposed project would be seen, it is necessary to select a KOP that would most clearly display the visual effects of the proposed project. A KOP may also represent primary viewer groups that would potentially be affected by the project. In addition to KOP photo(s), staff reviews landscape character photos that help provide a visual overview of a project site, its vicinity, and the selected KOP area, as appropriate. Prior to application submittal, staff participates in the selection of appropriate KOP(s) for the analysis.

LORS Consistency

Energy Commission staff considers federal, state, and local laws, ordinances, regulations, and standards (LORS) relevant to aesthetics or protection and preservation of visual sensitive resources. Conflicts with such LORS can constitute significant visual impacts. For example, visual staff examines land use planning documents, such as a local government's General Plan, Specific Plan, and zoning ordinances applicable to the project site and surrounding area to gain insight as to the type of land uses intended for the area, and the guidelines given for aesthetics, or protection and preservation of visual sensitive resources.

California Environmental Quality Act Guidelines

The CEQA Guidelines define a "significant effect on the environment" to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including . . . objects of historic or aesthetic significance" (California Code of Regulations, Title 14, section 15382).

[2]The use of KOPs or similar view locations is common in visual resource analysis. The U.S. Bureau of Land Management (USDI BLM 1986a, 1986b, 1984) and the U.S. Forest Service (USDA Forest Service 1995) use such an approach.

Appendix G Environmental Checklist Form of the CEQA Guidelines, under “Aesthetics,” lists the following four questions to be addressed regarding whether the potential impacts of a project are significant:

A. Would the project have a substantial adverse effect on a scenic vista?

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Staff answers each of the four checklist questions for the proposed project, including any related facility such as a transmission line or gas pipeline, for both construction and operation phases.

APPENDIX VR-2

ENERGY COMMISSION STAFF - VISUAL ANALYSIS TERMS

For the purpose of this visual analysis, Energy Commission staff has defined the following visual related terms:

Duration of View - ranges from *high* (extended), a view of the project site that is reached across an extended distance or amount of time, to *low* (brief), a view of the project site that is reached in a short amount of distance or time. The range of view duration generally differs depending on the type of activity in which the viewer is engaged.

Scenic Resource - a unique water feature (waterfall, transitional water, part of a stream or river, estuary); a unique physical geological terrain feature (rock masses, outcroppings, layers or spires); a tree having a unique visual/historical importance to a community (a tree linked to a famous event or person, an ancient old growth tree); historic building; or a designated federal scenic byway or state scenic highway corridor.

Scenic Vista - a distant view through and along a corridor or opening that exhibits a high degree of pictorial quality.

Viewer Concern - estimated level of a viewer's anticipated interest in preserving and protecting the existing physical environment. Viewer attitudes and expectations are often correlated with viewer activity type (e.g., viewers engaged in certain activities, such as recreation, are considered to have high levels of concern for scenic quality, while those engaged in other activities, such as work, are generally considered to have lower levels of concern). Residences are generally considered to have high viewer concern.

Existing landscape character may temper viewer concern on some state and locally designated scenic highways and corridors. Similarly, travelers on other highways and roads, including those in agricultural areas, may have moderate viewer concern depending on viewer expectations as conditioned by regional and local landscape features. Commercial uses, including business parks, typically have low-to-moderate viewer concern, though some commercial developments have specific requirements related to visual quality with respect to landscaping, building height limitations, building design, and prohibition of above-ground utility lines, thus indicating a higher level of viewer concern. Industrial uses typically have the lowest viewer concern because workers are focused on their work and generally are working in surroundings with relatively low visual value.

Viewer Exposure – the primary factors affecting viewer susceptibility to impacts, including visibility of a landscape feature, the number of viewers, distance, and the duration of the view.

Viewshed – an area visible to an observer from a fixed vantage point, called a *key observation point* (KOP). Staff uses a 35mm camera with a focal length of 50mm which encompasses an approximate image angle of 46^0. The staff uses a field of view that is not to be confused with a panoramic (180^0) or cycloramic (360^0) view. These are broad horizontal composition with no apparent limits to the view.

Visibility - the level to which the proposed project site is visually obstructed by natural and/or man-made surface features (development, vegetation, hills) from the key observation point.

Visual Contrast - the conspicuousness or prominence of a project and its compatibility with its setting. Visual contrast is described in terms of formal attributes of form, line, color, and texture of the project in comparison to those of the setting. Staff considers the proposed project's introduction of form (shape and mass), line (changes in edge types and interruption or introduction of edges, bands, and silhouette lines), color (surface color, reflectivity, and glare), and texture (noticeable differences in the grain or irregularity and directional patterns) to the existing physical environment to determine the degree of contrast**.** Degree of contrast: *none* – the element contrast is not visible or perceived; *weak* – the element contrast can be seen but does not attract attention; *moderate* – the element contrast begins to attract attention and begins to dominate the characteristic landscape; *strong* – the element contrast demands attention, will not be overlooked, and is dominant in the landscape.

Visual Disruption - the extent to which a previously visible scenic resource or scenic vista in the existing physical environment is blocked from view by the proposed project. The view disruption is assigned greater weight according to the quality and importance of the blocked view.

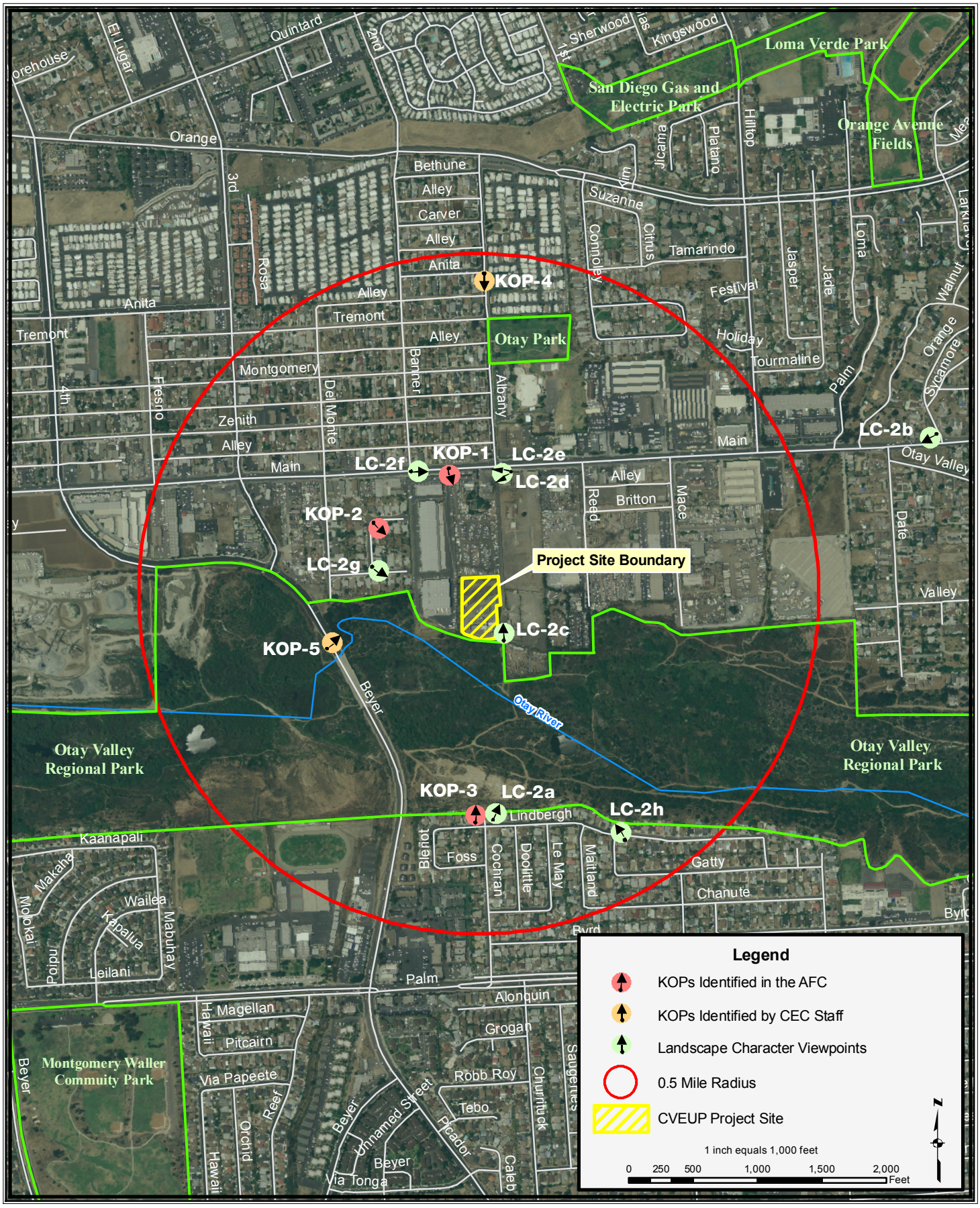
Visual Quality – the estimated visual impression and appeal of the existing physical environmental setting and the associated public value attributed to it. An outstanding visual quality is a rating reserved for landscapes that would be what a viewer might think of as "picture postcard" landscapes. Low visual quality describes landscapes that are often dominated by visually discordant human alterations and do not provide views that people would find inviting or interesting (Buhyoff et al. 1994).

Visual Scale - the proposed project's apparent size relationship with other components in the existing physical environment relative to the total field-of-view as viewed by the human eye, or the lens of a 35mm camera with a focal length of 50mm.

Visual Sensitivity - the overall level of sensitivity of a viewshed due to visual change that is a function of visual quality, viewer concern, and viewer exposure.

VISUAL RESOURCES - FIGURE 1

Chula Vista Energy Upgrade Project - Landscape Character and Key Observation Point (KOP) Locations.



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SOURCE: California Energy Commission



Figure 2a. View of the project vicintiy looking east towards the San Miguel Mountains, from the mesa above the Otay River Valley at Cochran Avenue near Linbergh Street (the project site is just to the left of the picture).



Figure 2b. View of the project vicintiy looking to the southwest towards the Pacific Ocean, from the intersection of Main Street and Sycamore Avenue.

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, APRIL 2008
SOURCE: CEC Staff Photographs



Figure 2c. Light Industrial development along the private access lane, east of the project site entrance.



Figure 2d. Closed car wash located north of the project site on Main Street and the private access lane.

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, APRIL 2008
SOURCE: CEC Staff Photographs



Figure 2e. Residential development on the north side of Main Street near Albany Avenue.



Figure 2f. Commercial development on Main Street near Banner Avenue.

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, APRIL 2008
SOURCE: CEC Staff Photographs



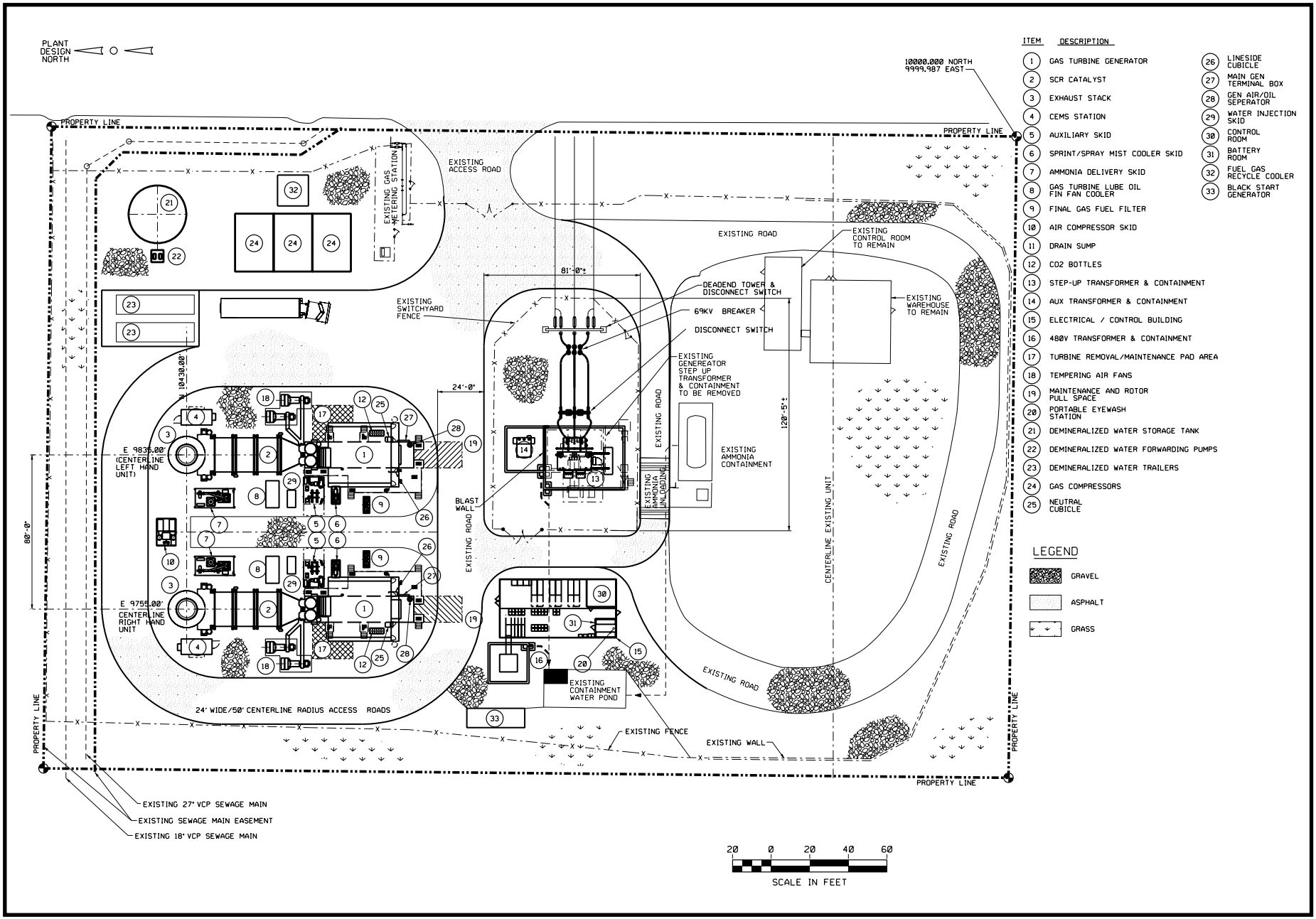
Figure 2g. Residential development south of Main Street and west of the meat packing plant and project on Del Monte Avenue and Alvoca Street.



Figure 2h. Residential development on the south side of the Otay River Valley, on Lindberg Street at National Avenue.

VISUAL RESOURCES - FIGURE 3

Chula Vista Energy Upgrade Project - General Arrangement of the CVEUP Site

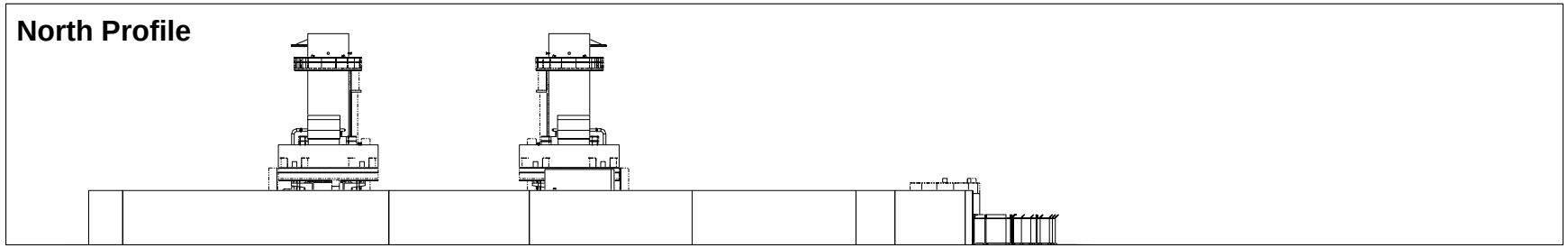


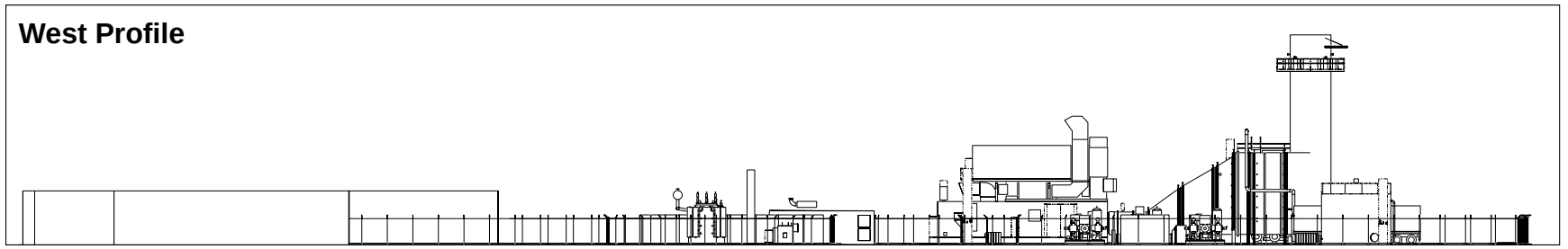
CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, APRIL 2008

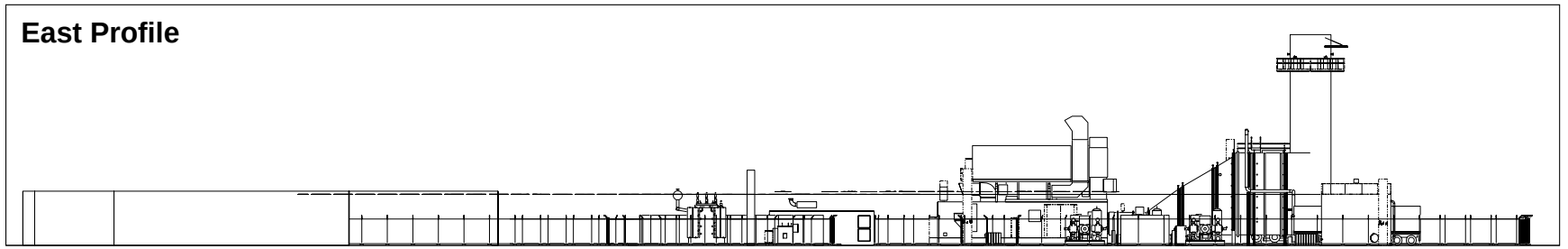
SOURCE: AFC Figure 2.1-1

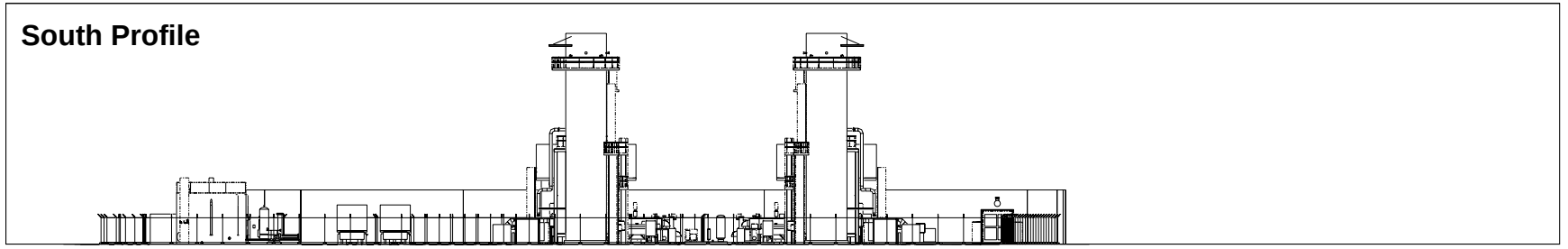
VISUAL RESOURCES - FIGURE 4

Chula Vista Energy Upgrade Project - Site Elevations for the CVEUP









CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, APRIL 2008

SOURCE: AFC Figure 2.1-2

VISUAL RESOURCES - FIGURE 5

Chula Vista Energy Upgrade Project - CVEUP Site Photographs

APRIL 2008



View from the Northwest



View from the Northeast

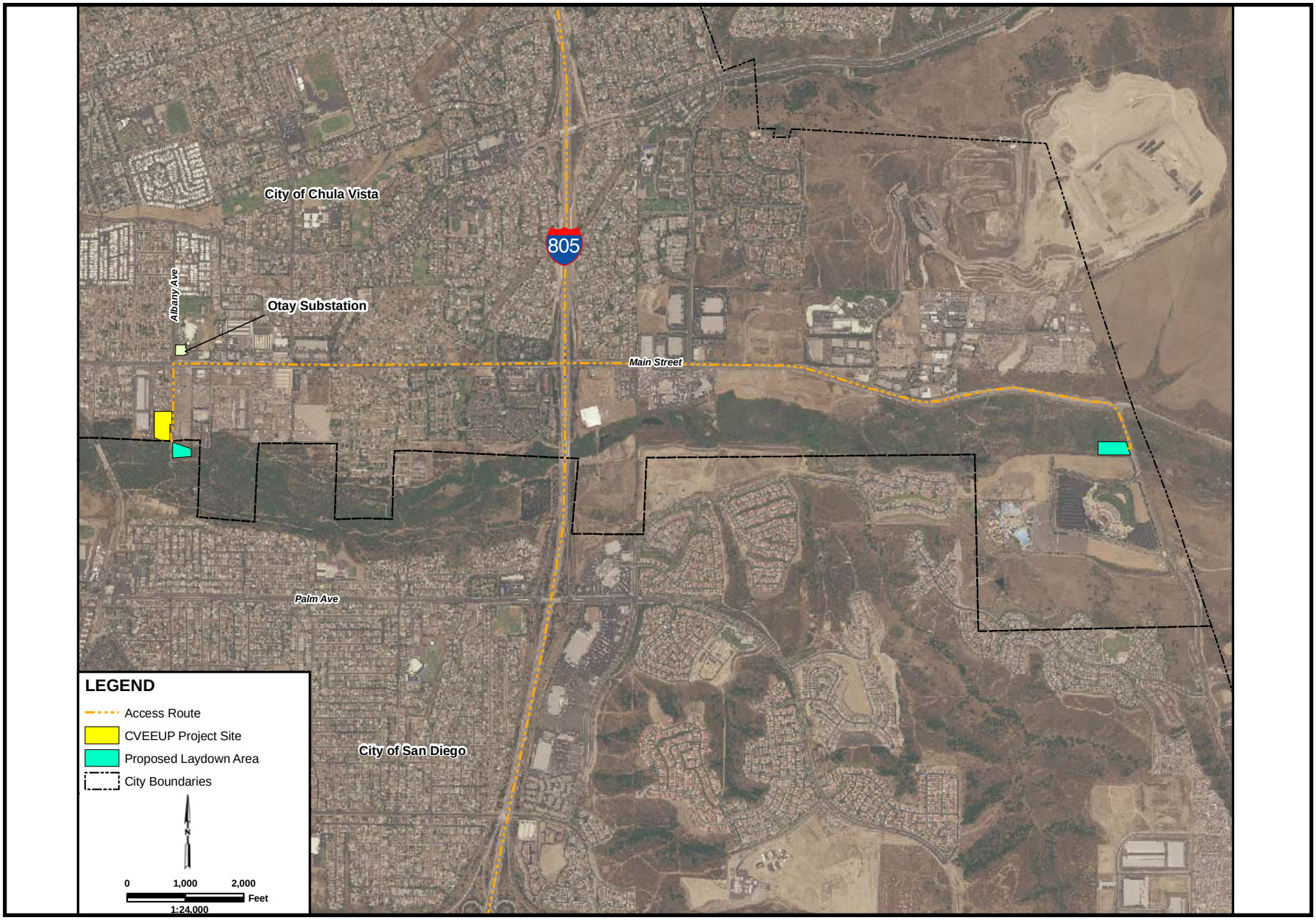
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, APRIL 2008

SOURCE: AFC Figure 2.1-3

VISUAL RESOURCES - FIGURE 6

Chula Vista Energy Upgrade Project - Alternate Construction Laydown and Parking Areas



CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, APRIL 2008

SOURCE: AFC Figure 2.1-7

VISUAL RESOURCES - FIGURE 7
Chula Vista Energy Upgrade Project - KOP1 - Main Street Near Banner Avenue



KOP1a - Existing view toward the project site from Main Street at the corner of Banner Avenue.



KOP1b - Simulated view toward the project site from Main Street at the corner of Banner Avenue.

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, APRIL 2008
SOURCE: AFC Figure 5.13-2

VISUAL RESOURCES - FIGURE 8

Chula Vista Energy Upgrade Project - KOP2 - Ancurza Way at Teena Drive, Looking Southeast



KOP2a - Existing view toward the project site from Ancurza Way.



KOP2b - Simulated view toward the project site from Ancurza Way.

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, APRIL 2008

SOURCE: AFC Figure 5.13-3

VISUAL RESOURCES - FIGURE 9

Chula Vista Energy Upgrade Project - KOP3 - Cochran Avenue near Lindberg Street Looking North



KOP3a - Existing view toward the project site from the northern end of Cochran Avenue.



KOP3b - Simulated view toward the project site from the northern end of Cochran Avenue.

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, APRIL 2008

SOURCE: AFC Figure 5.13-4



Figure 10a. KOP4 - Albany Avenue near Anita Street, Looking South.



Figure 10b. KOP5 - Beyer Way near the the Otay River, Looking Northeast.

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, APRIL 2008
SOURCE: CEC Staff Photographs

WASTE MANAGEMENT

Ellie Townsend-Hough

SUMMARY OF CONCLUSIONS

Management of the waste generated during construction and operation of the Chula Vista Energy Upgrade Project would not result in any significant adverse impacts and would comply with applicable waste management laws, ordinances, regulations, and standards if the measures proposed in the Application for Certification and staff's proposed conditions of certification are implemented.

INTRODUCTION

This Preliminary Staff Assessment (PSA) presents an analysis of issues associated with wastes generated from the proposed construction and operation of the Chula Vista Energy Upgrade Project (CVEUP). The technical scope of this analysis encompasses solid wastes existing on site and those to be generated during facility construction and operation. Management and discharge of wastewater is addressed in the **Soil and Water Resources** section of this document. Additional information related to waste management may also be covered in the **Worker Safety** and **Hazardous Materials Management** sections of this document.

The Energy Commission staff's objectives in conducting this waste management analysis are to ensure that:

- the management of project wastes would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS). Compliance with LORS ensures that wastes generated during the construction and operation of the proposed project would be managed in an environmentally safe manner.
- the disposal of project wastes would not result in significant adverse impacts to existing waste disposal facilities.
- upon project completion, the site is managed in such a way that project wastes and waste constituents would not pose a significant risk to humans or the environment.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local environmental laws, ordinances, regulations, and standards (LORS) have been established to ensure the safe and proper management of both solid and hazardous wastes in order to protect human health and the environment. Project compliance with the various LORS is a major component of staff's determination regarding the significance and acceptability of the CVEUP with respect to management of waste.

WASTE MANAGEMENT Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Title 42, United States Code, §§ 6901, et seq. Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al.)	The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al., establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation, and delegation to states, enforcement provisions, and responsibilities, as well as research, training, and grant funding provisions. RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing: • generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • waste labeling practices and use of appropriate containers; • use of a manifest when transporting wastes; • submission of periodic reports to the United States Environmental Protection Agency (U.S. EPA) or other authorized agency; and • corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills. RCRA is administered at the federal level by U.S. EPA and its 10 regional offices. The Pacific Southwest regional office (Region 9) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.
Title 42, United States Code, §§ 9601, et seq. Comprehensive Environmental Response, Compensation and Liability Act	The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses: • reporting requirements for releases of hazardous substances; • requirements for remedial action at closed or abandoned hazardous waste sites and brownfields; • liability of persons responsible for releases of hazardous substances or waste; and • requirements for property owners/potential buyers to conduct “all appropriate inquiries” into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental

	Site Assessment is commonly used to satisfy CERCLA "all appropriate inquiries" requirements.
Title 40, Code of Federal Regulations (CFR), Subchapter I – Solid Wastes	These regulations were established by U.S. EPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes. • Part 246 addresses source separation for materials recovery guidelines. • Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. • Part 258 addresses the criteria for municipal solid waste landfills. • Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). U.S. EPA implements the regulations at the federal level. However, California is an authorized state so the regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.
Title 49, CFR, Parts 172 and 173 Hazardous Materials Regulations	U.S. Department of Transportation established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with Title 40, CFR, section 262.20.
State	
California Health and Safety Code, Chapter 6.5, §§ 25100, et seq. Hazardous Waste Control Act of 1972, as amended	This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements. The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.
Title 22, California Code of Regulations (CCR), Division 4.5 Environmental Health Standards for the Management of Hazardous Waste	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers, prepare manifests before transporting the waste off site, and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires

	that hazardous waste be transported by registered hazardous waste transporters. The standards addressed by Title 22, CFR include: • Identification and Listing of Hazardous Waste (Chapter 11, §§ 66261.1, et seq.) • Standards Applicable to Generators of Hazardous Waste (Chapter 12, §§ 66262.10, et seq.) • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §§ 66263.10, et seq.) • Standards for Universal Waste Management (Chapter 23, §§ 66273.1, et seq.) • Standards for the Management of Used Oil (Chapter 29, §§ 66279.1, et seq.) • Requirements for Units and Facilities Deemed to Have a Permit by Rule (Chapter 45, §§ 67450.1, et seq.) The Title 22 regulations are established and enforced at the state level by DTSC. Some generator standards are also enforced at the local level by CUPAs.
California Health and Safety Code, Chapter 6.11 §§ 25404–25404.9 Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)	The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below. • Aboveground Storage Tank Program • Business Plan Program • California Accidental Release Prevention (CalARP) Program • Hazardous Material Management Plan / Hazardous Material Inventory Statement Program • Hazardous Waste Generator / Tiered Permitting Program • Underground Storage Tank Program The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as Certified Unified Program Agencies (CUPAs). San Diego County Department of Environmental Health is the area CUPA. Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program. Other elements of the Unified Program may be addressed in the **Hazardous Materials** and/or **Worker Health and Safety** analysis sections.
Title 27, CCR, Division 1, Subdivision 4, Chapter 1, §§	While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses.

15100, et seq. Unified Hazardous Waste and Hazardous Materials Management Regulatory Program	• Article 9 – Unified Program Standardized Forms and Formats (§§ 15400–15410). • Article 10 – Business Reporting to CUPAs (§§ 15600–15620).
Public Resources Code, Division 30, §§ 40000, et seq. California Integrated Waste Management Act of 1989.	The California Integrated Waste Management Act of 1989 (as amended) establishes mandates and standards for management of solid waste. Among other things, the law includes provisions addressing solid waste source reduction and recycling, standards for design and construction of municipal landfills, and programs for county waste management plans and local implementation of solid waste requirements.
Title 14, CCR, Division 7, § 17200, et seq. California Integrated Waste Management Board	These regulations further implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions. • Chapter 3 – Minimum Standards for Solid Waste Handling and Disposal. • Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. • Chapter 7 – Special Waste Standards. • Chapter 8 – Used Oil Recycling Program. • Chapter 8.2 – Electronic Waste Recovery and Recycling.
California Health and Safety Code, Division 20, Chapter 6.5, Article 11.9, §25244.12, et seq. Hazardous Waste Source Reduction and Management Review Act of 1989 (also known as SB 14).	This law was enacted to expand the state's hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (~ 26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a 4-year cycle, with a summary progress report due to DTSC every 4th year.
Title 22, CCR, § 67100.1 et seq. Hazardous Waste Source Reduction and Management Review.	These regulations further clarify and implement the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the act.
Local	
City of Chula Vista General Plan, Policies EE/17/1;	These policies provide guidance for remediation of contaminated sites and for siting and management of facilities that store, collect, treat, dispose or transfer hazardous waste.

17.2; 19.1; 19.2; 20.1; 20.2; and 20.3	
San Diego County Integrated Waste Management Plan	The plan provides guidance for local management of solid waste and household hazardous waste (incorporates the county's Source Reduction and Recycling Elements, which detail means of reducing commercial and industrial sources of solid waste).
San Diego County Department of Environmental Health, Hazardous Material Division various programs	Hazardous Material Division is the Certified Unified Program Agency (CUPA) for San Diego County that regulates and conducts inspections of businesses that handle hazardous materials, hazardous wastes, and/or have underground storage tanks. Hazardous Material Division programs include assistance with oversight on property re-development (i.e., brownfields) and voluntary or private oversight cleanup assistance.
Chula Vista General Plan Chapter 9, section 3.4	The section describes the City of Chula Vista's hazardous materials and waste requirements.

SETTING

The proposed CVEUP is a 100-megawatt (MW) natural gas-fired, simple cycle generating facility (MCC 2007b, p. 1-1). The simple cycle equipment will consist of two combustion turbine generators and associated support equipment. The facility will be located on a 3.8-acre parcel in the City of Chula Vista, San Diego County, California. The proposed facility is located in Chula Vista's Main Street Industrial Corridor and is zoned for industrial use (MCC 2007b, p. 5.6-1).

The proposed power plant will be constructed on vacant land. A 44.5-MW simple cycle peaking power plant is located on the southern portion of the project parcel (MCC 2007a, p. 2.1). Construction of the proposed power plant will require demolition of most of the existing 44.5-MW plant. CVEUP would use the existing transmission connection; natural gas, water, and sanitary sewer pipelines; fencing and sound attenuation wall; utility/control building; stormwater runoff retention basin; and the 12,000-gallon aqueous ammonia storage tank and tank refilling station (MCC 2007b, p. 2.1).

The construction and demolition associated with CVEUP will produce a variety of mixed nonhazardous wastes, such as wood, metal, plastics, etc. Waste will be recycled where practical, and nonrecyclable waste will be deposited in a Class III landfill. The hazardous waste generated during this phase of the project will consist of electrical equipment, used oils, universal wastes, solvents, and empty hazardous waste materials (MMC 2007b, section 5.14.1.2). Universal wastes are hazardous wastes that contain mercury, lead, cadmium, copper, and other substances hazardous to human and environmental health. Examples of universal wastes are batteries, fluorescent tubes, and some electronic devices.

The proposed CVEUP would be a peaking power plant and would operate during times of very high electrical load or when baseload plants are not operating or during emergency conditions. Operation and maintenance of the plant and associated facilities will generate a variety of wastes, including hazardous wastes. To control air emissions,

the project's turbine units would use selective catalytic reduction and oxidation catalyst equipment and chemicals, which generate both solid and hazardous waste.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This waste management analysis addresses: a) existing project site conditions and the potential for contamination associated with prior activities on or near the project site, and b) the impacts from the generation and management of wastes during project construction and operation.

Existing Project Site Conditions and Potential for Contamination from Prior Activities

For any site in California proposed for the construction of a power plant, the applicant must provide documentation about the nature of any potential or existing releases of hazardous substances or contamination at the site. If potential or existing releases or contamination at the site are identified, the significance of the release or contamination would be determined by site-specific factors, including, but not limited to: the amount and concentration of contaminants or contamination; the proposed use of the area where the contaminants/contamination is found; and any potential pathways for workers, the public, or sensitive species or environmental areas to be exposed to the contaminants. Any unmitigated contamination or releases of hazardous substances that pose a risk to human health or environmental receptors would be considered significant by Energy Commission staff.

As a first step in documenting existing site conditions, the Energy Commission's power plant site certification regulations require that a Phase I Environmental Site Assessment (ESA) be prepared[1] and submitted as part of an application for certification. The Phase I ESA is conducted to identify any conditions indicative of releases and threatened releases of hazardous substances at the site and to identify any areas known to be contaminated (or a source of contamination) or near the site.

In general, the Phase I ESA uses a qualified environmental professional to conduct inquiries into past uses and ownership of the property, research hazardous substance releases and hazardous waste disposal at the site and within a certain distance of the site, and visually inspect the property, making observations about the potential for contamination and possible areas of concern. After conducting all necessary file reviews, interviews, and site observations, the environmental professional then provides findings about the environmental conditions at the site. In addition, since the Phase I ESA does not include sampling or testing, the environmental professional may also give an opinion about the potential need for any additional investigation. Additional

[1] Title 20, California Code of Regulations, section 1704(c) and Appendix B, section (g)(12)(A). Note that the Phase I ESA must be prepared according to American Society for Testing and Materials protocol or an equivalent method agreed upon by the applicant and the Energy Commission staff.

investigation may be needed, for example, if there were significant gaps in the information available about the site, an ongoing release is suspected, or to confirm an existing environmental condition.

If additional investigation is needed to identify the extent of possible contamination, a Phase II ESA may be required. The Phase II ESA usually includes sampling and testing of potentially contaminated media to verify the level of contamination and the potential for remediation at the site.

In conducting its assessment of a proposed project, Energy Commission staff will review the project's Phase I ESA and work with the appropriate oversight agencies as necessary to determine if additional site characterization work is needed and if any mitigation is necessary at the site to ensure protection of human health and the environment from any hazardous substance releases or contamination identified.

Impacts from Generation and Management of Wastes during Construction and Operation

Regarding the management of project-related wastes generated during construction and operation of the proposed project, staff reviewed the applicant's proposed solid and hazardous waste management methods and determined if the methods proposed are consistent with the LORS identified for waste disposal and recycling. The federal, state, and local LORS represent a comprehensive regulatory system designed to protect human health and the environment from impacts associated with management of both non-hazardous and hazardous wastes. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management.

Staff then reviewed the capacity available at off-site treatment and disposal sites and determines whether or not the proposed power plant's waste would have a significant impact on the volume of waste a facility is permitted to accept. Staff used a waste volume threshold equal to 10 percent of a disposal facility's remaining permitted capacity to determine if the impact from disposal of project wastes at a particular facility would be significant.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Existing Site Conditions

A Phase I ESA of the proposed project site, dated November 21, 2006, was prepared by Advantage Environmental Consultants, LLC, in accordance with the American Society for Testing and Materials Standard Practice E 1527-00 for ESAs. The Phase I ESA is included as Appendix 5.14 in Volume 2 of the project Application for Certification (AFC) (MMC 2007b, Appendix 5.14).

The Phase I ESA conducted for the existing 44.5-MW power plant and proposed CVEUP site did not identify any recognized environmental conditions associated with the proposed project site and linear facility corridors. A recognized environmental condition is the presence or likely presence of any hazardous substances or petroleum products on a property under the conditions that indicated an existing release, past

release, or a material threat of a release of any hazardous substance or petroleum products into structures on the property or in the ground, groundwater, or surface water of the property.

Energy Commission staff notes that the Phase I ESA shows the site was used as a junk yard from 1980 to 1990 prior to construction of the 44.5-MW power plant. This type of use indicates there is potential for impacts from hazardous substances or petroleum products that could have been dumped at the site but are not readily observed at the surface. Staff has proposed Conditions of Certification **WASTE-1** and **WASTE-2** to mitigate potential impacts. These proposed conditions of certification require that a registered professional geologist or engineer with experience in remedial investigation and feasibility studies be available for consultation during soil excavation and grading activities. This would be adequate to address identification and investigation of any soil or groundwater contamination that may be encountered.

Construction Impacts and Mitigation

Site preparation and construction of the proposed power plant and associated facilities would generate both nonhazardous and hazardous wastes in solid and liquid forms (MMC 2007b, § 5.14.1.2.1). Before construction can begin, the project owner would be required to develop and implement a Construction Waste Management Plan, per proposed Condition of Certification **WASTE-5**.

Non-Hazardous Wastes

Non-hazardous solid wastes generated during construction would include approximately 455 tons of scrap wood, concrete, steel/metal, paper, glass, and plastic waste (MMC 2007b, § 5.14.2.3.1). All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a solid waste disposal facility, in accordance with Title 14, California Code of Regulations, sections 17200 et seq.

Non-hazardous liquid wastes would also be generated during construction, including sanitary wastes, dust suppression drainage, and equipment wash water. Sanitary wastes would be collected in portable, self-contained toilets and pumped periodically for disposal at an appropriate facility. Potentially contaminated equipment wash water will be contained at designated wash areas and transported to a sanitary wastewater treatment facility. Please see the **Soil and Water Resources** section of this document for more information on the management of project wastewater.

Hazardous Wastes

The generation of hazardous wastes anticipated during construction include empty hazardous material containers, solvents, waste paint, oil absorbents, used oil, oily rags, batteries, and cleaning wastes. The amount of waste generated would be minor if handled in the manner identified in the AFC (MMC 2007b, § 5.14.1.2.1).

The project owner would be required to obtain a unique hazardous waste generator identification number for the site prior to starting construction, pursuant to proposed Condition of Certification **WASTE-3**. Although the hazardous waste generator number is determined based on site location, both the construction contractor and the project

owner/operator could be considered the generator of hazardous wastes at the site. Wastes would be accumulated on site for less than 90 days and then properly manifested, transported, and disposed at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. Staff reviewed the disposal methods described in AFC section 6.16.3.1 and in the responses to data requests and concluded that all wastes would be disposed in accordance with all applicable LORS. Should any construction waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **WASTE-4** to notify the Energy Commission's Compliance Project Manager (CPM) whenever the owner becomes aware of any such action.

In the event that construction excavation, grading, or trenching activities for the proposed project encounter potentially contaminated soils and/or specific handling, disposal, and other precautions that may be necessary pursuant to hazardous waste management LORS, staff finds that proposed Conditions of Certification **WASTE-1** and **WASTE-2** would be adequate to address any soil contamination contingency that may be encountered during construction of the project and would ensure compliance with LORS. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management activities.

Operation Impacts and Mitigation

The proposed CVEUP would generate non-hazardous and hazardous wastes in both solid and liquid forms under normal operating conditions. (Table 5.14-2 of the project AFC gives a summary of the operation waste streams, expected waste volumes and generation frequency, and management methods proposed.) Before operations can begin, the project owner would be required to develop and implement an Operation Waste Management Plan pursuant to proposed Condition of Certification **WASTE-6**.

Non-Hazardous Solid Wastes

The generation of non-hazardous solid wastes expected during project operation include routine maintenance wastes (such as used air filters, spent deionization resins, sand and filter media) as well as domestic and office wastes (such as office paper, newsprint, aluminum cans, plastic, and glass). All non-hazardous wastes will be recycled to the extent possible, and non-recyclable wastes will be regularly transported off site to a local solid waste disposal facility (MMC 2007b, § 5.14.1.2.3). The applicant estimates the project will generate 39 tons of non-hazardous waste per year (MMC 2007b, p. 5.14-6).

Non-Hazardous Liquid Wastes

Non-hazardous liquid wastes would be generated during facility operation and are discussed in the **Soil and Water Resources** section of this document.

Hazardous Wastes

The project owner/operator would be considered the generator of hazardous wastes at the site during facility operations. Therefore, the project owner's unique hazardous

waste generator identification number, obtained prior to construction in accordance with proposed Condition of Certification **WASTE-3**, would be retained and used for hazardous waste generated during facility operation.

The generation of hazardous wastes expected during routine project operation include used hydraulic fluids, oils, greases, oily filters and rags, spent SCR catalysts, cleaning solutions and solvents, and batteries. In addition, spills and unauthorized releases of hazardous materials or hazardous wastes may generate contaminated soils or materials that may require corrective action and management as hazardous waste. Proper hazardous material handling and good housekeeping practices will help keep spill wastes to a minimum. However, to ensure proper cleanup and management of any contaminated soils or waste materials generated from hazardous materials spills, staff proposes Condition of Certification **WASTE-7** requiring the project owner/operator to report, clean up, and remediate as necessary, any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements. More information on hazardous material management, spill reporting, containment, and spill control and countermeasures plan provisions for the project are provided in the **Hazardous Material Management** section of the PSA.

The amount of hazardous wastes generated during the operation of CVEUP would be minor, with source reduction and recycling of wastes implemented whenever possible. The hazardous wastes would be temporarily stored on site, transported off site by licensed hazardous waste haulers, and recycled or disposed at authorized disposal facilities in accordance with established standards applicable to generators of hazardous waste (Title 22, CCR, §§ 66262.10 et seq.). Should any operations waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **WASTE-4** to notify the CPM whenever the owner becomes aware of any such action.

Impact on Existing Waste Disposal Facilities

Non-Hazardous Solid Wastes

During construction of the proposed project, approximately 455 tons of solid waste will be generated and recycled or disposed in a Class III landfill (MMC 2007b, § 5.14.2.3.1). The non-hazardous solid wastes generated yearly at CVEUP will also be recycled, if possible, or disposed in a Class III landfill.

Table 5.14-3 of the project AFC identifies four non-hazardous (Class III) waste disposal facilities that could potentially take the non-hazardous construction and operation wastes generated by the CVEUP. These Class III landfills are all located in Southern California in San Diego County. The remaining capacity for the four landfills combined is over 167 million cubic yards. The total amount of non-hazardous waste generated from project construction and operation will contribute less than 1 percent of the available landfill capacity. Staff finds that disposal of the solid wastes generated by the CVEUP can occur without significantly impacting the capacity or remaining life of any of these facilities.

Hazardous Wastes

Section 5.14.2.3.2 of the project AFC discusses the two Class I landfills in California: the Clean Harbor Landfill (Buttonwillow) in Kern County and the Chemical Waste Management Landfill (Kettleman Hills) in Kings County. The Kettleman Hills facility also accepts Class II and Class III wastes. In total, there is in excess of 15 million cubic yards of remaining hazardous waste disposal capacity at these landfills, with approximately 30 years of remaining operating lifetimes. The CVEUP construction and operation waste will likely be sent to the Buttonwillow facility.

Hazardous wastes generated during construction and operation would be recycled to the extent possible and practical. Those wastes that cannot be recycled will be transported off site to a permitted treatment, storage, or disposal facility. The volume of hazardous waste from the CVEUP requiring off-site disposal would be far less than staff's threshold of significance and would therefore not significantly impact the capacity or remaining life of the Class I waste facilities.

CUMULATIVE IMPACTS AND MITIGATION

As proposed, the amount of non-hazardous and hazardous wastes generated during construction and operation of the CVEUP would add to the total quantity of waste generated in the State of California. However, project wastes would be generated in modest quantities, waste recycling would be employed wherever practical, and sufficient capacity is available at several treatment and disposal facilities to handle the volumes of wastes that would be generated by the project. Therefore, staff concludes that the waste generated by the CVEUP would not result in significant cumulative waste management impacts.

COMPLIANCE WITH LORS

Energy Commission staff concludes that the proposed CVEUP would comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during both facility construction and operation. The applicant is required to recycle and/or dispose hazardous and non-hazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes would be produced during both project construction and operation, the CVEUP would be required to obtain a hazardous waste generator identification number from U.S. EPA. The CVEUP would also be required to properly store, package, and label all hazardous waste; use only approved transporters; prepare hazardous waste manifests; keep detailed records; and appropriately train employees, in accordance with state and federal hazardous waste management requirements.

In the **Socioeconomics** section of this staff assessment, staff presents census information that shows that there are minority populations within one mile and six miles of the project. Since staff has added conditions of certification that would reduce the risk associated with hazardous waste to a less than significant level, staff concludes that there will be no significant impact from construction or operation of the power plant on minority populations. Therefore, there are no environmental justice issues for Waste Management.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

The San Diego County, Department of Environmental Health, Hazardous Materials Division regulates businesses that use hazardous materials, dispose of hazardous wastes, and maintain and remove underground storage tanks. The Hazardous Materials Division will require that the applicant complete a Hazardous Materials Questionnaire form. The division will be concerned that the demolition debris is properly disposed of through a licensed hauler if any of the debris is considered hazardous waste (SDCDEHHMD 2008a).

CONCLUSIONS

Staff concludes that management of the waste generated during construction and operation of the CVEUP would not result in any significant adverse impacts and would comply with applicable LORS, if the waste management practices and mitigation measures proposed in the CVEUP AFC and staff's proposed conditions of certification are implemented.

Staff has proposed Conditions of Certification **WASTE-1** through **WASTE-7** (below) requiring that:

- the project owner have an experienced and qualified professional engineer or professional geologist available for consultation during site characterization (if needed), demolition, excavation, and grading activities in the event that contaminated soils are encountered;
- if potentially contaminated soil is unearthed during excavation at either the proposed site or linear facilities, the professional engineer or professional geologist shall inspect the site, determine the need for sampling, file a written report, and seek guidance from the CPM and the appropriate regulatory agencies;
- the project owner shall obtain a unique hazardous waste generator identification number in accordance with federal and state hazardous waste management requirements;
- the project owner shall notify the CPM whenever the owner becomes aware of any impending waste management-related enforcement action;
- the project owner shall prepare and submit a construction waste management plan for all wastes generated during construction of the facility and submit the plan to the CPM;
- the project owner shall prepare and submit an operation waste management plan for all wastes generated during operation of the facility and submit the plan to the CPM; and
- the project owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous wastes are reported, cleaned up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.

PROPOSED CONDITIONS OF CERTIFICATION

WASTE-1 The project owner shall provide the resume of an experienced and qualified professional engineer or professional geologist, who shall be available for consultation during site characterization (if needed), demolition, excavation, and grading activities, to the CPM for review and approval. The resume shall show experience in remedial investigation and feasibility studies.

The professional engineer or professional geologist shall be given full authority by the project owner 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 resume to the CPM for review and approval.

WASTE-2 If potentially contaminated soil is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the professional engineer or professional geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, representatives of Department of Toxic Substances Control, and the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional 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 professional engineer or professional geologist, significant remediation may be required, the project owner shall contact the CPM and representatives of the Department of Toxic Substances Control for guidance and possible oversight.

Verification: The project owner shall submit any final reports filed by the professional engineer or professional geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-3 The project owner shall obtain a hazardous waste generator identification number from the United States Environmental Protection Agency prior to generating any hazardous waste during construction and operations.

Verification: The project owner shall keep a copy of the identification number on file at the project site and provide the number to the CPM in the next Monthly Compliance Report.

WASTE-4 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 way project-related wastes are managed.

WASTE-5 The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

1. a description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications; and

2. management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

WASTE-6 The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

1. a detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;

2. management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;

3. information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;

4. a detailed description of how facility wastes will be managed and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and

5. a detailed description of how facility wastes will be managed and disposed upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary.

The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-7 The project owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are reported, cleaned up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.

Verification: The project owner shall document all unauthorized releases and spills of hazardous substances, materials, or wastes that occur on the project property or related pipeline and transmission corridors. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; amount of contaminated soil/material generated; how release was managed and material cleaned up; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. Copies of the unauthorized spill documentation shall be provided to the CPM within 30 days of the date the release was discovered.

REFERENCES

MMC (MMC Energy, Inc.). 2007b. Application for Certification for the Chula Vista Energy Upgrade Project, Volumes 1 and 2. Submitted to the California Energy Commission, August 10, 2007.

MMC (MMC Energy, Inc.). 2007c. Data Adequacy Supplement for the Chula Vista Energy Upgrade Project, Application for Certification. September 25, 2007.

SDCDEHHMD (San Diego County Department of Environmental Health Hazardous Materials Division). 2008a. E-mail to Ellie Townsend-Hough, January 31, 2008.

SDCDEHHMD (San Diego County Department of Environmental Health Hazardous Materials Division). 2008b. E-mail to Ellie Townsend-Hough, February 5, 2008.

WORKER SAFETY AND FIRE PROTECTION

Alvin J. Greenberg, Ph.D. and Rick Tyler

SUMMARY OF CONCLUSIONS

Staff concludes that if the applicant for the proposed Chula Vista Energy Upgrade Project provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program, as required by Conditions of Certification **WORKER SAFETY -1**and **-2** and fulfils the requirements of **WORKER SAFETY -3** through **-5**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable laws, ordinances, regulations, and standards. The proposed conditions of certification provide assurance that the Construction Safety and Health Program and the Operations and Maintenance Safety and Health Program proposed by the applicant will be reviewed by the appropriate agencies before implementation. The conditions also require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable laws, ordinances, regulations, and standards.

INTRODUCTION

Worker safety and fire protection is regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. Industrial workers at the facility operate equipment and handle hazardous materials daily and may face hazards that can result in accidents and serious injury. Protection measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this Preliminary Staff Assessment (PSA) is to assess the worker safety and fire protection measures proposed by the Chula Vista Energy Upgrade Project (CVEUP) and to determine whether the applicant has proposed adequate measures to:

- comply with applicable safety LORS;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

WORKER SAFETY AND FIRE PROTECTION Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
29 U.S. Code § 651 et seq (Occupational Safety and Health Act of 1970)	This act mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC § 651).
29 CFR sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own safety and health requirements, in lieu of most of the federal requirements found in 29 CFR §§1910.1 to 1910.1500.
State	
8 CCR all applicable sections (Cal/OSHA regulations)	Requires that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components; fire safety; and hazardous materials use, storage, and handling.
24 CCR section 3, et seq.	Incorporates the current addition of the Uniform Building Code.
Health and Safety Code section 25500, et seq.	Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	Requires a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local (or locally enforced)	
Title 24, California Code of Regulations (24 CCR § 3, et seq.)	The 2007 edition of the California Building Code is enforced by the City of Chula Vista and is comprised of 11 parts containing building design and construction requirements as they relate to fire, life, and structural safety. It incorporates the current edition of the 2006 International Building Code.
2007 Edition of California Fire Code (24 CCR Part 9)	The California Fire Code is based upon the standards of the 2006 International Fire Code. The fire code contains general provisions for fire safety, including: 1) required road and building access; 2) water supplies; 3) installation of fire protection and life safety systems; 4) fire-resistive construction; 5) general fire safety precautions; 6) storage of combustible materials; 7) exits and emergency escapes; and 8) fire alarm systems. The 2007 edition is enforced by the Chula Vista Fire Department as of Jan. 1, 2008.

SETTING

The proposed facility would be located in the City of Chula Vista within an industrial area that is currently served by the local fire department. Fire support services to the site will be under the jurisdiction of the City of Chula Vista Fire Department (CVFD). The closest station to the CVEUP site would be Station #9, located at 266 East Oneida Street (approximately 3 miles away). Fire Station # 5 is the next closest station at 391 Oxford Street (approximately 4 miles away). The driving time from both stations would be about 3 to 5 minutes, but the total response time (from the moment a call is made to the point of arrival at the site) would be closer to 6 to 8 minutes. A third fire station (Station #1) is located nearby at 447 F Street (approximately 7 miles from the CVEUP site). The drive time from this station would be 6 to 8 minutes and the total response time would be 11 to 14 minutes (CVFD 2008).

All three stations are equipped with one engine and three firefighters per shift, and Station #1 also has one truck with four additional firefighters. The CVFD as a whole has eight fire engines, two fire trucks, and one rescue vehicle. There are 38 firefighters on duty per day (department-wide), 3 per engine, 4 per truck, and 4 for the rescue vehicle. All CVFD firefighters are trained at the level of Emergency Medical Technician Level 1 (EMT-1) and as first responders for hazardous materials incidents (CVFD 2008).

The CVFD would also be the first responder to hazardous materials incidents, with backup support provided by the San Diego City and County Department of Health Hazardous Materials Incident Response Team (DEH-HIRT). The DEH-HIRT is capable of handling any hazardous materials-related incident and would respond from two stations: Station No. 44, located at 10011 Black Mountain Road in San Diego, about 21 miles from the CVEUP site, and the San Diego County Station located at 1255 Imperial Avenue, about 15 miles from the site (MMC 2007b, Sections 5.5.2.5 and 5.10.1.6.3).

WORKER SAFETY AND FIRE PROTECTION Table 2
Equipment and Personnel at CVFD*

CVFD Station	Total Response Time**	Distance to CVEUP	Equipment	#of Firefighters per shift	EMS/HazMat Capability***
Station #9	6-8 min.	~3 mi	1 fire engine	3	Y/Y
Station #5	6-8 min.	~4 mi	1 fire engine	3	Y/Y
Station #1	11-14 min.	~7 mi	1 battalion chief 1 fire engine 1 fire truck	7	Y/Y

*Source: phone conversation with Fire Chief Geering, CVFD (CVFD 2008).
**Total response times are estimated from the moment a 911 call is made to arrival at the site and are dependent upon traffic conditions and other variables.
***All personnel are trained to EMT-1 level and first responder for hazardous materials incidents.

In addition to construction and operations worker safety issues, the potential exists for exposure to contaminated soil during site preparation. The Phase I Environmental Site Assessment conducted for this site in 2006 did not find any “recognized environmental conditions” at the site. That is, there was no evidence or record of any use, spillage, or disposal of hazardous substances on the site, nor any other environmental concern that

would require remedial action. To address the remote possibility that soil contamination would be encountered during construction of the CVEUP, proposed Conditions of Certification **Waste-1** and **Waste-2** require a registered professional engineer or geologist to be available during soil excavation and grading to ensure proper handling and disposal of contaminated soil. See the staff assessment section on **Waste Management** for a more detailed analysis of this topic.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Two issues are assessed in Worker Safety-Fire Protection:

1. The potential for impacts on the safety of workers during demolition, construction, and operations activities and

2. Fire prevention/protection, emergency medical response, and hazardous materials spill response during demolition, construction, and operations.

Worker safety issues are thoroughly addressed by California Division of Occupational Safety and Health (Cal-OSHA) regulations. If all LORS are followed, workers will be adequately protected. Thus, the standard for staff's review and determination of significant impacts on workers is whether or not the applicant has demonstrated adequate knowledge about and dedication to implementing all pertinent and relevant Cal-OSHA standards.

Regarding fire prevention matters, staff reviews and evaluates the on-site fire-fighting systems proposed by the applicant and the time needed for off-site local fire departments to respond to a fire, medical, or hazardous material emergency at the proposed power plant site. If on-site systems do not follow established codes and industry standards, staff recommends additional measures. Staff reviews and evaluates the local fire department capabilities and response time in each area and interviews the local fire officials to determine if they feel adequately trained, manned, and equipped to respond to the needs of a power plant. Staff then determines if the presence of the power plant would cause a significant impact on a local fire department. If it would, staff will recommend that the applicant mitigate this impact by providing increased resources to the fire department.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Worker Safety

Industrial environments are potentially dangerous during construction and operation of facilities. Workers at the proposed CVEUP project would be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. The workers may experience falls, trips, burns, lacerations, and numerous other injuries. They have the potential to be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, and electrical sparks and electrocution. It is important for the CVEUP project to have well-defined policies and procedures, training, and hazard recognition and control at its facility to minimize such hazards and protect

workers. If the facility complies with all LORS, workers will be adequately protected from health and safety hazards.

A Safety and Health Program will be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase “Safety and Health Program” to refer to the measures that will be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Safety and Health Program

CVEUP encompasses construction and operation of a natural gas fired-facility. Workers will be exposed to hazards typical of construction and operation of a gas-fired simple cycle facility.

Construction Safety Orders are published in 8 CCR sections 1502, et seq. These requirements are promulgated by Cal/OSHA and are applicable to the construction phase of the project. The Construction Safety and Health Program will include the following:

- Construction Injury and Illness Prevention Program (8 CCR § 1509)
- Construction Fire Prevention Plan (8 CCR § 1920)
- Personal Protective Equipment Program (8 CCR §§ 1514 to 1522)
- Emergency Action Program and Plan

Additional programs under General Industry Safety Orders (8 CCR §§ 3200 to 6184), Electrical Safety Orders (8 CCR §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 CCR §§ 450 to 544) will include:

- Electrical Safety Program,
- Motor Vehicle and Heavy Equipment Safety Program,
- Forklift Operation Program,
- Excavation/Trenching Program,
- Fall Protection Program,
- Scaffolding/Ladder Safety Program,
- Articulating Boom Platforms Program,
- Crane and Material Handling Program,
- Housekeeping and Material Handling and Storage Program,
- Respiratory Protection Program,
- Employee Exposure Monitoring Program,
- Hand and Portable Power Tool Safety Program,
- Hearing Conservation Program,
- Back Injury Prevention Program,

- Hazard Communication Program,
- Heat and Cold Stress Monitoring and Control Program,
- Pressure Vessel and Pipeline Safety Program,
- Hazardous Waste Program,
- Hot Work Safety Program, and
- Permit-Required Confined Space Entry Program.

The Application for Certification (AFC) includes adequate outlines of each of the above programs (MMC 2007b, § 5.16.2.3). Prior to the start of construction of CVEUP, detailed programs and plans will be provided to the California Energy Commission Compliance Project Manager (CPM) and to the CVFD pursuant to the Condition of Certification **WORKER SAFETY-1**.

Operations and Maintenance Safety and Health Program

Prior to the start of operations at CVEUP, the Operations and Maintenance Safety and Health Program will be prepared. This operational safety program will include the following programs and plans:

- Injury and Illness Prevention Program (8 CCR § 3203),
- First Aid, CPR, and Automated External Defibrillator,
- Fire Protection and Prevention Program (8 CCR § 3221),
- Personal Protective Equipment Program (8 CCR §§ 3401 to 3411), and
- Emergency Action Plan (8 CCR § 3220).

In addition, the requirements under General Industry Safety Orders (8 CCR §§ 3200 to 6184), Electrical Safety Orders (8 CCR §§ 2299 to 2974), and Unfired Pressure Vessel Safety Orders (8 CCR §§ 450 to 544) will be applicable to the project. Written safety programs for CVEUP, which the applicant will develop, will ensure compliance with the above-mentioned requirements.

The AFC includes adequate outlines of the Injury and Illness Prevention Program, Emergency Action Plan, Fire Prevention Program, and Personal Protective Equipment Program (MMC 2007b, § 5.16.2.3.2). Prior to operation of CVEUP, all detailed programs and plans will be provided to the CPM and CVFD pursuant to Condition of Certification **WORKER SAFETY-2**.

Safety and Health Program Elements

As mentioned above, the applicant provided the proposed outlines for both a Construction Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state

and federal law. The major items required in both safety and health programs are as follows:

Injury and Illness Prevention Program

The Injury and Illness Prevention Program (IIPP) will include the following components as presented in the AFC (CVEUP 2007a, § 5.16.2.3.2):

- identity of person(s) with authority and responsibility for implementing the program;
- safety and health policy of the plan;
- definition of work rules and safe work practices for construction activities;
- system for ensuring that employees comply with safe and healthy work practices;
- system for facilitating employer-employee communications;
- procedures for identifying and evaluating workplace hazards and developing necessary program(s);
- methods for correcting unhealthy/unsafe conditions in a timely manner;
- specific safety procedures; and
- training and instruction.

Fire Prevention Plan

California Code of Regulations requires an Operations Fire Prevention Plan (8 CCR § 3221). The AFC outlines a proposed Fire Prevention Plan which is acceptable to staff (MMC 2007b, § 5.16.2.3.2). The plan will accomplish the following actions:

- determine general program requirements;
- determine fire hazard inventory, including ignition sources and mitigation;
- develop good housekeeping practices and proper materials storage;
- establish employee alarm and/or communication system(s);
- provide portable fire extinguishers at appropriate site locations;
- locate fixed fire fighting equipment in suitable areas;
- specify fire control requirements and procedures;
- establish proper flammable and combustible liquid storage facilities;
- identify the location and use of flammable and combustible liquids;
- provide proper dispensing and determine disposal requirements for flammable liquids;
- establish and determine training and instruction requirements and programs; and
- identify personnel to contact for information on plan contents.

Staff proposes that the applicant submit a final Fire Prevention Plan to the CPM for review and approval and to the CVFD for review and comment to satisfy proposed Conditions of Certification **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Personal Protective Equipment Program

California regulations require personal protective equipment and first aid supplies whenever hazards are present that due to process, environment, chemicals, or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (8 CCR §§ 3380 to 3400). The CVEUP operational environment will require personal protective equipment.

All safety equipment must meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and will carry markings, numbers, or certificates of approval. Respirators must meet NIOSH and Cal/OSHA standards. Each employee must be provided with the following information pertaining to the protective clothing and equipment:

- proper use, maintenance, and storage;
- when to use the protective clothing and equipment;
- benefits and limitations; and
- when and how to replace the protective clothing and equipment.

The Personal Protective Equipment Program ensures that employers comply with the applicable requirements for the program and provides employees with the information and training necessary to protect them from potential workplace hazards.

Emergency Action Plan

California regulations require an Emergency Action Plan (8 CCR § 3220). The AFC contains a satisfactory outline for an emergency action plan (MMC 2007b, § 5.16.2.3.2).

The outline will accomplish the following:

- establish emergency escape procedures and emergency escape route for the facility;
- determine procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
- provide procedures to account for all employees and visitors after emergency evacuation of the plant has been completed;
- specify rescue and medical duties for assigned employees;
- identify fire and emergency reporting procedures to regulatory agencies;
- develop alarm and communication systems for the facility;
- establish a list of personnel to contact for information on the plan contents;
- provide emergency response procedures for ammonia release; and
- determine and establish training and instruction requirements and programs.

Written Safety Program

In addition to the specific plans listed above, additional LORS called “safe work practices” apply to the project. Both the Construction and the Operations Safety Programs will address safe work practices under a variety of programs. The components of these programs include, but are not limited to, the programs found under the heading Construction Safety and Health Program earlier in this staff assessment.

Safety Training Programs

Employees will be trained in the safe work practices described in the above-referenced safety programs.

Additional Mitigation Measures

Protecting construction workers from injury and disease is among the greatest challenges in occupational safety and health. The following facts are reported by the National Institute for Occupational Safety and Health (NIOSH):

- More than 7 million persons work in the construction industry, representing 6 percent of the labor force. Approximately 1.5 million of these workers are self employed.
- Of approximately 600,000 construction companies, 90 percent employ fewer than 20 workers. Few have formal safety and health programs.
- From 1980 to 1993, an average of 1,079 construction workers were killed on the job each year, totaling more fatal injuries than in any other industry.
- Falls caused 3,859 construction worker fatalities (25.6 percent) between 1980 and 1993.
- Construction injuries account for 15 percent of workers' compensation costs.
- Assuring safety and health in construction is complex, involving short-term work sites, changing hazards, and multiple operations and crews working in close proximity.
- In 1990, Congress directed NIOSH to undertake research and training to reduce diseases and injuries among construction workers in the United States. Under this mandate, NIOSH funds both intramural and extramural research projects.

The hazards associated with the construction industry are thus well documented. These hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired power plants. In order to reduce and/or eliminate these hazards, it has become standard industry practice to hire a Construction Safety Supervisor to ensure a safe and healthful environment for all personnel. This has been evident in the audits of power plants under construction recently conducted by the staff. The federal Occupational Safety and Health Administration (OSHA) has also entered into strategic alliances with several professional and trade organizations to promote and recognize safety professionals trained as Construction Safety Supervisors, Construction Health and Safety Officers, and other professional designations. The goal of these partnerships is to encourage construction subcontractors to improve their safety and health performance; to assist them in striving for the elimination of the four hazards (falls, electrical, caught

in/between and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections; to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term "Competent Person" is used in many OSHA and Ca/-OSHA standards, documents, and directives. A "Competent Person" is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, in order to meet the intent of the OSHA standard to provide for a safe workplace during power plant construction, staff proposes Condition of Certification **WORKER SAFETY-3,** which would require the applicant/project owner to designate and provide for a power plant site Construction Safety Supervisor.

As discussed above, the hazards associated with the construction industry are well documented. These hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired power plants.

Accidents, fires, and a worker death have occurred at Energy Commission-certified power plants in the recent past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by Energy Commission staff in safety audits conducted in 2005 at several power plants under construction. The findings of the audit staff include, but are not limited to, such safety oversights as:

- lack of posted confined space warning placards/signs;
- confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
- confusing and/or inappropriate procedures for handing over lockout/tagout and confined space permits from the construction team to commissioning team and then to operations;
- dangerous placement of hydraulic elevated platforms under each other;
- inappropriate placement of fire extinguishers near hotwork;
- dangerous placement of numerous power cords in standing water on the site, thus increasing the risk of electrocution;
- construction of an unsafe aqueous ammonia unloading pad;
- inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility but too close to the perimeter fence; and

- lack of adequate employee or contractor written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

In order to reduce and/or eliminate these hazards, it is necessary for the Energy Commission to have a professional Safety Monitor on site to track compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand over to operational status. These requirements are outlined in Condition of Certification **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner yet reporting to the Chief Building Official and CPM, will serve as an extra set of eyes to ensure that safety procedures and practices are fully implemented at all power plants certified by the Energy Commission. During the audits conducted by staff, most site safety professionals welcomed the audit team and actively engaged the team in questions about its findings and recommendations. These safety professionals recognized that safety requires continuous vigilance and that the presence of an independent audit team provided a fresh perspective of the site.

Fire Hazards

During construction and operation of the proposed CVEUP project, there is the potential for both small fires and major structural fires. Electrical sparks; combustion of fuel oil, natural gas, hydraulic fluid, mineral oil, or insulating fluid at the power plant switchyard; or flammable liquids, explosions, and over-heated equipment may cause small fires. Major structural fires in areas without automatic fire detection and suppression systems are unlikely to develop at power plants. Fires and explosions of natural gas or other flammable gasses or liquids are rare. Compliance with all LORS will be adequate to assure protection from all fire hazards.

Staff reviewed the information provided in the AFC and spoke to representatives of the Chula Vista Fire Department to determine if available fire protection services and equipment would adequately protect workers and to determine the project's impact on fire protection services in the area. The project will rely on both on-site fire protection systems and local fire protection services. The on-site fire protection system provides the first line of defense for small fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the CVFD (CVFD 2008).

Construction

During construction, portable fire extinguishers would be placed throughout the site at appropriate intervals and periodically maintained, and safety procedures and training would be implemented in accordance with the guidelines of the Construction Fire Protection and Prevention Program.

Operation

The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the California Fire Code, all applicable recommended National Fire protection Association (NFPA) standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements with one exception (see below). Fire suppression elements in the proposed plant will

include both fixed and portable fire extinguishing systems. The fire water will be potable water supplied from the Sweetwater Authority (MMC 2007b, Section 2.1.11).

A fixed sprinkler system would be installed in areas of risk and in administrative buildings in accordance with NFPA requirements. A carbon dioxide and dry chemical fire protection system would be provided for the combustion turbine generators and accessory equipment. This system would have fire detection sensors that will trigger alarms, turn off ventilation, close ventilation openings, and automatically actuate the CO_2 and chemical suppression system. In addition to the fixed fire protection system, the appropriate class of service portable extinguishers and fire hydrants would be located throughout the facility at code-approved intervals (MMC 2007b, §§ 2.1.11 and 2.2.1.1.2). These systems are standard requirement by the NFPA and the Uniform Fire Code, and staff has determined that they will ensure adequate fire protection.

The applicant would be required by Conditions of Certification **WORKER SAFETY-1** and **-2** to provide the final Fire Protection and Prevention Program to staff and to the CVFD prior to construction and operation of the project, to confirm the adequacy of the proposed fire protection measures.

The one exception mentioned above pertains to fire department access to the site. Both the California Fire Code (24 CCR Part 9, chapter 5, section 503.1.2) and the Uniform Fire Code (sections 901 and 902) require that access to the site be reviewed and approved by the fire department. All power plants licensed by the Energy Commission have more than one access point to the power plant site. This is sound fire safety procedure and allows for fire department vehicles and personal to access the site should the main gate be blocked. The proposed CVEUP has only one access point, that being through the main gate, and the AFC makes no mention of a secondary access point through the perimeter fence. Chula Vista Fire Department Fire Marshall Justin Gibson agrees with staff that a second access point is necessary to ensure fire department access. This access point can be restricted to emergency use only and, if possible, should be equipped with the fire department's Opticom System for remote keyless entry. Therefore, in order to comply with the requirements of LORS, staff proposes a Condition of Certification **WORKER SAFETY-6** that would require the project owner to identify and provide a second access point to the site for emergency vehicles and equip this secondary gate with either the Opticom System or a keypad for fire department personnel to open the gate.

Emergency Medical Services Response

Staff conducted a statewide survey to determine the frequency of emergency medical services (EMS) response and off-site fire-fighter response for natural gas-fired power plants in California. The purpose of the analysis was to determine what impact, if any, power plants may have on local emergency services. Staff has concluded that incidents at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments, except for rare instances where a rural fire department has mostly volunteer firefighting staff. However, staff has determined that the potential for both work-related and nonwork-related heart attacks exists at power plants. In fact, staff's research on the frequency of EMS response to gas-fired power plants shows that many of the responses for cardiac emergencies involved

nonwork-related incidences, including those involving visitors. The need for prompt response within a few minutes is well documented in the medical literature. Staff believes that the quickest medical intervention can only be achieved with the use of an on-site automatic external defibrillator (AED); the response from an off-site provider would take longer regardless of the provider location. This fact is also well documented and serves as the basis for the maintenance of on-site cardiac defibrillation devices at many private and public locations (e.g., airports, factories, government buildings). Therefore, staff concludes that, with the advent of modern cost-effective cardiac defibrillation devices, it is proper in a power plant environment to maintain such a device on site to address cardiac arrythmias resulting from industrial accidents or other nonwork-related causes.

The applicant's outline of the Operations Health and Safety Program contains a First Aid, CPR, and Automated External Defibrillator Program. This program would include specifications for general requirements, a written program, training, and maintenance of the first aid and defibrillator equipment (MMC 2007b, § 5.16.2.3.2). Staff proposes a Condition of Certification **WORKER SAFETY-5** which would require that this portable AED be located on site, that all power plant employees on site during operations be trained in its use, and that a representative number of workers on site during construction and commissioning also be trained in its use.

CUMULATIVE IMPACTS AND MITIGATION

Staff reviewed the potential for the construction and operation of the CVEUP project combined with existing industrial facilities and expected new facilities, including the nearby manufacturing development, to result in impacts on the fire and emergency service capabilities of the CVFD and found that cumulative impacts were insignificant. The CVFD stated that it feels adequately staffed and equipped to serve as first responder to any incident at the proposed facility and that in the case of a large-scale incident the CVFD may utilize its mutual aid agreement with the San Diego Fire Department. According to the CVFD, the existing Chula Vista Power Plant did not call upon the fire department often, and it does not expect the newer CVEUP to be a burden to the department (CVFD 2008).

Given the industrial area where the project is proposed to be built and the lack of unique fire hazards associated with a modern gas-fired power plant, staff finds that this project will not have any significant incremental burden on the department's ability to respond to a fire or medical emergency.

CONCLUSIONS

Staff concludes that if the applicant for the proposed CVEUP project provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program as required by Conditions of Certification **WORKER SAFETY -1**, and **-2** and fulfils the requirements of Conditions of Certification **WORKER SAFETY-3** through **-6**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable LORS. Staff also concludes that incidents at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments.

PROPOSED CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

1. a Construction Personal Protective Equipment Program;

2. a Construction Exposure Monitoring Program;

3. a Construction Injury and Illness Prevention Program;

4. a Construction Emergency Action Plan; and

5. a Construction Fire Prevention Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the programs with all applicable Safety Orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the Chula Vista Fire Department for review and comment prior to submittal to the CPM for approval.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Chula Vista Fire Department stating the Fire Department's comments on the Construction Fire Prevention Plan and 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:

1. an Operation Injury and Illness Prevention Plan;

2. an Emergency Action Plan;

3. a Hazardous Materials Management Program;

4. an Operation Fire Prevention Program (8 CCR § 3221); and

5. a Personal Protective Equipment Program (8 CCR §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the CPM for review and comment concerning compliance of the programs with all applicable Safety Orders. The Operation Fire Prevention Plan, the Hazardous Materials Management Program, and the Emergency Action Plan shall also be submitted to the Chula Vista Fire Department for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Chula Vista Fire Department stating the Fire Department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

1. have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;

2. assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;

3. assure that all construction and commissioning workers and supervisors receive adequate safety training;

4. complete accident and safety-related incident investigations and emergency response reports for injuries and inform the CPM of safety-related incidents; and

5. assure that all the plans identified in Conditions of Certification Worker Safety-1 and -2 are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement (CSS) shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;
- report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
- report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO.

Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification **WORKER SAFETY-3**, implements all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: Prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in use of the AED and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift foremen. During operations, all power plant employees shall be trained in use of the AED. The training program shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable automatic external defibrillator (AED) exists on site and a copy of the training and maintenance program for review and approval.

WORKER SAFETY-6 The project owner shall identify and provide a second access point for emergency personnel to enter the site. This access point and the method of gate operation shall be submitted to the Chula Vista Fire Department for review and comment and to the CPM for review and approval.

Verification: At least 60) days prior to the start of site mobilization, the project owner shall submit to the Chula Vista Fire Department and the CPM preliminary plans showing the location of a second access point to the site and a description of how the gate will be opened by the fire department. At least thirty (30) days prior to the start of site mobilization, the project owner shall submit final plans to the CPM review and approval. The final plan submittal shall also include a letter containing comments from the Chula Vista Fire Department or a statement that no comments were received.

REFERENCES

California Fire Code 1998 – Published by the International Fire Code Institute comprised of the International Conference of Building Officials, the Western Fire Chiefs Association, and the California Building Standards Commission. Whittier, Ca.

CVFD (Chula Vista Fire Department) 2008 – Record of conversation with Fire Chief Jim Geering, January 28, 2008.

MMC (MMC Energy, Inc.) 2007b. – Application for Certification for the Chula Vista Energy Upgrade Project, Volumes 1 and 2. Submitted to the California Energy Commission, August 10, 2007.

Uniform Fire Code 1997, Vol. 1 – Published by the International Fire Code Institute comprised of the International Conference of Building Officials and the Western Fire Chiefs Association, Whittier, Ca.

U.S. OSHA (United States Occupational Safety and Health Administration). 1993 – Process Safety Management / Process Safety Management Guidelines for Compliance. U.S. Department of Labor, Washington, D.C.

ENGINEERING ASSESSMENT

FACILITY DESIGN

Erin Bright and Steve Baker

SUMMARY OF CONCLUSIONS

The California Energy Commission staff concludes that the design, construction, and eventual closure of the Chula Vista Energy Upgrade Project and its linear facilities would likely comply with applicable engineering laws, ordinances, regulations, and standards. The proposed conditions of certification, below, would ensure compliance with these laws, ordinances, regulations, and standards.

INTRODUCTION

Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the Chula Vista Energy Upgrade Project (CVEUP). The purpose of this analysis is to:

- verify that the laws, ordinances, regulations, and standards (LORS) that apply to the engineering design and construction of the project have been identified;
- verify that both the project and its ancillary facilities are sufficiently described, including proposed design criteria and analysis methods, in order to provide reasonable assurance that the project will be designed and constructed in accordance with all applicable engineering LORS, in a manner that also ensures the public health and safety;
- determine whether special design features should be considered during final design to address conditions unique to the site which could influence public health and safety; and
- describe the design review and construction inspection process and establish the conditions of certification used to monitor and ensure compliance with the engineering LORS, in addition to any special design requirements.

Subjects discussed in this analysis include:

- identification of the engineering LORS that apply to facility design;
- evaluation of the applicant's proposed design criteria, including identification of criteria essential to public health and safety;
- proposed modifications and additions to the application for certification (AFC) necessary for compliance with applicable engineering LORS; and
- conditions of certification proposed by staff to ensure that the project will be designed and constructed to ensure public health and safety and comply with all applicable engineering LORS.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Lists of LORS applicable to each engineering discipline (civil, structural, mechanical, and electrical) are described in the AFC (MMC 2007b, Appendix 2C). Key LORS are listed in **FACILITY DESIGN Table 1** below.

FACILITY DESIGN Table 1
Key Engineering Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards
State	2007 California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
Local	San Diego County regulations and ordinances
General	American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME) American Welding Society (AWS) American Society for Testing and Materials (ASTM)

SETTING

The Chula Vista Energy Upgrade Project (CVEUP) will be located on a 3.8-acre parcel in the City of Chula Vista, San Diego County. The site lies in Seismic Risk Zone 4. For more information on the site and related project description, please see the **Project Description** section of this document. Additional engineering design details are contained in the AFC (MMC 2007b, Appendix 2C).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The purpose of this analysis is to ensure that the project would be built to applicable engineering codes and ensure public health and life safety. This analysis further verifies that applicable engineering LORS have been identified and that the project and its ancillary facilities have been described in adequate detail. It also evaluates the applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering LORS and any other special design requirements. These conditions allow both the California Energy Commission (Energy Commission) compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme that will verify compliance with these LORS.

SITE PREPARATION AND DEVELOPMENT

Staff has evaluated the proposed design criteria for grading, flood protection, erosion control, site drainage, and site access, in addition to the criteria for designing and constructing linear support facilities such as natural gas and electric transmission interconnections. The applicant proposes the use of accepted industry standards (see MMC 2007b, Appendix 2C, for a representative list of applicable industry standards), design practices, and construction methods in preparing and developing the site. Staff concludes that this project, including its linear facilities, would most likely comply with all applicable site preparation LORS and proposes conditions of certification (see below and the **Geology and Paleontology** section of this document) to ensure that compliance.

MAJOR STRUCTURES, SYSTEMS, AND EQUIPMENT

Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production; costly or time consuming to repair or replace; used for the storage, containment, or handling of hazardous or toxic materials; or capable of becoming potential health and safety hazards if not constructed according to applicable engineering LORS. Major structures and equipment are identified in the proposed Condition of Certification **GEN-2,** below.

The CVEUP shall be designed and constructed to the 2007 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 other applicable codes and standards in effect when the design and construction of the project actually begin. If the initial designs are submitted to the chief building official (CBO) for review and approval after the update to the 2007 CBSC takes effect, the 2007 CBSC provisions shall be replaced with the updated provisions.

Certain structures in a power plant may be required, under the CBC, to undergo dynamic lateral force (structural) analysis; others may be designed using the simpler static analysis procedure. In order to ensure that structures are analyzed according to their appropriate lateral force procedure, staff has included Condition of Certification **STRUC-1**, below, which, in part, requires the project CBO's review and approval of the owner's proposed lateral force procedures before construction begins.

PROJECT QUALITY PROCEDURES

The project's AFC (MMC 2007b, AFC § 2.2.2.5, Appendix 2C) describes a quality program intended to inspire confidence that its systems and components will be designed, fabricated, stored, transported, installed, and tested in accordance with all appropriate power plant technical codes and standards. Compliance with design requirements will be verified through specific inspections and audits. Implementation of this quality assurance/quality control (QA/QC) program will ensure that the CVEUP is actually designed, procured, fabricated, and installed as described in this analysis.

COMPLIANCE MONITORING

Under Section 104.1 in Appendix Chapter 1 of the CBC, the CBO is authorized and directed to enforce all provisions of the CBC. The Energy Commission itself serves as the building official and has the responsibility to enforce the code for all of the energy facilities it certifies. In addition, the Energy Commission has the power to interpret the CBC and adopt and enforce both rules and supplemental regulations that clarify application of the CBC's provisions.

The Energy Commission's design review and construction inspection process conforms to CBC requirements and ensures that all facility design conditions of certification are met. As provided by section 103.3 in Appendix Chapter 1 of the CBC, the Energy Commission appoints experts to perform design review and construction inspections and act as delegate CBOs on behalf of the Energy Commission. These delegates typically include the local building official and/or independent consultants hired to provide technical expertise that is not provided by the local official alone. The applicant, through permit fees provided by the CBC, section 108 in Appendix Chapter 1, pays the cost of these reviews and inspections. While building permits in addition to Energy Commission certification are not required for this project, the applicant, consistent with CBC section 108, pays in lieu of CBC permit fees to cover the costs of these reviews and inspections.

Engineering and compliance staff will invite the City of Chula Vista, San Diego County, or a third-party engineering consultant to act as CBO for this project. When an entity has been assigned CBO duties, Energy Commission staff will complete a memorandum of understanding (MOU) with that entity to outline both its roles and responsibilities and those of its subcontractors and delegates.

Staff has developed proposed conditions of certification to ensure public health and safety and compliance with engineering design LORS. Some of these conditions address the roles, responsibilities, and qualifications of the engineers who will design and build the proposed project (Conditions of Certification **GEN-1** through **GEN-8**). These engineers must be registered in California and sign and stamp every submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that every element of the project's construction (subject to CBO review and approval) be approved by the CBO before it is performed. They also require that qualified special inspectors perform or oversee special inspections required by all applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility in scheduling construction activities, these conditions are written so that no element of construction (of permanent facilities subject to CBO review and approval) that could be difficult to reverse or correct can proceed without prior CBO approval. Elements of construction that are not difficult to reverse may proceed without approval of the plans. The applicant bears the responsibility to fully modify construction elements in order to comply with all design changes resulting from the CBO's subsequent plan review and approval process.

FACILITY CLOSURE

The removal of a facility from service (decommissioning) when it reaches the end of its useful life ranges from “mothballing” to the removal of all equipment and appurtenant facilities and subsequent restoration of the site. Future conditions that could affect decommissioning are largely unknown at this time.

In order to ensure that decommissioning will be completed in a manner that is environmentally sound, safe, and protects the public health and safety, the applicant shall submit a decommissioning plan to the Energy Commission for review and approval before the project’s decommissioning begins. The plan shall include a discussion of:

- proposed decommissioning activities for the project and all appurtenant facilities that were constructed as part of the project;
- all applicable LORS and local/regional plans and proof of adherence to those applicable LORS and local/regional plans;
- the activities necessary to restore the site if the plan requires removal of all equipment and appurtenant facilities; and
- decommissioning alternatives other than complete site restoration.

Satisfying the above requirements should serve as adequate protection, even in the unlikely event that the project is abandoned. Staff has proposed general conditions (see **General Conditions**) to ensure that these measures are included in the Facility Closure Plan.

CONCLUSIONS AND RECOMMENDATIONS

1. The laws, ordinances, regulations, and standards (LORS) identified in the AFC and supporting documents directly apply to the project.

2. Staff has evaluated the proposed engineering LORS, design criteria, and design methods in the record, and concludes that the design, construction, and eventual closure of the project will likely comply with applicable engineering LORS.

3. The proposed conditions of certification will ensure that the CVEUP is designed and constructed in accordance with applicable engineering LORS. This will be accomplished through design review, plan checking, and field inspections that will be performed by the CBO or other Energy Commission delegate. Staff will audit the CBO to ensure satisfactory performance.

4. Though future conditions that could affect decommissioning are largely unknown at this time, it can reasonably be concluded that if the project owner submits a decommissioning plan as required in the **General Conditions** section of this document prior to decommissioning, decommissioning procedures will comply with all applicable engineering LORS.

Energy Commission staff recommends that:

1. The proposed conditions of certification be adopted to ensure that the project is designed and constructed in a manner that protects the public health and safety and complies with all applicable engineering LORS;

2. The project be designed and built to the 2007 CBSC (or successor standards, if in effect when initial project engineering designs are submitted for review); and

3. The CBO reviews the final designs, checks plans, and performs field inspections during construction. Energy Commission staff shall audit and monitor the CBO to ensure satisfactory performance.

CONDITIONS OF CERTIFICATION

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California 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 laws, ordinances, regulations and standards (LORS) in effect at the time initial design plans are submitted to the chief building official (CBO) for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility (2007 CBC, Appendix Chapter 1, § 101.2, Scope). All transmission facilities (lines, switchyards, switching stations, and substations) are covered in the 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 the successor to the 2007 CBSC is in effect, the 2007 CBSC provisions 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 ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.

Verification: Within 30 days following 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 (2007 CBC, Appendix Chapter 1, § 110, Certificate of Occupancy).

Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. The CPM will then determine if the CBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for CBO review, the project owner shall furnish the CPM and the CBO with a schedule of facility design submittals, master drawing, and master specifications lists. 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 upon request.

Verification: At least 60 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, the master drawing, and master specifications lists 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 **FACILITY DESIGN Table 2,** 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.

FACILITY DESIGN Table 2
Major Structures and Equipment List

Equipment/System	Quantity (Plant)
Combustion Turbine (CT) Foundation and Connections	2
CT Generator Foundation and Connections	2
SCR Catalyst System Structure Foundation and Connections	2
SCR Exhaust Stack Foundation and Connections	2
Tempering Air Fans (Blowers) Foundation and Connections	2
CEMS Station Foundation and Connections	2
CT Auxiliary Skid Foundation and Connections	2
CT Fire Protection System Foundation and Connections	2
SPRINT/Spray Mist Cooler Skid Foundation and Connections	2
NOx Water Injection Skid Foundation and Connections	2
CT Inlet Air Fogger System Foundation and Connections	2
Ammonia Delivery Skid Foundation and Connections	2
GT Lube Oil Fin Fan Cooler Foundation and Connections	2
Natural Gas Fuel Filter Foundation and Connections	2

Equipment/System	Quantity (Plant)
Air Compressor Skid Foundation and Connection	1
Step-Up Transformer Foundation and Connections	1
Auxiliary Transformer Foundation and Connections	1
480V Transformer Foundation and Connections	1
Electrical/ Control Building Foundation and Connections	1
Wastewater Drainage Sump System Foundation and Connections	1
Demineralized Water Storage Tank Foundation and Connections	1
Demineralized Water Forwarding Pumps Foundation and Connections	1
Demineralized Water Trailer Foundations and Connections	2
Fuel Gas Compressors Foundation and Connections	3
Fuel Gas Recycle Cooler Foundation and Connections	1
Oil/Water Separator Foundation and Connections	1
Black Start Diesel Generator Foundation and Connections	1

GEN-3 The project owner shall make payments to the CBO for design review, plan checks, and construction inspections, 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 2007 CBC (2007 CBC, Appendix Chapter 1, § 108, Fees; Chapter 1, Section 108.4, Permits, Fees, Applications and Inspections), 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 otherwise agreed upon 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 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 the resident engineer in charge of the project (2007 California Administrative Code, § 4-209, Designation of Responsibilities). All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the conditions of certification in the **Transmission System Engineering** section of this document.

The resident engineer 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 that each part is clearly defined as a distinct unit. Separate assignments of general responsibility may be made for each designated part.

The resident engineer shall:

1. Monitor progress of construction work requiring CBO design review and inspection to ensure compliance with LORS;

2. Ensure that construction of all facilities subject to CBO design review and inspection conforms in every material respect to applicable LORS, these conditions of certification, approved plans, and specifications;

3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;

4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets 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 when they do not conform to approved plans and specifications.

The resident engineer shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the resident engineer 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 (or within a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the resume and registration number of the resident engineer and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the resident engineer and other delegated engineer(s) within five days of the approval.

If the resident engineer or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the resume 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 civil engineer; a soils, geotechnical, or civil engineer experienced and

knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: 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; a mechanical engineer; and an electrical engineer. (California Business and Professions Code section 6704 et seq., and sections 6730, 6731 and 6736 require 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 the conditions of certification 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 (for example, 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 responsible engineers assigned to the project (2007 CBC, Appendix Chapter 1, § 104, Duties and Powers of Building Official).

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned responsible engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A. The civil engineer shall:

1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;

2. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities requiring design review and inspection by the CBO. At a minimum, these include: grading; site preparation; excavation; compaction; and construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads and sanitary sewer systems; and

3. Provide consultation to the resident engineer during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.

B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports;

2. Prepare the foundation investigations, geotechnical or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement, or collapse when saturated under load (2007 CBC, Appendix J, § J104.3, Soils Report; Chapter 18, § 1802.2, Foundation and Soils Investigations);

3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2007 CBC, Appendix J, section J105, Inspections, and the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and

4. Recommend field changes to the civil engineer and resident engineer.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations (2007 CBC, Appendix Chapter 1, § 114, Stop Orders).

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and

2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;

2. Provide consultation to the resident engineer during design and construction of the project;

3. Monitor construction progress to ensure compliance with engineering LORS;

4. Evaluate and recommend necessary changes in design; and

5. Prepare and sign all major building plans, specifications, and calculations.

E. 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 to all of the mechanical engineering design requirements set forth in the Energy Commission's decision.

F. 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 (or within a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer, and engineering geologist assigned to the project.

At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of construction, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the CBO's approvals of the responsible 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 resume 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 2007 CBC, Chapter 17, Section 1704, Special Inspections; Chapter 17A, Section 1704A, Special Inspections; and Appendix Chapter 1, Section 109, Inspections. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in conditions of certification in the **Transmission System Engineering** section of this document.

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).

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 resident engineer. All discrepancies shall be brought to the immediate attention of the resident engineer for correction, then, if uncorrected, to the CBO and the CPM for corrective action (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements); and

4. Submit a final signed report to the resident engineer, 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, specifications, and other provisions of the applicable edition of the CBC.

Verification: At least 15 days (or within a project owner- and CBO-approved alternative time frame) 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 in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; Chapter 17, § 1704.1.2, Report Requirements). 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, applicable sections of the CBC and/or other LORS.

Verification: The project owner shall transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next monthly compliance report. If any corrective action is disapproved, the project owner shall advise

the CPM, within five days, of 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 that has undergone CBO design review and approval. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the CBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at an alternative site approved by the CPM during the operating life of the project (2007 CBC, Appendix Chapter 1, § 106.3.1, Approval of Construction Documents). Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, in the next monthly compliance report, (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 the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.

Within 90 days of the completion of construction, the project owner shall provide to the CBO three sets of electronic copies of the above documents at the project owner's expense. These are to be provided in the form of "read only" files (Adobe .pdf 6.0), with restricted (password-protected) printing privileges, on archive quality compact discs.

CIVIL-1 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, geotechnical, or foundation investigation reports required by the 2007 CBC, Appendix J, section J104.3, Soils Report, and Chapter 18, section 1802.2, Foundation and Soils Investigation.

Verification: At least 15 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design 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 soils engineer, geotechnical engineer, or the 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 (2007 CBC, Appendix Chapter 1, § 114, Stop Work Orders).

Verification: The project owner shall notify the CPM within 24 hours when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the CBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the CBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the 2007 CBC, Appendix Chapter 1, section 109, Inspections, and Chapter 17, section 1704, Special Inspections. All plant site-grading operations, for which a grading permit is required, shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

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 for review and approval. 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 work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans (2007 CBC, Chapter 17, § 1703.2, Written Approval).

Verification: Within 30 days (or within a project owner- and CBO-approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO, for review and approval, the final grading plans (including final changes) and 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, along with a copy of the transmittal letter to the CPM. The project owner shall submit a copy of the CBO's approval to the CPM in the next monthly compliance report.

STRUC-1 Prior to the start of any increment of construction of any major structure or component listed in **FACILITY DESIGN Table 2** of Condition of Certification

GEN 2, above, the project owner shall submit to the CBO for design 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 the following items (from **Table 2**, above):

1. Major project structures;

2. Major foundations, equipment supports, and anchorage; and

3. Large field-fabricated tanks.

Construction of any structure or component shall not begin until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

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 (for example, 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 (2007 CBC, Appendix Chapter 1, § 109.6, 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 prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation (2007 California Administrative Code, § 4-210, Plans, Specifications, Computations and Other Data);

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 (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge); and

5. Submit to the CBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge).

Verification: At least 60 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of any increment of construction of any structure

or component listed in **FACILITY DESIGN Table 2** of Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO the above final design plans, specifications and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

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 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 2007 CBC, Chapter 17, section 1704, Special Inspections, and section 1709.1, Structural Observations.

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 and the proposed corrective action to the CBO, with a copy of the transmittal letter to the CPM (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). 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 necessary to obtain the CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 2007 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the CBO prior notice of the intended filing (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents; §

106.4, Amended Construction Documents; 2007 California Administrative Code, § 4-215, Changes in Approved Drawings and Specifications).

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 the 2007 CBC, Chapter 3, Table 307.1(2), shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or within a project owner- and CBO-approved alternate time frame) 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 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 **FACILITY DESIGN Table 2**, 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 that construction (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents; § 109.5, Inspection Requests; § 109.6, Approval Required; 2007 California Plumbing Code, § 301.1.1, Approvals).

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems, subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations, and industry standards (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge), which may include, but are not limited to:

- 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
- San Diego County codes.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency (2007 CBC, Appendix Chapter 1, § 103.3, Deputies).

Verification: At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of any increment of major piping or plumbing construction listed in **FACILITY DESIGN Table 2**, Condition of Certification **GEN-2,** above, the project owner shall submit to the CBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

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 inspection approvals.

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 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 that installation (2007 CBC, Appendix Chapter 1, § 109.5, Inspection Requests).

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 (or within a project owner- and CBO-approved alternative time frame) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for design review and approval, the above-listed documents, 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 The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC), or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of that 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 (2007 CBC, Appendix Chapter 1, § 109.3.7, Energy Efficiency Inspections; § 106.3.4, Design Professionals in Responsible Charge).

Verification: At least 30 days (or within a project owner- and CBO-approved alternative time frame) 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 CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for all electrical equipment and systems 480 Volts or higher (see a representative list, 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 (2007 CBC, Appendix Chapter 1, § 106.1, 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 (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; § 109.5, Inspection Requests). All transmission facilities (lines, switchyards, switching

stations, and substations) are handled in conditions of certification in the **Transmission System Engineering** section of this document.

A. Final plant design plans shall 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 must establish:

1. short-circuit ratings of plant equipment;

2. ampacity of feeder cables;

3. voltage drop in feeder cables;

4. system grounding requirements;

5. coordination study calculations for fuses, circuit breakers, and protective relay settings for the 13.8 kV, 4.16 kV, and 480 V systems;

6. system grounding requirements; and

7. 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 (or within a project owner- and CBO-approved alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for design review and approval the above-listed documents. The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

REFERENCES

MMC (MMC Energy, Inc.). 2007b. Application for Certification for the Chula Vista Energy Upgrade Project, Volumes 1 and 2. Submitted to the California Energy Commission, August 10, 2007.

GEOLOGY AND PALEONTOLOGY

Dal Hunter, Ph.D., C.E.G.

SUMMARY OF CONCLUSIONS

The proposed Chula Vista Energy Upgrade Project is located in an active geologic area of the Peninsular Ranges Geomorphic Province in south-central San Diego County in Southern California. Because of its geologic setting, the site could be subject to intense levels of earthquake-related ground shaking. While the potential for earthquake ground rupture is low, the site is within 50 miles of several active faults. The effects of strong ground shaking must be mitigated, to the extent practical, through structural designs required by the California Building Code (2007) and a project geotechnical report. The California Building Code (2007) requires that structures be designed to resist seismic stresses from ground acceleration and, to a lesser extent, liquefaction potential. A preliminary geotechnical investigation has been performed by the applicant and presents standard engineering design recommendations for mitigation of potential settlement due to the thick, undocumented fill that covers the site.

The potential for tsunami (harbor wave) impact to the site has not been addressed by the applicant's geotechnical investigation (Ninyo & Moore 2006) or by the Application for Certification (MMC 2007b). No existing study of tsunami hazards for southern San Diego County could be identified by California Energy Commission staff. Staff believes the proximity of the Chula Vista Energy Upgrade Project site to San Diego Bay and the Pacific Ocean shore, coupled with the presence of at least five Holocene faults within 50 miles offshore, indicates some potential for tsunami activity in the future. It is staff's opinion that the nature of offshore faulting (primarily strike-slip with a lesser vertical component), the distance of the Chula Vista Energy Upgrade Project site from the bay and ocean (2-3/4 to 4-1/4 miles), the elevation of the site above sea level (approximately 50 to 60 feet), and the presence of intervening structures that would slow any wave front all act to minimize the potential for significant site damage from tsunamis. However, the true potential for tsunami impact should be assessed by an experienced tsunami specialist to verify the risk is low or to establish additional design requirements, as appropriate.

There are no known viable geologic or mineralogical resources at the Chula Vista Energy Upgrade Project site. Regionally, paleontological resources have been documented within Quaternary terrace deposits and older alluvium similar to deposits that underlie the project site, but no significant fossils were found during field explorations at the plant site. Approximately 23 to 25 feet of fill, which overlies native geologic units, will nearly eliminate the potential to disturb any existing paleontological resources during construction activities. Potential impacts will also be mitigated through worker training and monitoring by qualified paleontologists, as required by Conditions of Certification, **PAL-1** through **PAL-7**. If ground disturbing activities do not penetrate more than 25 feet below existing grade, these conditions may not be necessary.

Based on its independent research and review, the California Energy Commission believes that the potential is low for significant adverse impacts to the project from geologic hazards during its design life and to potential geologic, mineralogic, and

paleontologic resources from the construction, operation, and closure of the proposed project. It is staff's opinion that the Chula Vista Energy Upgrade Project can be designed and constructed in accordance with all applicable laws, ordinances, regulations, and standards and in a manner that both protects environmental quality and assures public safety, to the extent practical.

INTRODUCTION

In this section, California Energy Commission (Energy Commission) staff discusses the potential impacts of geologic hazards on the proposed Chula Vista Energy Upgrade Project (CVEUP) as well as the CVEUP's impact on geologic, mineralogic, and paleontologic resources. Staff's objective is to ensure that there will be no consequential adverse impacts to significant geological and paleontological resources during the project construction, operation, and closure and that operation of the plant will not expose occupants to high-probability geologic hazards. A brief geological and paleontological overview is provided. The section concludes with staff's proposed monitoring and mitigation measures for geologic hazards and geologic, mineralogic, and palentologic resources, with proposed Conditions of Certification.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable laws, ordinances, regulations, and standards (LORS) are listed in the application for certification (AFC) (MMC 2007b). The following briefly describes the current LORS for both geologic hazards and resources and mineralogic and paleontologic resources.

GEOLOGY AND PALEONTOLOGY Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	The proposed CVEUP is not located on federal land. There are no federal LORS for geologic hazards and resources for this site.
State	
California Building Code (CBC), 2007	The CBC (2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control).
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), section 2621–2630	Mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. The site is not located within a designated Alquist-Priolo Fault Zone.
The Seismic Hazards Mapping Act, PRC Section 2690–2699	Areas are identified that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches.
PRC, Chapter 1.7, sections 5097.5 and 30244	Regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.
Warren-Alquist Act, PRC, sections 25527 and 25550.5(i)	The Warren-Alquist Act requires the Energy Commission to "give the greatest consideration to the need for protecting areas of critical environmental concern, including, but not limited to, unique and irreplaceable scientific, scenic, and educational wildlife habitats; unique historical, archaeological, and cultural sites…" With respect to paleontologic resources, the Energy Commission relies on guidelines from the Society for Vertebrate Paleontology, indicated below.
California Environmental Quality Act (CEQA), PRC sections 15000 et seq., Appendix G	Mandates that public and private entities identify the potential impacts on the environment during proposed activities. Appendix G outlines the requirements for compliance with CEQA and provides a definition of significant impacts on a fossil site.
Society for Vertebrate Paleontology (SVP), 1995	The "Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures" is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.
Local	
City of Chula Vista General Plan, 2005	Requires compliance with a number of development standards, including safety requirements. Also has established a special study zone in the vicinity of the Red Hill Fault.

SETTING

The proposed CVEUP will be constructed on currently vacant land within a 3.8 acre parcel at the existing MMC Energy Inc. Chula Vista power plant site located at 3497 Main Street in Chula Vista, San Diego County, California. The existing 44.5 megawatt (MW) power plant will be decommissioned and dismantled after completion of the proposed CVEUP. The proposed generating plant will be a peaker facility capable of generating 100 MW of electricity from natural gas-fired, combined cycle facilities during periods of high electrical demand. Two combustion turbine generators will power the plant. New auxiliary components include selective catalytic reduction and carbon monoxide catalyst air emissions control systems and water-injection or dry low nitrogen oxide combustors to control nitrogen oxide emissions. The existing electrical transmission connection; natural gas, water, and sewer pipelines; fence and sound attenuation wall; control building; storm water runoff retention basin; and 12,000 gallon aqueous ammonia storage tank and refilling station will be retained for use with the new plant.

Make-up water for evaporative cooling and other minor in-plant use will come from the existing Sweetwater Authority freshwater connection.

REGIONAL SETTING

The proposed Chula Vista Energy Upgrade Project (CVEUP) is located in an active geologic area of the Peninsular Ranges Geomorphic Province which extends from the Los Angeles Basin in the north some 900 miles south to the tip of Baja California in Mexico (Norris and Webb 1990). The Peninsular Ranges Geomorphic Province varies from approximately 30 to 100 miles in width. The site is located in the south-central portion of the San Diego basin on the coastal plains and terraces deposited between mountains of the Sierra Nevada Batholith to the east and the Pacific Ocean to the west. The Peninsular Ranges Geomorphic Province is characterized by primarily Mesozoic volcanic and metamorphic highland and mountain masses on the east, which slope steeply downward to alluvial, colluvial, and uplifted marine deposits along the Pacific Coast to the west.

Mountains of the Peninsular Range are commonly offset by northwest-trending right-lateral strike-slip faults. Some major fault systems found within the Peninsular Range Geomorphic Province are the San Andreas (southern section), San Jacinto (Coyote Creek, Borrego Mountain, and Anza Sections), the Whittier-Elsinore (Coyote Mountain and Julian Sections), and, more locally, the La Nacion and San Ysidro fault zones. Major fault zones to the west of the CVEUP site include the Newport-Inglewood-Rose Canyon Zone (Silver Strand and San Diego Sections), the Coronado Bank Zone, the San Diego Trough, and the San Clemente Fault.

The CVEUP site lies on approximately 23 to 25 feet of undocumented fill which reportedly varies from medium-dense to very dense silty to clayey sand with gravel and cobbles, stiff to hard clayey silt and silty sandy gravelly clay, and discarded construction debris. The undocumented fill overlies approximately 3 to 5 feet of dense to very dense clayey sand and clayey gravel alluvial deposits (MMC 2007b). Quaternary stream terrace deposits, which border the Otay River, underlie the thin alluvial deposits at a

depth of 28 to 30 feet below ground surface. The terrace deposits are described as a thin veneer of locally derived unconsolidated sand and gravel overlying Quaternary marine, lagoon, and non-marine poorly consolidated fine- to medium-grained sandstone (Kennedy and Tan 1977).

PROJECT SITE DESCRIPTION

Several active and potentially active faults related to regional strike-slip faulting and compressional tectonics are present within 65 miles of the CVEUP site. The various faults are listed in **GEOLOGY AND PALEONTOLOGY Table 2**, along with the orientation, type, most recent movement, and distance from the project site. The sense of movement and age of last activity were derived from a number of sources (Blake 2000; Jennings and Saucedo 2002; Trieman and Lundberg 1999; USGS 2006; CDMG 2003.; CGS 2002; SCEC 2006).

GEOLOGY AND PALEONTOLOGY Table 2
Active Faults Relative to the CVEUP Site

Fault	Type	Strike	Most Recent Movement	Fault Class	Estimated Maximum Magnitude (Mw)[1]	Distance (miles) and Direction from Site
San Andreas (Southern segment)	Right-Lateral Strike-Slip	NW	0 – 200 yrs	A	7.2	92 E
San Jacinto (Coyote Creek Section)	Right-Lateral Strike-Slip and Dip-Slip	NW	39 yrs	A	6.8	65 NE
San Jacinto (Borrego Mountain Section)	Right-Lateral Strike-Slip and Normal Dip-Slip	NW	<330 yrs	A	6.6	66 NE
San Jacinto (Anza Section)	Right-Lateral Strike-Slip and Dip-Slip	NW	300 yrs (possibly <100 yrs)	A	7.2	68 NE
Elsinore (Coyote Mountain Section)	Right-Lateral Strike-Slip and Reverse Dip-Slip	NW	200 – 300 yrs	A	6.8	48 E
Elsinore (Julian Section)	Right-Lateral Strike-Slip and Reverse Dip-Slip	NW	4 – 6.1 ka*	A	7.1	45 NE
Newport-Inglewood-Rose Canyon (San Diego Section)	Right-Lateral Strike-Slip and Dip-Slip	NW	<8.1 ka	A	7.1	9 NW
Newport-Inglewood-Rose Canyon (Silver Strand Section)	Right-Lateral Strike-Slip and Dip-Slip	NW	<3.3 ka	A	7.2	5 W
Coronado Bank Zone	Right-Lateral and Normal	NW	<10 ka	B	7.6	12 W
San Diego Trough	Right-Lateral	NW	<10 ka		7.7[2]	22 W
San Clemente Island	Right-Lateral with Vertical Component	NW	<10 ka	[3]	7.7[2]	50 W
La Nacion	Normal	NNW	12 ka to 1.6 Ma**	[3]	6.6[2]	1.75 E
San Ysidro	Right-Lateral Strike-Slip	NW	undetermined	[3]		1.25 S

*ka = 1000 years ago.
[1] From CGS 2002b unless otherwise noted.
[3] Not assigned.
**Ma = 1,000,000 years ago.
[2] San Diego County, 2008.

In addition to the above faults, the San Diego-El Centro regional geologic map shows left-lateral strike slip faulting along the length of the Otay River including that portion immediately south of the CVEUP site. This fault is not indicated on more recent geologic

maps. Likewise the north-northwest trending La Nacion Fault Zone, which extends to within 1.75 miles east of the site, is featured prominently in Kennedy and Tan (1977), Jennings and Saucedo (2002), and Alquist-Priolo documentation (CGS 2002a) but goes unmentioned in other works. The San Ysidro Fault is approximately 1.25 miles south of the site.

Published mapping by individual authors in the vicinity of the CVEUP site (Kennedy and Tan 1977) as well as borehole drilling at the site for the geotechnical investigation (Ninyo & Moore 2006) indicate the following stratigraphic section. The proposed plant site surface is composed of approximately 23 to 25 feet of uncontrolled fill that in turn is underlain by a 3 to 5-foot layer of Holocene age unconsolidated alluvium (Qal + Qsw). The unconsolidated alluvium layer overlies unconsolidated Holocene stream terrace deposits (Qt) to a depth of at least 41-1/2 feet below ground surface (bgs) (Ninyo & Moore 2006). Regional mapping indicates the terrace deposits overlie Pleistocene to Holocene age poorly consolidated fine- to medium-grained marine, lagoonal, and non-marine sandstone (Qbp + Qn), which overlies poorly consolidated fine- to medium-grained middle to late Pleistocene age marine sandstone (Tsdss) of the San Diego Formation.

GEOLOGY AND PALEONTOLOGY Table 3 summarizes the stratigraphic nomenclature of late Pleistocene to Holocene stratigraphic units mapped at or near the project site.

GEOLOGY AND PALEONTOLOGY Table 3
Stratigraphic Units

Kennedy and Tan (1977)	Geologic Unit	Thickness (feet)	Age	Degree of Dissection	Soil Development
Fill	Undocumented fill	23–25	Recent	N/A	N/A
Qal + Qsw	Unconsolidated alluvium	3–5	Holocene	Slightly	Negligible
Qt	Stream terrace deposits	12–15	Holocene	Moderately to Deeply	Negligible
Qbp + Qn	Marine and non-marine sandstone	Not known	Holocene to Pleistocene	Not described	Not described
Tsdss	San Diego Formation (sandstone)	Not known	Middle to Late Pleistocene	Slightly to Moderately	Negligible to Moderate

Ground water depth in the area is 31 to 34 feet below ground surface but may be seasonably variable (Ninyo & Moore 2006).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section considers two types of impacts. The first is geologic hazards, which could impact the proper functioning of the proposed facility and create life/safety concerns. The second is the potential impacts the proposed facility could have on existing geologic, mineralogic, and paleontologic resources in the area.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

No federal LORS concerning geologic hazards and geologic and mineralogic resources apply to this project. The California Building Standards Code (CBSC) and CBC (2007) provide geotechnical and geological investigation and design guidelines, which engineers must follow when designing a facility. As a result, the criteria used to assess the significance of a geologic hazard include evaluating each hazard's potential impact on the design and construction of the proposed facility. Geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, and seiches.

The California Environmental Quality Act (CEQA) guidelines, Appendix G, provide a checklist of questions that lead agencies typically address.

- Section (V) (c) includes guidelines that determine if a project will either directly or indirectly destroy a unique paleontological resource or site or a unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) focus on whether or not the project would expose persons or structures to geologic hazards.
- Sections (X) (a) and (b) concern the project's effects on mineral resources.

Staff has reviewed geologic and mineral resource maps for the surrounding area, as well as site-specific information provided by the applicant, to determine if geologic and mineralogic resources exist in the area and to determine if operations could adversely affect geologic and mineralogic resources.

Staff reviewed existing paleontologic information and requested records searches from the San Bernardino County Museum, the San Diego Natural History Museum, and the Natural History Museum of Los Angeles County for the site area. Site-specific information generated by the applicant for the CVEUP was also reviewed. All research was conducted in accordance with accepted assessment protocol (SVP 1995) to determine whether any known paleontologic resources exist in the general area. If present or likely to be present, conditions of certification which outline required procedures to mitigate impacts to potential resources are proposed as part of the project's approval.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Ground shaking and settlement represent the main geologic hazards at this site. These potential hazards can be effectively mitigated through facility design by incorporating recommendations contained in a project geotechnical report. Proposed Conditions of Certification **GEN-1, GEN-5,** and **CIVIL-1** in the **Facility Design** section should also mitigate these impacts to a less than significant level.

Economic deposits of sand and gravel have been identified and historically mined in the site vicinity. Several quarries that produced sand and coarse aggregate formerly existed along the length of the Otay River Valley (CDMG 1983). However, those which operated in the vicinity of the CVEUP site ceased operation in the 1980s, and the Otay River Valley in the site vicinity is no longer classified as an aggregate resource zone (CDMG

1996). It appears likely that development of the southern portion of the project site will result in removing some portion of the known aggregate deposits of the Otay River from potential development. However the relatively small volume of aggregate which will be made unavailable and the common availability of aggregate materials from other sources in the San Diego area minimize the impact of development of the CVEUP on local aggregate resources.

Uncontrolled fill, which covers the site to a depth of approximately 23 to 25 feet, is not considered an important paleontologic resource bearing unit because any fossils contained within the fill would be out of geologic context and therefore of little paleontologic value. The 3 to 5-foot-thick bed of Quaternary alluvium which directly underlies the uncontrolled fill (Qal + Qsw) is considered to be of low paleontologic importance because of its recent deposition over a geologically short time period. Quaternary terrace deposits (Qt) which underlie the young Quaternary alluvium are considered to have moderate paleontologic importance as fossil recoveries from other stream terrace deposits within the San Diego area have been well documented.

No important paleontological resources were observed on the CVEUP site during the paleontological field survey conducted for the AFC (LSA 2006). The proposed site is underlain to a depth of about 23 feet by recent uncontrolled fill. Even if construction includes significant amounts of grading, foundation excavation, and utility trenching, staff considers the probability that paleontological resources will be encountered during such activities to be low.

Drilled shaft foundations have been proposed by the geotechnical consultant (Ninyo & Moore 2006) as one method to reduce potential settlement of heavily loaded, critical structures on the undocumented fill. These 24-inch diameter borings would extend approximately 40 feet below the existing ground elevation, through the fill and well into native sedimentary deposits. The native materials, and particularly those below a depth of about 28 feet, have some potential to include sporadic but significant vertebrate fossils. It must be recognized, however, that auger cuttings from installation of drilled shaft foundations would be severely disturbed and also out of context. At the same time, a 24-inch diameter boring only affects about 3.1 square feet. Given the small area of disturbance, even for numerous drilled shafts, and the general scarcity of fossils, the likelihood of damaging a significant fossil deposit would seem remote.

This assessment is based on SVP criteria and the confidential paleontological report appended to the AFC. Proposed Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate paleontological resource impacts, as discussed above, to less than significant levels. These conditions essentially require a worker education program in conjunction with the monitoring of earthwork activities by a qualified professional paleontologist (a paleontologic resource specialist, or PRS). If final project design does not include drilled shafts, or other excavations that extend below a depth of about 25 feet, these conditions may not be necessary.

The proposed conditions of certification allow the Energy Commission's compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme ensuring compliance with LORS applicable to geologic hazards and the protection of geologic, mineralogic, and paleontologic resources.

Based on the information below, it is staff's opinion that the potential for significant adverse, direct or indirect impacts to the project, from geologic hazards, and to potential geologic, mineralogic, and paleontologic resources, from the proposed project, is very low.

GEOLOGICAL HAZARDS

The AFC (MMC 2007b) provides documentation of potential geologic hazards at the proposed CVEUP site, including site-specific subsurface information (Ninyo & Moore 2006). Review of the AFC, coupled with staff's independent research, indicates that the possibility of geologic hazards at the plant site, during its practical design life, is low, and geologic hazards, such as potential for expansive clay soils and settlement due to compressible soils, hydrocompaction, or dynamic compaction, are addressed in the project geotechnical report per California Building Code (CBC) (2007) requirements (Ninyo & Moore 2006).

Staff's independent research included the review of available geologic maps, reports, and related data of the CVEUP site. Geological information was available from the California Geological Survey (CGS), California Division of Mines and Geology (CDMG), the U.S. Geological Survey (USGS), and other governmental organizations. Since 2002, the CDMG has been known as the California Geological Survey.

Faulting and Seismicity

Energy Commission staff reviewed numerous CDMG and USGS publications as well as informational websites in order to gather data on the location, recency, and type of faulting in the project area. No active faults are shown on published maps as crossing the boundary of new construction on the proposed CVEUP site. The closest mapped faults to the plant site are the San Ysidro Fault Zone located 1.25 miles to the south and the La Nacion Fault Zone approximately 1.75 miles east of the site. These faults are considered only potentially active because, although they show Quaternary movement, there is no evidence of movement during the Holocene period. The nearest onshore Holocene active faults are the Elsinore Fault (Coyote Mountain and Julian Sections) and the San Jacinto Fault including the Coyote Creek, Borrego Mountain, and Anza Sections. These faults are located east and northeast of the CVEUP site and range from approximately 45 to 68 miles distant. Movement along these faults has occurred at various times ranging from about 6,000 years ago to within the last few decades. The San Jacinto Fault is considered to be the most active fault system within the southern Sierra Nevada batholith.

Offshore faulting present west and northwest of the site includes the Newport-Inglewood-Rose Canyon System (San Diego and Silver Strand Sections), the Coronado Bank Zone, the San Diego Trough, and the San Clemente Fault Zone. Each of these faults has been demonstrated to have had Holocene activity and all have right-lateral as well as a lesser vertical component of movement. These offshore faults range in distance from approximately 5 miles to as much as approximately 50 miles from the site and have most recent movement from 3,300 years to as much as 10,000 years ago.

Type A faults have slip-rates of ≥5 mm per year and are capable of producing an earthquake of magnitude 7.0 or greater. Type B faults have slip-rates of 2 to 5 mm per year and are capable of producing an earthquake of magnitude 6.5 to 7.0. The fault type, potential magnitude, and distance from the CVEUP site are summarized in GEOLOGY AND PALEONTOLOGY Table 2.

The Alquist-Priolo Act of 1973 and subsequent California state law (California Code of Regulations 2001) require that all occupied structures be set back 50 feet or more from the surface trace of an active fault. Since no active faults have been documented within the CVEUP power plant site, setbacks from occupied structures will not be required.

Based on previous drilling to determine the depth of aggregate in the Otay River and on the soil profile generated for this site by the geotechnical investigation, the site soil class is assumed to be seismic Class D. The estimated peak horizontal ground acceleration for the power plant is 0.45 times the acceleration of gravity (0.45g) for bedrock acceleration based on 2 percent probability of exceedence in 50 years under 2007 CBC criteria. For a Class D site, the soils profile amplifies the acceleration of the ground surface to 0.48g (USGS 2008).

Liquefaction

Liquefaction is a condition in which a saturated cohesionless soil may lose shear strength because of sudden increase in pore water pressure caused by an earthquake. However, the potential for liquefaction of strata deeper than approximately 40 feet below surface is considered negligible due to the increased confining pressure and because geologic strata at this depth are generally too compact to liquefy. The reported deep ground water table of at least 30 feet would indicate no significant potential for liquefaction and standard penetration testing (blowcounts) reported in the project-specific geotechnical report (Ninyo & Moore 2006) indicate strata beneath the water table are generally too dense to liquefy. Liquefaction potential on the CVEUP site was also addressed in the project geotechnical report per CBC (2007) and Condition of Certification **GEN-1** requirements.

Lateral Spreading

Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope—that is, a nearby steep hillside or deeply eroded stream bank, etc.—but can also occur on gentle slopes such as are present at the project site. Other factors such as distance from the epicenter, magnitude of the seismic event, and thickness and depth of liquefiable layers also affect the amount of lateral spreading. Because the CVEUP site is not subject to significant liquefaction, the potential for lateral spreading of the site surface during seismic events is negligible.

Dynamic Compaction

Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase is soil density). The decrease in volume can result in settlement of overlying structural improvements. Site specific geotechnical investigation indicates the artificial fill material

which covers the site to approximately 23 feet, as well as the alluvial deposits which underlie the fill, are generally too dense to allow significant dynamic compaction (Ninyo & Moore 2006).

Hydrocompaction

Hydrocompaction (also known as hydro-collapse) is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when landscaping irrigation dissolves the weak cementation that is preventing the immediate collapse of the soil structure. Site specific geotechnical investigation indicates the artificial fill material which covers the site to approximately 23 feet as well as the alluvial deposits which underlie the fill, are generally too dense to experience significant hydrocompaction (Ninyo & Moore 2006).

Subsidence

Local subsidence or settlement may occur when areas containing compressible soils are subjected to foundation loads. Site-specific geotechnical investigation indicates the artificial fill material which covers the site to a depth of approximately 23 feet, as well as the alluvial deposits which underlie the fill, are generally compacted to a medium-dense to very dense consistency and therefore are considered unlikely to support site-wide subsidence. Recommendations for re-excavation and compaction of uncontrolled fill in foundation and other structural areas, as presented in the site geotechnical report, should be followed to minimize settlement of the proposed improvements. Deep foundations (drilled shafts) or mat foundations may be necessary to limit settlement of heavily loaded structures (Ninyo & Moore 2006).

Regional ground subsidence is typically caused by petroleum or groundwater withdrawal that increases the effective unit weight of the soil profile, which in turn increases the effective stress on the deeper soils. This results in consolidation or settlement of the underlying soils. The nearest known petroleum or gas fields are located in the Los Angeles Basin roughly 60 miles northwest of the project site (CDC 2001), and the site water supply will be provided by a local water purveyor and not by groundwater removal from beneath the site. Therefore, subsidence due to petroleum, natural gas, or groundwater production is considered very unlikely.

Expansive Soils

Soil expansion occurs when clay-rich soils with an affinity for water exist in place at a moisture content below their plastic limit. The addition of moisture from irrigation, precipitation, capillary tension, water line breaks, etc. causes the clay soils to absorb water molecules into their structure, which in turn causes an increase in the overall volume of the soil. This increase in volume can correspond to excessive movement (heave) of overlying structural improvements. Expansive soils are not thought to be present at this site since it is underlain by about 23 feet of fill. The geotechnical report also recommends reworking the top 5 feet of fill, which would mitigate any expansive materials present in the fill (Ninyo & Moore 2006).

Landslides

The CVEUP site slopes gently to the south-southwest at a gradient of approximately 3 percent. Although numerous landslides have been mapped along the Otay Mesa southeast of the site and along Spooners Mesa south of the site, the gradual slope of the site coupled with the absence of topographically high ground within or immediately upgradient from the site have led to it being assigned a landslide susceptibility rating of 2 or “Marginally Susceptible” to landslide activity by the CDMG (Tan 1995).

Flooding

The Federal Emergency Management Agency (FEMA) has identified the CVEUP site and lay-down area as lying in Unshaded Zone X, or outside the limits of the 500-year floodplain (FEMA 1996).

Tsunamis and Seiches

The potential for tsunami (harbor wave) impact to the site has not been addressed by the geotechnical investigation (Ninyo & Moore 2006) or by the Application for Certification (MMC 2007b). No existing study of tsunami hazards for southern San Diego County could be located by Energy Commission staff, suggesting that no such hazard is thought to exist. Staff believes the proximity of the CVEUP site to San Diego Bay and the Pacific Ocean shore, coupled with the presence of at least five Holocene faults within 50 miles offshore, indicates some potential for tsunami activity. It is Energy Commission staff’s opinion, however, that the nature of offshore faulting (primarily strike-slip with a lesser vertical component), the distance of the CVEUP site from the bay and ocean (2-3/4 to 4-1/4 miles), the elevation of the site above sea level (50 to 60 feet), and the presence of intervening structures that would slow any wave front, all act to reduce the potential for significant site damage from a tsunami. However, the true potential for tsunami impact should be evaluated by a tsunami expert to assure inclusion of any necessary design criteria.

GEOLOGIC, MINERALOGIC, AND PALEONTOLOGIC RESOURCES

Energy Commission staff has reviewed applicable geologic maps, reports, and on-line resources for this area (Blake 2000; CDC 2001; CDMG 2003; CDMG 1999; CDMG 1998; CDMG 1995; CDMG 1994; CDMG 1993; CDMG 1990; CDMG 1983; CDMG 1975; CDMG 1962; CGS 2007; CGS 2002a and b; Kennedy and Welday 1980; Kennedy and Tan 1977; MMC 2007b; Norris and Webb 1990; SCEC 2006; Trieman and Lundberg 1999; and USGS 2006). Staff did not identify any geological or mineralogical resources at the energy facility location. Sand and gravel has been produced from at least three pits within 1 mile of the site (CDMG 1983). Production from these locations was ended in the 1980s, and the Otay River Valley in the site vicinity is no longer classified as an aggregate resource sector (CDMG 1996).

Energy Commission staff reviewed the paleontological resources assessment in Sections 5.8 and 5.8a of the AFC (MMC 2007b) and the attached confidential paleontologic site report (LSA 2006). Staff has also reviewed paleontological literature and records searches conducted by the San Bernardino County Museum (Scott 2008), San Diego Natural History Museum (Soetaert 2008), and the Natural History Museum of

Los Angeles County (McCleod 2008). No paleontological resources have been documented on the CVEUP plant site.

Although Quaternary terrace deposits, like those which underlie the project site, are known to contain a wide variety of vertebrate fossils, none have been identified at the site or within a 1-mile radius of the site. Soetaert (2008), however, reports approximately 300 fossil bearing localities within 5 miles of the site. These occur primarily in the Pliocene Age San Diego Formation (primarily vertebrates) and in the Pleistocene Age Bay Point Formation (marine invertebrates). Since the proposed site is underlain to a depth of approximately 23 to 25 feet by uncontrolled fill, even if construction includes significant amounts of grading, foundation excavation, and utility trenching, staff considers the probability that paleontological resources will be encountered during such activities to be low. There is some potential to encounter significant vertebrate fossils if drilled shaft foundations are required to support heavily loaded structures. Any fossil brought to the surface by drilling operations would be badly disturbed and out of context as well. Given the small diameter of the boring (24 inches), and the general scarcity of significant fossils, the chances of intersecting strata bearing significant fossils would seem remote.

This assessment is based on SVP criteria, the confidential paleontological report appended to the AFC (LSA 2006), and the independent paleontological assessment of McLeod (2008). Proposed Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate paleontological resource impacts, as discussed above, to less than significant levels. These conditions essentially require a worker education program in conjunction with the monitoring of earthwork activities by a qualified professional paleontologist (a paleontologic resource specialist, or PRS).

The proposed conditions of certification allow the Energy Commission's compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme ensuring compliance with LORS applicable to geologic hazards and the protection of geologic, mineralogic, and paleontologic resources. If final project design does not include drilled shafts, or other excavations that extend below a depth of 25 feet, these conditions may not be necessary.

Construction Impacts and Mitigation

The design-level geotechnical investigation, required for the project by the CBC (2007) and Condition of Certification **GEN-1** should provide standard engineering design recommendations for mitigation of earthquake ground shaking and excessive settlement from the 23 to 25 feet of undocumented fill found to overlie the site (Ninyo & Moore 2006). (See **Proposed Conditions of Certification, Facility Design**).

As noted above, no viable geologic or mineralogic resources are known to exist in the vicinity of the CVEUP construction site, although several sand and gravel quarries are present within 15 miles. No paleontologic resources have been identified at the site, and potentially fossil bearing strata lie at a depth of 28 feet or greater beneath the surface. Construction of the proposed project will include grading, foundation excavation, and utility trenching. Based on the soils profile, SVP assessment criteria, and the depth of the potentially fossiliferous geologic units, staff considers the probability of encountering paleontological resources to be low unless drilled shaft foundation borings, or other

excavations, reach greater than 25 feet below existing ground surface. Given the small diameter of the foundation borings (24 inches), and the general scarcity of significant fossils, the chances of intersecting fossil bearing strata would seem remote. The need for other excavations to extend to depths of 25 feet or more is unlikely.

Proposed Conditions of Certification **PAL-1 to PAL-7** are designed to mitigate any paleontological resource impacts, as discussed above, to a less than significant level. If final project design does not include drilled shafts, or other excavations that extend below a depth of about 25 feet, these conditions may not be necessary.

Essentially, Conditions of Certification **PAL-1 to PAL-7** require a worker education program in conjunction with monitoring of earthwork activities by qualified professional paleontologists (paleontologic resource specialist, or PRS). Earthwork is halted any time potential fossils are recognized by either the paleontologist or the worker. When properly implemented, the conditions of certification yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated. A paleontological resource specialist is retained, for the project by the applicant, to produce a monitoring and mitigation plan, conduct the worker training, and provide the monitoring. During the monitoring, the PRS can and often does petition the Energy Commission for a change in the monitoring protocol. Most commonly, this is a request for lesser monitoring after sufficient monitoring has been performed to ascertain that there is little change of finding significant fossils. In other cases, the PRS can propose increased monitoring due to unexpected fossil discoveries or in response to repeated out-of-compliance incidents by the earthwork contractor.

Based upon the literature and archives search, field surveys, and compliance documentation for the CVEUP, the applicant has proposed monitoring and mitigation measures to be followed during the construction of the CVEUP. Energy Commission staff believes that the facility can be designed and constructed to minimize the effect of geologic hazards at the site during project design life.

Operation Impacts and Mitigation

Operation of the proposed new gas-fired peaker generating facility should not have any adverse impact on geologic, mineralogic, or paleontologic resources.

CUMULATIVE IMPACTS AND MITIGATION

The proposed CVEUP is situated in a seismically active geologic environment. Strong ground shaking potential must be mitigated through foundation and structural design as required by the CBC (2007). Compressible soils (undocumented fill) must be mitigated in accordance with a design-level project geotechnical investigation and proposed Conditions of Certification **GEN-1, GEN-5, and CIVIL-1** under **Facility Design**. Paleontological resources have been documented in the general area of the project and in sediments similar to those that are present on the site. However, to date, none have been found during field studies of the CVEUP site. The potential impacts to paleontological resources due to construction activities will be mitigated as required by proposed Conditions of Certification **PAL-1 to PAL-7**.

Staff believes that the potential for significant adverse cumulative impacts to the proposed project from geologic hazards, during the project's design life, is low, and that the potential for impacts to geologic, mineralogic, and paleontologic resources is very low.

Based upon the literature and archives search, field surveys, and compliance documentation for the CVEUP project, the applicant proposes monitoring and mitigation measures for construction of the CVEUP, and staff agrees with the applicant that the project can be designed and constructed to minimize the effects of geologic hazards at the site and that impacts to fossils encountered during construction would be mitigated to levels of insignificance.

The proposed conditions of certification allow the Energy Commission CPM and the applicant to adopt a compliance monitoring scheme ensuring compliance with applicable LORS for geologic hazards and geologic, mineralogic, and paleontologic resources.

FACILITY CLOSURE

Facility closure activities are not expected to impact geologic, paleontologic, or mineralogic resources since no such resources are known to exist at the project location. In addition, the decommissioning and closure of the project should not negatively affect geologic, mineralogic, or paleontologic resources since the majority of the ground disturbed during plant decommissioning and closure would have been already disturbed, and mitigated as required, during construction and operation of the project.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff has not received any agency or public comments regarding geologic hazards, mineral resources, or paleontology at this time.

CONCLUSIONS

The applicant will easily be able to comply with applicable LORS, provided that the proposed conditions of certification are followed. The design and construction of the project should have no adverse impact with respect to geologic, mineralogic, and paleontologic resources. Staff proposes to ensure compliance with applicable LORS through the adoption of the proposed conditions of certification listed below.

PROPOSED CONDITIONS OF CERTIFICATION

General conditions of certification with respect to engineering geology are proposed under Conditions of Certification **GEN-1, GEN-5, and CIVIL-1** in the **FACILITY DESIGN** section. Proposed paleontological conditions of certification follow. It is staff's opinion that the likelihood of encountering paleontologic resources is low at the plant site. Staff will consider reducing monitoring intensity, at the recommendation of the project paleontologic resource specialist, following examination of sufficient, representative

deep excavations. If final project design does not include drilled shafts, or other excavations that extend below a depth of 25 feet, these conditions may not even be necessary.

PAL-1 The project owner shall provide the compliance project manager (CPM) with the resume and qualifications of its paleontological resource specialist (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified paleontological resource monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995. The experience of the PRS shall include the following:

1. Institutional affiliations, appropriate credentials, and college degree;
2. Ability to recognize and collect fossils in the field;
3. Local geological and biostratigraphic expertise;
4. Proficiency in identifying vertebrate and invertebrate fossils; and
5. At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary on the project. Paleontologic resource monitors (PRMs) shall have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification:

1. At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

2. At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project, 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. The letter shall be provided to the CPM no later than one week prior to the monitor's beginning on-site duties.

3. Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction lay-down areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the project or its linear facilities changes, the project owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week and until ground disturbance is completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

2. If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

3. If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares, and the project owner submits to the CPM for review and approval, a paleontological resources monitoring and mitigation plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities and may be modified with CPM approval. This document shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP 1995) and shall include, but not be limited, to the following:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to PRMMP procedures;

2. Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the conditions of certification;

3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;

4. An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;

5. A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling;

6. A discussion of procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;

7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;

8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources;

9. Identification of the institution that has agreed to receive data and fossil materials collected, 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; and

10. A copy of the paleontological conditions of certification.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for the following workers: project managers, construction supervisors, foremen, and general workers involved with or who operate ground-disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of an initial in-person PRS training during the project kick off for those mentioned above. Following initial training, a CPM-approved video or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. No ground disturbance shall occur prior to CPM approval of the Worker Environmental Awareness Program (WEAP), unless specifically approved by the CPM.

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;

2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontologic sensitivity;

3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;

4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;

5. An informational brochure that identifies reporting procedures in the event of a discovery;

6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

Verification:

1. At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow.

2. At least 30 days prior to ground disturbance, the project owner shall submit the script and final video to the CPM for approval if the project owner is planning to use a video for interim training.

3. If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

4. In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. 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 project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) 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 from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and will be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.

2. The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

3. The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence 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 within 24 hours, or Monday morning in the case of a weekend event, where construction has been halted because of a paleontological find.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities placed in the monthly compliance reports. The summary will include the name(s) of PRS or PRM(s) active during the month; general descriptions of training and monitored construction activities; and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils. 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 or any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-6 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during project construction.

Verification: The project owner shall maintain in his/her compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after project completion and approval of the CPM-approved paleontological resource report (see Condition of Certification **PAL-7**). The project owner shall be responsible for paying any curation fees charged by the museum for fossils collected and curated as a result of

paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and submit it to the CPM for review and approval.

The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

Certification of Completion
Worker Environmental Awareness Program
Chula Vista Energy Upgrade Project (07-AFC-4)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
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Cultural Trainer: _____ Signature:_____ Date: ___/___/____

PaleoTrainer: _____ Signature:_____ Date: ___/___/____

Biological Trainer: _____Signature:_____ Date:___/___/__

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POWER PLANT EFFICIENCY

Erin Bright and Steve Baker

SUMMARY OF CONCLUSIONS

The project, if constructed and operated as proposed, would generate a nominal 100 MW of peaking electric power, at an overall project fuel efficiency of 39.2 percent lower heating value at maximum full load. While the project will consume substantial amounts of energy, it will do so in the most efficient manner practicable. It will not create significant adverse effects on energy supplies or resources, will not require additional sources of energy supply, and will not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the project would present no significant adverse impacts upon energy resources.

INTRODUCTION

The Energy Commission makes findings as to whether energy use by the Chula Vista Energy Upgrade Project (CVEUP) will result in significant adverse impacts on the environment, as defined in the California Environmental Quality Act (CEQA). If the Energy Commission finds that the CVEUP's consumption of energy would create a significant adverse impact, it must determine whether there are any feasible mitigation measures that could eliminate or minimize the impacts. In this analysis, staff addresses the issue of inefficient and unnecessary consumption of energy.

In order to support the Energy Commission's findings, this analysis will:

- examine whether the facility will likely present any adverse impacts upon energy resources;
- examine whether these adverse impacts are significant; and if so,
- examine whether feasible mitigation measures exist that would eliminate the adverse impacts or reduce them to a level of insignificance.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

No federal, state or local/county laws, ordinances, regulations, and standards apply to the efficiency of this project.

SETTING

MMC Energy, Incorporated (MMC) proposes to construct and operate a 100-MW (nominal net output) natural gas-fired, simple cycle electrical generating facility in Chula Vista, California as a replacement for the existing 44.5-MW Chula Vista Power Plant in the same location, which will be decommissioned and removed. The project will provide peaking power to the San Diego Gas & Electric Company (SDG&E) in the cities of San Diego and Chula Vista (MMC 2007b, AFC § 1.1).

The applicant intends to operate the plant's two GE LM6000PC SPRINT combustion turbine generators (MMC 2007b, AFC Figure 2.1-4) no more than 4,000 hours per year (approximately 46 percent). Each combustion turbine generator will utilize an inlet air fogger to maintain maximum output and efficiency at escalated temperatures. Natural gas will be transmitted to the plant via an existing 8-inch diameter pipeline currently serving the Chula Vista Power Plant.

ASSESSMENT OF IMPACTS

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE OF ENERGY RESOURCES

CEQA Guidelines state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, § 15126.4[a][1]). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient, and unnecessary consumption of energy (Cal. Code regs., tit. 14, § 15000 et seq., Appendix F).

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas and oil, constitutes an adverse environmental impact. An adverse impact can be considered significant if it results in:

- adverse effects on local and regional energy supplies and energy resources;
- a requirement for additional energy supply capacity;
- noncompliance with existing energy standards; or
- the wasteful, inefficient, and unnecessary consumption of fuel or energy.

PROJECT ENERGY REQUIREMENTS AND ENERGY USE EFFICIENCY

Under average ambient conditions and at base load, the CVEUP is expected to consume natural gas at a maximum rate of 591.4 million Btu per hour lower heating value (LHV) (MMC 2007b, AFC § 2.2.3). This is a substantial rate of energy consumption and holds the potential to impact energy supplies. Under expected project conditions, electricity will be generated at a thermal efficiency of approximately 39.2 percent LHV with the combustion turbines operating at base load (MMC 2007b, AFC Appendix 2B). The facility will be designed to operate between 40 and 100 percent of base load (MMC 2007b, AFC § 2.2.2.1).

ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES

The applicant has described its sources of supply of natural gas for the project (MMC 2007b, AFC §§ 2.1.6, 2.2.2.3, 2.2.3, 4.0). Natural gas for the CVEUP will be supplied from the existing SDG&E natural gas transmission pipeline currently being used by the

Chula Vista Power Plant. The SDG&E gas supply represents an adequate source for a project of this size. It is therefore highly unlikely that the project could pose a significant adverse impact on natural gas supplies in California.

ADDITIONAL ENERGY SUPPLY REQUIREMENTS

Natural gas fuel will be supplied to the project by the SDG&E transmission pipeline via an existing 8-inch diameter high pressure pipeline currently serving a portion of the site at which the CVEUP will be constructed (MMC 2007b, AFC §§ 1.1.1, 2.1.6, 2.2.2.3, 4.0). SDG&E currently provides the necessary quantities of natural gas needed for a similar power plant at the location. While the CVEUP is expected to consume more fuel than the existing plant because of the addition of a second combustion turbine generator to the configuration of the site, plant operation as a peaker unit is anticipated to be quite low. SDG&E is a resource with adequate delivery capacity for a project of this size. There is no real likelihood that the CVEUP will require the development of additional energy supply capacity.

COMPLIANCE WITH ENERGY STANDARDS

No standards apply to the efficiency of the CVEUP or other non-cogeneration projects.

ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT, AND UNNECESSARY ENERGY CONSUMPTION

The CVEUP could be deemed to create significant adverse impacts on energy resources if alternatives existed that would reduce the project's use of fuel. Evaluation of alternatives to the project that could reduce wasteful, inefficient, or unnecessary energy consumption first requires examination of the project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by the configuration of the power producing system and by the selection of equipment used to generate power.

Project Configuration

The project objective is to provide additional peak electricity generation to the cities of San Diego and Chula Vista in a more efficient manner than the existing facility while utilizing existing infrastructure. The applicant expects that the CVEUP will mostly operate to provide local reliability service as well as some load following and cycling (MMC 2007b, AFC, § 1.1.1, 2.1.15). A simple cycle configuration is consistent with and supports this expectation due to its operating flexibility.

The CVEUP will be configured as two simple cycle power plants in parallel, in which electricity is generated by two natural gas-fired turbine generators. This configuration, with its short start-up time and fast ramping[1] capability, is well suited to providing peaking power. Further, when reduced output is required, one turbine generator can be shut down, allowing the remaining machine to produce a percentage of the full power at optimum efficiency, rather than operating a single, larger machine at an inefficient part load output.

[1] "Ramping" is increasing and decreasing electrical output to meet fluctuating load requirements.

The applicant intends for this facility to operate in peaking duty up to a total of 8,000 engine hours per year for the two combustion turbines. This is equivalent to each of the two turbines operating approximately 46 percent of the year (MMC 2007b, AFC § 1.1.2).

Equipment Selection

Modern gas turbines embody the most fuel-efficient electric generating technology available today. The applicant will employ two General Electric LM6000PC SPRINT gas turbine generators (MMC 2007b, AFC Figure 2.1-4, Appendix 2B). The LM6000PC SPRINT gas turbine to be employed in the CVEUP represents one of the most modern and efficient such machines now available. The SPRINT version of this machine is nominally rated at 50 MW and 40.3 percent efficiency LHV at ISO[2] conditions (GTW 2007). This rating differs from CVEUP's projected efficiency of 39.2 percent LHV because of efficiency losses from parasitic loads and increased flow losses due to the selective catalytic reduction units used on the exhaust of each unit.

Efficiency of Alternatives to the Project

Alternative Generating Technologies

Alternative generating technologies for the CVEUP are considered in the AFC (MMC 2007b, AFC § 6.6). Fossil fuels (oil and coal), biomass, geothermal, hydroelectric, solar, and wind technologies are all considered. Biomass and fossil fuels other than natural gas cannot meet air quality limitations. Renewables require more physical area and are not always available when peaking power is needed. Given the project objectives, location, and air pollution control requirements, staff agrees with the applicant that only natural gas-burning technologies are feasible.

Natural Gas-Burning Technologies

Fuel consumption is one of the most important economic factors in selecting an electric generator; fuel typically accounts for over two-thirds of the total operating costs of a fossil-fired power plant (Power 1994). Under a competitive power market system, where operating costs are critical in determining the competitiveness and profitability of a power plant, the plant owner is thus strongly motivated to purchase fuel-efficient machinery.

Capital cost is also important in selecting generating machinery. Recent progress in the development of gas turbines, incorporating technological advances made in the development of aircraft (jet) engines, combined with the cost advantages of assembly-line manufacturing, has made available machines that not only offer the lowest available fuel costs, but at the same time sell for the lowest per-kilowatt capital cost.

The applicant will employ two General Electric LM6000PC SPRINT gas turbine generators (MMC 2007b, AFC Figure 2.1-4, Appendix 2B). The SPRINT version of this machine is nominally rated at 50 MW and 40.3 percent efficiency LHV at ISO[3]

[2] International Standards Organization (ISO) standard conditions are 15°C (59°F), 60 percent relative humidity, and one atmosphere of pressure (equivalent to sea level).

[3] International Standards Organization (ISO) standard conditions are 15°C (59°F), 60 percent relative humidity, and one atmosphere of pressure (equivalent to sea level).

conditions (GTW 2007). (Staff compares alternative machines' ISO ratings as a common baseline, since project-specific ratings are not available for the alternative machines.) Alternative machines that can meet the project's objectives are the SGT-800 and FT8 TwinPac which, like the LM6000, are aeroderivative machines, adapted from Siemens Power Generation and Pratt & Whitney aircraft engines, respectively.

The Siemens SGT-800 gas turbine generator in a simple cycle configuration is nominally rated at 45 MW and 37 percent LHV at ISO conditions (GTW 2007). Another alternative is the Pratt & Whitney FT8 TwinPac gas turbine generator in a simple cycle configuration that is nominally rated at 51 MW and 38.4 percent LHV at ISO conditions (GTW 2007), an older model of which is currently being used by the existing Chula Vista power plant.

Machine	Generating Capacity (MW)	ISO Efficiency (LHV)
GE LM6000PC SPRINT	**50**	**40.5 %**
Siemens SGT-800	45	37.0 %
P & W FT8 TwinPac	51	38.4 %

Source: GTW 2007

The LM6000PC SPRINT is further enhanced by the incorporation of spray intercooling (thus the name, SPRay INTercooling). This takes advantage of the aeroderivative machine's two-stage compressor.[4] By spraying water into the airstream between the two compressor stages, the partially compressed air is cooled, reducing the amount of work that must be performed by the second stage compressor. This reduces the power consumed by the compressor, yielding greater net power output and higher fuel efficiency. The benefits in generating capacity and fuel efficiency increase with rising ambient air temperatures (GTW 2000).

While the LM6000 enjoys a slight advantage in fuel efficiency over the alternative machines, any differences among the three in actual operating efficiency will be relatively insignificant. Other factors such as generating capacity, cost, and ability to meet air pollution limitations are some of the factors considered in selecting the turbine model.

Inlet Air Cooling

A further choice of alternatives involves the selection of gas turbine inlet air-cooling methods.[5] The two commonly used techniques are the evaporative cooler, or fogger, and the chiller (mechanical or absorption); both techniques increase power output by cooling the gas turbine inlet air. In general terms, a mechanical chiller can offer greater power output than the evaporative cooler on hot, humid days, but consumes electric power to operate its refrigeration process, thus slightly reducing overall net power output and, thus, overall efficiency. An absorption chiller uses less electric power, but

[4] The larger industrial type gas turbines typically are single-shaft machines, with single-stage compressor and turbine. Aeroderivatives are two-shaft (or, in some cases, three-shaft) machines, with two-stage (or three-stage) compressors and turbines.

[5] A gas turbine's power output decreases as ambient air temperatures rise. The LM6000 SPRINT produces peak power at 50°F; this peak output can be maintained in much hotter weather by cooling the inlet air.

necessitates the use of a substantial inventory of ammonia. An evaporative cooler or a fogger boosts power output best on dry days; it uses less electric power than a mechanical chiller, possibly yielding slightly higher operating efficiency. The difference in efficiency among these techniques is relatively insignificant.

The applicant proposes to employ inlet air foggers (MMC 2007b, AFC §§ 2.1.2, 2.1.4, Figure 2.1-4). Given the relative lack of clear superiority of one system over the other, staff agrees that the applicant's approach will yield no significant adverse energy impacts.

In conclusion, the project configuration (simple cycle) and generating equipment chosen appear to represent the most efficient feasible combination to satisfy the project objectives. There are no alternatives that could significantly reduce energy consumption.

CUMULATIVE IMPACTS

The Otay Mesa Energy Center (currently under construction) and the Orange Grove Project (currently under review by the Energy Commission) are nearby projects that hold the potential for cumulative energy consumption impacts when aggregated with the project. Staff knows of no other projects that could result in cumulative energy impacts.

MMC's proposed upgrade of its peaker plant in Chula Vista will have a minimal impact on the natural gas supply of the San Diego region. Staff believes that construction and operation of the project will not bring about indirect impacts, in the form of additional fuel consumption, that would not have occurred but for the project. Older, less efficient power plants consume more natural gas to operate than the new, more efficient plants such as the CVEUP (CEC 2004rr). The high efficiency of the proposed CVEUP should allow it to compete very favorably, running at a high capacity factor, replacing less efficient power generating plants, and therefore not having an impact on or even reducing the cumulative amount of natural gas consumed for power generation.

NOTEWORTHY PROJECT BENEFITS

The applicant claims that the CVEUP will help meet SDG&E's stated need for additional efficient peak electricity generation capacity by replacing an existing plant with new, efficient GE LM6000 SPRINT gas turbines. The GE LM6000 SPRINT gas turbines represent one of the most modern and efficient such machines now available. The CVEUP will represent an efficient replacement for the existing in-city generation.

The configuration of the CVEUP, as two simple cycle power plants in parallel, allows for one of the turbine generators to be shut down, with the remaining machine still producing a percentage of the full power at optimum efficiency, rather than operating a single, larger machine at an inefficient part load output.

CONCLUSIONS

The project, if constructed and operated as proposed, would generate a nominal 100 MW of peaking electric power, at an overall project fuel efficiency of 39.2 percent

LHV at maximum full load. While it will consume substantial amounts of energy, it will do so in the most efficient manner practicable. It will not create significant adverse effects on energy supplies or resources, will not require additional sources of energy supply, and will not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the project would present no significant adverse impacts upon energy resources. No cumulative impacts on energy resources are likely.

PROPOSED CONDITIONS OF CERTIFICATION

No conditions of certification are proposed.

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POWER PLANT RELIABILITY

Erin Bright and Steve Baker

SUMMARY OF CONCLUSIONS

MMC Energy, Inc. predicts an equivalent availability factor of 92 to 98 percent, which staff believes is achievable. Based on a review of the proposal, staff concludes that the Chula Vista Energy Upgrade Project would be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No conditions of certification are proposed.

INTRODUCTION

In this analysis, Energy Commission staff addresses the reliability issues of the proposed Chula Vista Energy Upgrade Project to determine if the power plant is likely to be built in accordance with applicable laws, ordinances, regulations, and standards (LORS) and with typical industry norms for reliability of power generation. Staff uses this level of reliability as a benchmark because it ensures that the resulting project would likely not degrade the overall reliability of the electric system it serves (see the "Setting" subsection below).

The scope of this power plant reliability analysis covers:

- equipment availability;
- plant maintainability;
- fuel and water availability; and
- power plant reliability in relation to natural hazards.

Staff examined the project design criteria to determine if the project is likely to be built in accordance with applicable LORS and with typical industry norms for reliability of power generation. While MMC Energy, Inc. (MMC) has predicted an equivalent availability factor from 92 to 98 percent for the Chula Vista Energy Upgrade Project (CVEUP) (see below), staff uses typical industry norms as a benchmark, rather than MMC's projection, to evaluate the project's reliability.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Although no federal, state, or local/county LORS apply to the reliability of this project, recently adopted laws and regulations influence the project's operational requirements (see "Setting," below).

SETTING

In the restructured competitive electric power industry, the responsibility for maintaining system reliability falls largely to the state's control area operators, such as the California Independent System Operator (California ISO), that purchase, dispatch, and sell electric

power throughout the state. Determining how the California ISO and other control area operators would ensure system reliability has been an ongoing process; protocols have been developed and put in place that allow sufficient reliability to be maintained under the competitive market system. “Must-run” power purchase agreements and “participating generator” agreements, for example, are two mechanisms that have been employed to ensure an adequate supply of reliable power.

In September 2005, California AB 380 (Núñez, Chapter 367, Statutes of 2005) became law. This modification to the Public Utilities Code requires the California Public Utilities Commission to consult with the California ISO to establish resource adequacy requirements for all load-serving entities (basically, public and privately owned utility companies). These requirements include maintaining a minimum reserve margin (extra generating capacity to serve in times of equipment failure or unexpected demand) and maintaining sufficient local generating resources to satisfy the load-serving entity’s peak demand and operating reserve requirements.

In order to fulfill this mandate, the California ISO has begun to establish specific criteria for each load-serving entity under its jurisdiction. These criteria guide each load-serving entity in deciding how much generating capacity and ancillary services to build or purchase, after which the load-serving entity issues power purchase agreements to satisfy these needs. The CVEUP acquired its power purchase agreement from San Diego Gas and Electric Company (SDG&E) as a result of SDG&E’s plans to meet reliability requirements imposed by the California ISO.

The California ISO’s mechanisms to ensure adequate power plant reliability apparently were devised under the assumption that the individual power plants that compete to sell power into the system will each exhibit a level of reliability similar to that of power plants of past decades. However, there has been valid cause to believe that, under free market competition, financial pressures on power plant owners to minimize capital outlays and maintenance expenditures may act to reduce the reliability of many power plants, both existing and newly constructed (McGraw-Hill 1994). It is possible that, if significant numbers of power plants were to exhibit individual reliability sufficiently lower than this historical level, the assumptions used by California ISO to ensure system reliability would prove invalid, with potentially disappointing results. Accordingly, staff has recommended that power plant owners continue to build and operate their projects to the level of reliability to which all in the industry are accustomed.

As part of its plan to provide needed reliability, the applicant proposes to operate a 100-MW (nominal output) simple cycle peaking power plant, providing peaking power and quick start capability[1] to SDG&E to support local demand in the San Diego county region (MMC 2007b, AFC § 1.1). The CVEUP is expected to achieve an equivalent availability factor in the range of 92 to 98 percent (MMC 2007b, AFC §§ 2.1.2, 2.2.2.1). The project will be permitted to operate at capacity factors up to 46 percent during each year of its operating life, being dispatched to serve peak loads at times of high demand (MMC 2007b, AFC §§ 1.1.2, 2.1.7.1, 2.1.15).

[1] The LM6000 PC SPRINT machines to be employed in this project can achieve full load from a cold start in 10 minutes (MMC 2007b, AFC § 1.1.1; GE 2008).

ASSESSMENT OF IMPACTS

METHOD FOR DETERMINING RELIABILITY

The Energy Commission must make findings as to the manner in which the project is to be designed, sited, and operated to ensure safe and reliable operation (Cal. Code Regs., tit. 20, § 1752[c]). Staff takes the approach that a project is acceptable if it does not degrade the reliability of the utility system to which it is connected. This is likely the case if the project exhibits reliability at least equal to that of other power plants on that system.

The equivalent availability factor for a power plant is the percentage of the time that it is available to generate power; both planned and unplanned outages subtract from its availability. Measures of power plant reliability are based on its actual ability to generate power when it is considered available and are affected by starting failures and unplanned, or forced, outages. For practical purposes, reliability can be considered a combination of these two industry measures, making a reliable power plant one that is available when called upon to operate. Throughout its intended 30-year life (MMC 2007b, AFC § 2.2.2.1), the CVEUP will be expected to perform reliably. Power plant systems must be able to operate for extended periods without shutting down for maintenance or repairs. Achieving this reliability is accomplished by ensuring adequate levels of equipment availability, plant maintainability with scheduled maintenance outages, fuel and water availability, and resistance to natural hazards. Staff examines these factors for the project and compares them to industry norms. If they compare favorably, staff can conclude that the power plant will be as reliable as other power plants on the electric system and will therefore not degrade system reliability.

EQUIPMENT AVAILABILITY

Equipment availability will be ensured by use of appropriate quality assurance/quality control (QA/QC) programs during design, procurement, construction, and operation of the plant and by providing for adequate maintenance and repair of the equipment and systems (discussed below).

Quality Control Program

The applicant describes a QA/QC program (MMC 2007b, AFC §§ 2.1.12.3, 2.2.2.5) typical of the power industry. Equipment will be purchased from qualified suppliers, based on technical and commercial evaluations. Suppliers' personnel, production capability, past performance, QA programs, and quality history will be evaluated. The project owner will perform receipt inspections, test components, and administer independent testing contracts. Staff expects implementation of this program to yield typical reliability of design and construction. To ensure such implementation, staff has proposed appropriate conditions of certification under the **Facility Design** section of this document.

PLANT MAINTAINABILITY

Equipment Redundancy

A peaking generating facility commonly offers adequate opportunity for maintenance work during its downtime. During periods of extended dispatch, however, as could occur if other major generating or transmission assets were disabled, the facility may be required to operate for extended periods. A typical approach for achieving reliability in such circumstances is to provide redundant examples of those pieces of equipment most likely to require service or repair.

The applicant plans to provide appropriate redundancy of function for the project (MMC 2007b, AFC §§ 2.1.13.3, 2.2.2.2, Table 2.2-1). The fact that the project consists of two combustion turbine-generator sets operating in parallel as independent equipment trains provides inherent reliability. A single equipment failure cannot disable more than one train, thus allowing the plant to continue to generate (at reduced output). In addition, all plant ancillary systems are also designed with adequate redundancy to ensure continued operation in the face of equipment failure (MMC 2007b, AFC §§ 2.1.13.3, 2.2.2.2, Table 2.2-1). Staff believes that equipment redundancy will be sufficient for a project such as this.

Maintenance Program

The applicant proposes to establish a preventive plant maintenance program typical of the industry (MMC 2007b, AFC §§ 2.1.5.4, 2.1.15, 2.2.1.1, 2.2.2.1, 2.2.2.5, 2.3). Equipment manufacturers provide maintenance recommendations with their products; the applicant will base its maintenance program on these recommendations. The program will encompass preventive and predictive maintenance techniques. Maintenance outages will be planned for periods of low electricity demand. In light of these plans, staff expects that the project will be adequately maintained to ensure acceptable reliability.

FUEL AND WATER AVAILABILITY

For any power plant, the long-term availability of fuel and of water for cooling or process use is necessary to ensure reliability. The need for reliable sources of fuel and water is obvious; lacking long-term availability of either source, the service life of the plant may be curtailed, threatening the supply of power as well as the economic viability of the plant.

Fuel Availability

The CVEUP will burn natural gas supplied by SDG&E. Natural gas fuel will be supplied to the project via an existing 8-inch diameter high pressure pipeline that currently serves MMC's Chula Vista Power Plant, which the CVEUP will be replacing (MMC 2007b, AFC §§ 1.1.2, 2.0, 2.1.6, 2.2.2.3, 4.0). The SDG&E natural gas system represents a resource of considerable capacity and offers access to adequate supplies of gas. Taking into account the two proposed gas-fired power plants nearby (the Otay Mesa Energy Center and the Orange Grove Project), staff agrees with the applicant’s prediction that there will be adequate natural gas supply and pipeline capacity to meet the project’s needs.

Water Supply Reliability

The CVEUP will obtain potable water via an existing 2-inch to 4-inch diameter pipeline connecting to the Sweetwater Authority, which serves the existing Chula Vista Power Plant (MMC 2007b, AFC §§ 1.1.1, 2.1.7, 5.15.2.1.1, Appendix 2A). This water will be used for safety and sanitary water (showers, safety showers, and eyewash stations) as well as plant service water. Service water will be treated by ion exchange demineralization and used for inlet air fogging, water wash for the compressor, and turbine combustor water injection. Bottled drinking water will be supplied for plant personnel. Demineralized water will be contained in a single 100,000 gallon tank, which corresponds to approximately 12 hours of plant operation (MMC 2007b, AFC §§ 1.1, 1.5.5, 2.1.7, 5.15.2.1). Staff believes this source, combined with the on-site storage capacity, yields sufficient likelihood of a reliable supply of water. (For further discussion of water supply, see the **Soil and Water Resources** section of this document.)

POWER PLANT RELIABILITY IN RELATION TO NATURAL HAZARDS

Natural forces can threaten the reliable operation of a power plant. High winds, tsunamis (tidal waves), and seiches (waves in inland bodies of water) will not likely represent a hazard for this project, but seismic shaking (earthquake) and flooding may present credible threats to reliable operation.

Seismic Shaking

The site lies in Seismic Risk Zone 4 and is located within 20 miles of two major zones of seismic activity (MMC 2007b, AFC §§ 2.2.1.1.1, 5.4.1.4); see the **Geology and Paleontology** section of this document. The project will be designed and constructed to the Seismic Zone 4 standards of the latest appropriate LORS (MMC 2007b, AFC § 5.4.4).

Compliance with current LORS applicable to seismic design represents an upgrading of performance during seismic shaking compared to older facilities, due to the fact that these LORS have been periodically and continually upgraded. By virtue of being built to the latest seismic design LORS, this project will likely perform at least as well as, and perhaps better than, existing plants in the electric power system. Staff has proposed conditions of certification to ensure this; see the **Facility Design** section of this document. In light of the historical performance of California power plants and the electrical system in seismic events, staff believes there is no special concern with power plant functional reliability affecting the electric system's reliability due to seismic events.

Flooding

The site does not lie within either a 100-year or 500-year floodplain (MMC 2007b, AFC §§ 2.2.1.1.1, 5.4.1.5.7). Staff believes there should be no significant concerns with power plant functional reliability due to flooding. For further discussion, see the **Soil and Water Resources** and **Geology and Paleontology** sections of this Preliminary Staff Assessment.

COMPARISON WITH EXISTING FACILITIES

The North American Electric Reliability Council (NERC) keeps industry statistics for availability factors (as well as many other related reliability data). NERC continually polls

utility companies throughout the North American continent on project reliability data through its Generating Availability Data System and periodically summarizes and publishes the statistics on the Internet (http://www.nerc.com). NERC reports the following summary generating unit statistics for the years 2002 through 2006 (NERC 2007):

- for Gas Turbine units (50 MW and larger):

  Equivalent Availability Factor = 91.82 percent

The gas turbines that will be employed in the project have been on the market for several years and can be expected to exhibit typically high availability. The applicant's prediction of an annual availability factor of 92 to 98 percent (MMC 2007b, AFC §§ 2.1.2, 2.2.2.1) appears reasonable compared to the NERC figure for similar plants throughout North America (see above). In fact, these new machines can well be expected to outperform the fleet of various (mostly older) gas turbines that make up the NERC statistics. Further, since the plant will consist of two parallel gas turbine generating trains, maintenance can be scheduled during those times of year when the full plant output is not required to meet market demand, typical of industry standard maintenance procedures. The applicant's estimate of plant availability, therefore, appears realistic. The stated procedures for assuring design, procurement, and construction of a reliable power plant appear to follow industry norms, and staff believes they are likely to yield an adequately reliable plant.

NOTEWORTHY PROJECT BENEFITS

The applicant proposes to provide peaking power and quick start capability as dispatched by SDG&E during periods of high demand (MMC 2007b, AFC §§ 1.1.1,2.1.15, 2.2.2.1). The fact that the project consists of two combustion turbine generators configured as independent equipment trains provides inherent reliability. A single equipment failure cannot disable more than one train, thus allowing the plant to continue to generate (at reduced output). In light of this and the additional reliability-enhancing features of the project described above, the applicant's prediction of an equivalent availability factor of 92 to 98 percent appears achievable. Staff believes this should provide an adequate level of reliability.

CONCLUSION

MMC predicts an equivalent availability factor of 92 to 98 percent, which staff believes is achievable. Based on a review of the proposal, staff concludes that the plant would be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No conditions of certification are proposed.

PROPOSED CONDITIONS OF CERTIFICATION

No conditions of certification are proposed.

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TRANSMISSION SYSTEM ENGINEERING

Laiping Ng and Mark Hesters

SUMMARY OF CONCLUSIONS

The proposed 93 megawatt (MW) Chula Vista Energy Upgrade Project (CVEUP) outlet transmission lines and terminations are adequate and acceptable and would comply with all applicable laws, ordinances, regulations, and standards (LORS). The power plant interconnection to the grid would require installation of Special Protection Scheme (SPS) and breaker changes within the substations. No additional downstream transmission facilities (other than those proposed by the applicant) that would require review under provisions of the California Environmental Quality Act (CEQA).

- The applicant has chosen to install SPS to reduce CVEUP generation instead of reconductoring the South Bay-Sweetwater and Otay-Otay Tap 69 kilovolt (kV) transmission lines as mitigation of overloads forecasted under contingency conditions. The proposed SPS have been accepted by the California Independent System Operator (California ISO) and San Diego Gas and Electric Company (SDG&E). The installation of SPS would occur within the fence line of existing SDG&E substations.
- The normal and contingency overloads of the 69 kV generation tie-line and the South Bay-Montgomery Tap 69 kV transmission lines would be mitigated through resetting existing relays of the substations to achieve higher continuous line ratings.
- Interconnection of the CVEUP would require the replacement of two 69 kV circuit breakers at the Montgomery Substation. Increases in the fault duty of nine circuit breakers at the South Bay Substation would be addressed in the SDG&E Grid Assessment process.

INTRODUCTION

STAFF ANALYSIS

The Transmission System Engineering (TSE) analysis examines whether or not the facilities associated with the proposed interconnection conform to all LORS required for safe and reliable electric power transmission. Additionally, under the CEQA, the California Energy Commission (Energy Commission) must conduct an environmental review of the whole of the action, "… which may include facilities not licensed by the Energy Commission (Title 14, California Code of Regulations §15378). Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities downstream of the proposed interconnection that are required for interconnection and represent the "whole of the action."

Energy Commission staff relies on the California ISO, the interconnecting authority for the analysis of impacts on the transmission grid as well as the identification and approval of required new or modified facilities downstream from the proposed interconnection required as mitigation measures. The proposed CVEUP would connect to the SDG&E 69 kV transmission network and the California ISO controlled grid.

CALIFORNIA ISO'S ROLE

The California ISO is responsible for ensuring electric system reliability for all participating transmission owners and is also responsible for developing the standards necessary to achieve system reliability. The project power will be dispatched to the California ISO grid via SDG&E's Otay 69 kV Substation. The California ISO oversees the study of the SDG&E transmission system to ensure adequacy of the proposed transmission interconnection. The California ISO will determine the reliability impacts of the proposed transmission modifications on the SDG&E transmission system in accordance with all applicable reliability criteria. According to the California ISO tariffs, the California ISO will determine the "need" for transmission additions or upgrades downstream from the interconnection point to insure reliability of the transmission grid. The California ISO will, therefore, direct and oversee the System Impact Study (SIS) performed by SDG&E. On completion of the Facility Study (FS), the California ISO will issue a final approval/disapproval letter for the interconnection of the proposed CVEUP. The California ISO may provide written and verbal testimony on its findings at the Energy Commission hearings.

SAN DIEGO GAS AND ELECTRIC COMPANY'S ROLE

SDG&E is responsible for ensuring electric system reliability in the SDG&E system for the addition of the proposed transmission modifications and determines both the standards necessary to achieve reliability and whether the proposed transmission modifications conform to those standards. SDG&E analyzes the interconnection of a proposed project under the direction of the California ISO.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

- The North American Electric Reliability Corporation's (NERC) reliability standards for the bulk electric transmission systems of North America provide national policies, standards, principles, and guides to ensure the adequacy and security of the electric transmission system. The NERC planning standards provide for system performance levels for both normal and contingency conditions. While these standards are similar to the NERC/Western Electricity Coordinating Council's (WECC) planning standards, certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards alone for transmission system contingency performance. The NERC's planning standards apply not only to interconnected system operation but to individual service areas as well (NERC 2006).
- The WECC's planning standards are merged with the NERC's reliability standards to provide the system performance standards used to assess the reliability of the interconnected system. These standards require the uninterrupted continuity of service as their first priority, and the preservation of interconnected operation as their second priority. Some aspects of the NERC/WECC standards are more stringent or specific than NERC standards alone. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis of the WECC system is based to a large degree upon Section I.A of the standards, *NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance*

Table, and on Section I.D, *NERC and WECC Standards for Voltage Support and Reactive Power.* These standards require that the results of power flow and stability simulations verify defined performance levels. Performance levels are defined by specifying allowable variations in thermal loading, voltage and frequency, and the loss of load that could occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as the loss of either multiple 500 kV lines along a common right- of-way, and/or the loss of multiple generators). While controlled loss of generation or load or system separation is permitted under certain circumstances, uncontrolled loss is not permitted (WECC 2002).

- California Public Utilities Commission (CPUC) General Order 95 (GO-95*), Rules for Overhead Electric Line Construction,* specifies uniform requirements for the construction of overhead electric lines. Compliance with this order ensures both reliable service and a safe working environment for those working in the construction, maintenance, operation, or use of overhead electric lines, and for the safety of the general public.
- CPUC General Order 128 (GO-128), *Rules for Underground Electric Line Construction,* establishes uniform requirements for the construction of underground electric lines. Compliance with this order also ensures both reliable service and a safe working environment for those working in the construction, maintenance, operation, or use of underground electric lines, and for the safety of the general public.
- National Electric Safety Code 1999 provides electrical, mechanical, civil, and structural requirements for overhead electric line construction and operation.
- California ISO planning standards also provide the standards and guidelines that assure adequacy, security and reliability during the planning process of the California ISO's electric transmission facilities. The California ISO planning standards incorporate both the NERC and WECC planning standards. With regard to power flow and stability simulations, the California ISO's planning standards are similar to those of the NERC and WECC, and to the NERC's planning standards for transmission system contingency performance. However, the California ISO's standards provide additional requirements that are not found in the NERC, WECC, or NERC planning standards. The California ISO standards apply to all participating transmission owners that interconnect to both the California ISO-controlled transmission grid, and to neighboring grids not operated by the California ISO (California ISO 2002a).
- California ISO and Federal Energy Regulatory Commission (FERC) electric tariffs provide guidelines for the construction of all transmission additions and upgrades (projects) within the California ISO-controlled grid. The California ISO also determines the need for a proposed project, its cost responsibility, and provides operational review for all facilities connected to the California ISO grid (California ISO 2003a).

PROJECT DESCRIPTION

The CVEUP would be a simple-cycle power generating facility located in the City of Chula Vista, San Diego County, California. The applicant has proposed to remove an existing 44 MW natural gas fired combustion turbine-generator and install two 47 MW General Electric Energy LM 6000 combustion turbine-generators. The nominal output of the power plant to the transmission grid would be approximately 93 MW. The applicant has proposed to interconnect the CVEUP to the SDG&E 69 kV Otay Substation via the existing generator tie line. The proposed Commercial Operation date of the CVEUP is June of 2009 (MMC 2007b, section 1.1, 2.1.5.1, 2.1.14, Figure 3.2-1). The two combustion turbine generators, each would interconnect to the low side of the three-winding 72/96/120 MVA generator step-up (13.8/69 kV) transformer through a circuit breaker and an intermediate 13.8kV, 3000A bus. The high voltage side of the step-up transformer would be connected to the existing 69 kV generator tie line through an existing 69 kV circuit breaker and a disconnect switch. The existing 1033 ACSR, 1500 foot long generator tie line will interconnect the power plant to the 69 kV Otay Substation. Power would be distributed to the SDG&E grid through the Otay Substation (MMC 2007b**,** section 3.2, Figure 3.2-1, Figure 3.2-2, Appendix 3A, page 3-5).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

For the interconnection of either a proposed generating unit or transmission facility to the grid, the interconnecting utility (SDG&E in this case) and the control area operator (California ISO) are jointly responsible for ensuring the grid's reliability. These entities together determine the project's impact on the transmission system and any needed mitigation measures to ensure system conformance with utility reliability criteria, NERC planning standards, WECC reliability criteria, and California ISO reliability criteria. An SIS and FS are used to determine the impacts of the proposed project on the transmission grid. Staff relies on these studies and any review conducted by the California ISO to determine the project's effect on the transmission grid and to identify necessary downstream facilities or indirect project impacts required to bring the transmission system into compliance with applicable reliability standards.

The SIS and FS analyze the grid both with and without the proposed project, under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds through which grid reliability is determined. The studies must analyze the impact of the project for the proposed first year of operation, and are thus based upon a forecast of loads, generation, and transmission. Load forecasts are developed by the interconnecting utility and the California ISO. Generation and transmission forecasts are established by an interconnection queue. The studies are focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads, or cascading outages), and short circuit duties.

If the studies show that the interconnection of the project could cause the grid to be out of compliance with reliability standards, then the study will identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. When a project connects to the California ISO controlled grid, both the studies and

mitigation alternatives must be reviewed and approved by the California ISO. If the mitigation identified by the California ISO or interconnecting utility includes transmission modifications or additions requiring CEQA review, the Energy Commission must analyze the environmental impacts of these modifications or additions.

CALIFORNIA INDEPENDENT SYSTEM OPERATOR STUDY

The California ISO has performed the SIS and FS and concluded that under forecasted conditions, the SDG&E transmission system is able to accommodate the proposed CVEUP project with modifications within the fence line of SDG&E substations. The California ISO approved the interconnection of the CVEUP project to the California ISO controlled grid (California ISO 2008b).

SCOPE OF SYSTEM IMPACT STUDY

The SIS was performed by the California ISO at the request of the project owner, to identify transmission system impacts caused by the CVEUP on SDG&E's transmission system. The SIS included Power Flow study (Thermal Analysis and Voltage Analysis), Short Circuit study, and Dynamic Stability Analyses (Transient Stability Analysis). The SIS modeled the proposed CVEUP project for a net output of 93 MW. The base cases included all major California ISO transmission expansion projects, different generation and import scenarios in SDG&E area. Generation included planned generating facilities ahead of the CVEUP in the California ISO generation interconnection queue and all regulatory must-take generation units in SDG&E area. Detailed SIS assumptions are described in the SIS. Power Flow studies were conducted both with and without the CVEUP project connection to the SDG&E grid, at the Otay Substation using base cases modeling 2008 and 2010 summer peak conditions. The Power Flow study assessed the project's impact on the thermal loading of the transmission lines and equipment. Dynamic Stability analyses were conducted using the 2008 summer peak base cases to determine whether the project would create instability in the system following certain selected outages. The Short Circuit study was conducted with and without the project to determine if its interconnection could overstress the existing substation facilities (MMC 2007b Appendix 3A).

Power Flow Study Results and Mitigations

The SIS evaluated both 2008 and 2010 summer peak conditions. Only 2010 summer peak study results would be considered in the Power Flow Study since the proposed commercial operation date is June 2009.

The Power Flow Study identified project overload criteria violations under the 2010 summer peak conditions. Pre-project overloads are caused by either existing system conditions or by projects with higher positions in the California ISO's generation interconnection queue. The CVEUP would be responsible to mitigate the post-project overloads. Following are the study results and mitigation measures based on the Power Flow Study (MMC 2007b Appendix 3A, California ISO 2008b, CH2MHill2008d).

Under normal conditions:

The existing generation tie-line would be capable of carrying the full out put of the CVEUP generation. However, the existing TL6929 relays in the Otay Substation would need to be reset to a higher rating (a continuous line rating of 136 MVA) to accommodate the full CVEUP output. Resetting the relays would occur within the fence line of the Otay Substation.

Under contingency conditions:

- South Bay – Montgomery Tap 69 kV line: The line is overloaded under N-1 and N-2 contingency conditions.
  - Mitigation: Reset TL642 relays to achieve a continuous line rating of 200 MVA. This would occur within the fence line of SDG&E substation.
- South Bay – Sweetwater 69 kV Line: This line is overloaded under N-1 and N-2 contingency conditions.

  Mitigation options:
  - Reconductor the approximately 3,800-foot long, single 1750 kcmil underground aluminum cable with bundled 1750 kcmil aluminum underground cable between South Bay and Sweetwater Substations. In addition, two existing wood poles would be replaced with steel poles and replace two 69 kV disconnect switches at the South Bay Substation.
  - Install SPS to monitor the South Bay – Sweetwater line loading conditions and trip CVEUP generation when the line is overloaded. Installation of SPS would occur within the fence line of SDG&E substation.
- Otay – Otay Tap 69 kV line: This line is overloaded under N-1 and N-2 contingency conditions.

  Mitigation options:
  - Reconductor the approximately 5,330-foot long, single overhead 4/0 copper conductor with 636 ACSS conductor between Otay Substation and Otay Tap. The proposed reconductoring would require in replacement of existing 27 wood poles with 23 Class H2 and four anchor-bolted steel poles. Additionally, the circuit breaker TL649, two disconnect switches and 69 kV switch (649-3) would be replaced to accommodate the increase loading of the Otay substation.
  - Install SPS to monitor the Otay – Otay Tap line loading conditions and trip CVEUP generation when the line is overloaded. Installation of SPS would occur within the fence line of SDG&E substation.
- South Bay – Montgomery Tap – Sweetwater and South Bay – Sweetwater 69 kV lines: These lines are overloaded under N-2 contingency conditions.
  - Mitigation: Install SPS at Otay Substation to trip CVEUP generation units when one of the lines is open and the other line loading in excess of 205 MVA. The installation of the SPS would occur within the fence line of the existing substation.

Dynamic Stability Study Results

Dynamic Stability studies for the CVEUP project were conducted using 2008 summer peak base cases to determine if the project would create any adverse impact on the stable operation of the transmission grid in the event of selected N-1 and N-2 outages. The machine dynamics data remained unchanged between 2008 and the 2010 time period, therefore 2008 summer peak study results are acceptable. The Dynamic Stability study results indicate there are no adverse impacts on the stable operation of the transmission system in the event of the selected disturbances, as shown in the SIS for integration of the project (MMC 2007b, Appendix 3A, page 22, CA-ISO 2008b, section 3).

Short Circuit Study Results and Mitigations

Short circuit studies were conducted using 2010 summer peak base cases to determine the degree to which the addition of the CVEUP project could increase fault duties at SDG&E's substations, adjacent utility substations, and other 69 kV and 138 kV busses within the study area. The busses at locations where faults were simulated, the maximum three phase and single line-to-ground fault currents at these busses, both with and without the project, and information on the breaker duties at each location are summarized in Appendix E of the FS. The Short Circuit Study indicates that the addition of the CVEUP would cause fault duty increase in two 69 kV circuit breakers (MG 641 and MG642) at the Montgomery Substation and nine breakers in the South Bay Substation. Interconnection of the CVEUP would require the replacement of two 69 kV circuit breakers at the Montgomery Substation. SDG&E would address the effect on nine circuit breakers in the South Bay Substation through their Grid Assessment process. The remaining breakers of the substations are adequate enough to withstand the post project incremental fault currents caused by the Short Circuit Study (CA-ISO 2008b, SDG&E 2008a).

COMPLIANCE WITH LORS

The SIS and the FS indicate that the project interconnection would comply with all NERC/WECC planning standards and California ISO reliability criteria. The proposed CVEUP would use to the existing 69 kV transmission line (TL6929) as its generation tie-line. The existing relays would be modified to accommodate the full output of the new CVEUP generation units. Proposed modifications to the Otay Substation would be performed by SDG&E. Staff concludes that, with implementation of the proposed conditions of certification, the project will meet the requirements and standards of all applicable LORS.

CONCLUSIONS AND RECOMMENDATIONS

The proposed 93 MW CVEUP outlet transmission lines and terminations are adequate and acceptable and would comply with all applicable LORS. The power plant interconnection to the grid would require installation of SPS and breaker changes within the substations. No additional downstream transmission facilities (other than those proposed by the applicant) that would require review under provisions of the CEQA.

- The applicant has chosen to install SPS to reduce CVEUP generation instead of reconductoring the South Bay-Sweetwater and Otay-Otay Tap 69 kV transmission lines as mitigation of overloads forecasted under contingency conditions. The proposed SPS have been accepted by the California ISO and SDG&E. The installation of SPS would occur within the fence line of existing SDG&E substations.
- The normal and contingency overloads of the 69 kV generation tie-line and the South Bay-Montgomery Tap 69 kV transmission lines would be mitigated through resetting existing relays of the substations to achieve higher continuous line ratings.
- Interconnection of the CVEUP would require the replacement of two 69 kV circuit breakers at the Montgomery Substation. Increases in the fault duty of nine circuit breakers at the South Bay Substation would be addressed in the SDG&E Grid Assessment process.

CONDITIONS OF CERTIFICATION FOR TSE

TSE-1 The project owner shall provide the Compliance Project Manager (CPM) and the Chief Building Official (CBO) with 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 both a description and a 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 (or fewer, if mutually agreed upon by the project owner and the CBO) before the start of construction, the project owner shall submit the schedule, a master drawing list, and a master specifications list to both the CBO and 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 both 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
Grounding system

TSE-2 Before the start of construction, the project owner shall assign to the project an electrical engineer and at least one of each of the following:

1. A civil engineer;

2. A geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering;

3. A design engineer who is either a structural engineer or a civil engineer and fully competent and proficient in the design of power plant structures and equipment supports; or

4. A mechanical engineer (Business and Professions Code Sections 6704 et seq. require state registration to practice as either a civil engineer or a structural engineer in California).

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, or 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 as required by 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 earth work and require changes; if site conditions are

unsafe or do not conform with the predicted conditions used as the basis for design of earth work or foundations.

The electrical engineer shall:

1. Be responsible for the electrical design of the power plant switchyard, outlet, and termination facilities; and

2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or fewer if mutually agreed to by the project owner and the CBO) before 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 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend corrective action (2001 California Building Code, Chapter 1, section 108.4, approval required; Chapter 17, section 1701.3, *Duties and Responsibilities of the Special Inspector;* Appendix Chapter 33, section 3317.7, *Notification of Noncompliance*). The discrepancy documentation shall become a controlled document and shall be submitted to the CBO for review and approval and refer to this condition of certification.

Verification: The project owner shall submit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for the disapproval, along with the revised corrective action required to obtain the CBO's approval.

TSE-4 For the power plant switchyard, outlet line and termination, the project owner shall not begin any construction until plans for that increment of construction 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:

1. Receipt or delay of major electrical equipment;

2. Testing or energization of major electrical equipment; and

3. The number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least 30 days (or fewer if mutually agreed to by the project owner and the CBO) before 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, and outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer verifying compliance with all 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, and the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations, as determined by the CBO.

1. The CVEUP project will be interconnected to SDG&E's Otay Substation via the existing radial 69 kV transmission lines. The existing generator tie line is approximately 1,500 feet long and built with 1033 kcmil ACSR conductors.

2. The interconnection of the CVEUP at the Otay Substation will require reset of the existing relays to achieve a continuous line rating of 136 MVA.

3. The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC) and related industry standards.

4. Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be rated to comply with a short-circuit analysis.

5. 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.

6. Termination facilities shall comply with applicable SDG&E interconnection standards.

7. The project owner shall provide to the CPM:

   i) the final Facility Study, including a description of facility upgrades, operational mitigation measures, and/or special protection system sequencing and timing if applicable;

   ii) the executed project owner and California ISO facility interconnection agreement.

Verification: At least 60 days before the start of construction of transmission facilities (or fewer days if mutually agreed upon by the project owner and CBO), the project owner shall submit to the CBO for approval:

1. Design drawings, specifications, and calculations conforming with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, CA ISO standards, National Electric Code (NEC) and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment;

2. 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"[1] 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 National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC), and related industry standards;

3. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in charge, a route map, and an engineering description of the equipment and configurations covered by requirements **TSE-5** a) through g), above;

4. The final DFS, including a description of facility upgrades, operational mitigation measures, and/or SPS sequencing and timing if applicable, shall be provided concurrently to the CPM; and

5. 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 the facilities described in this condition and request approval to implement such changes.

TSE-6 The project owner shall provide the following notice to the California ISO prior to synchronizing the facility with the California electric transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide the California ISO with a letter stating the proposed date of synchronization; and

2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the California ISO's outage coordination department.

Verification: The project owner shall provide copies of the California ISO letter to the CPM when it is sent to the California ISO one week before initial synchronization with the grid. The project owner shall contact the California ISO's outage coordination

[1] Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.

department (Monday through Friday, between the hours of 7:00 a.m. and 3:30 p.m. at (916) 351-2300) at least one business day prior to synchronizing the facility with the grid for testing. A report of that conversation with the California ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California electric transmission system for the first time.

TSE-7 The project owner shall be responsible for inspection of the transmission facilities during and after project construction, and for any subsequent CPM- and CBO-approved changes, to ensure conformance with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC) and related industry standards. In cases of non-conformance, the project owner shall inform the CPM and CBO, in writing and within 10 days of the discovery of such non-conformance, and the actions that will be taken to correct it.

Verification: Within 60 days after the first synchronization of the project, the project owner shall transmit to the CPM and CBO:

1. "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 charge. A statement verifying conformity with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC) and related industry standards;

2. An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in charge or an acceptable alternative verification. "As built" drawings of the electrical, 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

3. 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.

REFERENCES

California ISO (California Independent System Operator) 1998a – California ISO tariff scheduling protocol posted April 1998, Amendments 1,4,5,6, and 7 incorporated.

California ISO 1998b – California ISO dispatch protocol posted April 1998.

California ISO 2002a – California ISO Grid Planning Standards, February 2002.

California ISO 2003a - California ISO, FERC Electric Tariff, First Replacement Vol. No. 1, March 11, 2003.

California ISO 2007a – California Independent System Operator/ G. DeShazo (tn 39486) Re-affirmation of Final Interconnection Approval. 01/23/2007 rec'd 03/06/2007.

California ISO 2008a – CA-ISO Interconnection Facilities Study with Appendices A-E for the Chula Vista Energy Upgrade Project (07-AFC-4). February 25, 2008.

California ISO 2008b – Final CA-ISO Interconnection Facilities Study with Appendices A-E for the Chula Vista Energy Upgrade Project (07-AFC-4). March 31, 2008.

CH2MHill 2008d – MMC Comment Letter on the CA-ISO Interconnection Facilities Study for the Chula Vista Energy Upgrade Project (07-AFC-4). March 27, 2008.

MMC 2007b – Application for Certification for the Chula Vista Energy Upgrade Project, Volumes 1 and 2. Submitted to the California Energy Commission, August 10, 2007.

MMC 2007c – Data Adequacy Supplement for the Chula Vista Energy Upgrade Project, Application for Certification. September 25, 2007.

NERC (North American Electric Reliability Corporation) 2006 – Reliability Standards for the Bulk Electric Systems of North America, May 2 2006.

San Diego Gas and Electric Company (SDG&E) 2008a – Email from SDG&E Engineer Christopher Nicolai to Energy Commission staff on MMC Overdutied Breakers at South Bay for the Chula Vista Energy Upgrade Project (07-AFC-4). April 1, 2008.

WECC (Western Electricity Coordinating Council) 2002 – NERC/WECC Planning Standards, August 2002.

DEFINITION OF TERMS

AAC	All aluminum conductor.
ACSR	Aluminum conductor steel-reinforced.
ACSS	Aluminum conductor steel-supported.
Ampacity	Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.
Ampere	The unit of current flowing in a conductor.
Bundled	Two wires, 18 inches apart.
Bus	Conductors that serve as a common connection for two or more circuits.
Conductor	The part of the transmission line (the wire) that carries the current.

Congestion management

A scheduling protocol, which provides that dispatched generation and transmission loading (imports) will not violate criteria.

Double contingency condition
: Also known as emergency or N-2 condition, a forced outage of two system elements usually (but not exclusively) caused by one single event. Examples of an N-2 contingency include loss of two transmission circuits on a single tower line or loss of two elements connected by a common circuit breaker due to the failure of that common breaker.

Emergency overload
: See single contingency condition. This is also called an N-1 condition.

kcmil
: One-thousand circular mil. A unit of the conductor's cross-sectional area divided by 1,273 to obtain the area in square inches.

Kilovolt (kV)
: A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground.

Loop
: An electrical cul-de-sac. A transmission configuration that interrupts an existing circuit, diverts it to another connection, and returns it back to the interrupted circuit, thus forming a loop or cul-de-sac.

Megavar
: One megavolt ampere reactive.

Megavars
: Mega-volt-ampere-reactive. One million volt-ampere-reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.

Megavolt ampere (MVA)
: A unit of apparent power equal to the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.

Megawatt (MW)
: A unit of power equivalent to 1,341 horsepower.

N-0 condition
: See normal operation/normal overload.

Normal operation/normal overload (N-0)
: When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.

N-1 condition
: See single–contingency condition.

N-2 condition
: See double–contingency condition.

Outlet
: Transmission facilities (e.g., circuit, transformer, circuit breaker) linking generation facilities to the main grid.

Power flow analysis
: A power flow analysis is a forward-looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers, and other equipment and system voltage levels.

Reactive power
: Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system. An adequate

supply of reactive power is required to maintain voltage levels in the system.

Remedial action scheme (RAS)
: A remedial action scheme is an automatic control provision, which, for instance, will trip a selected generating unit upon a circuit overload.

SF6
: Sulfur hexafluoride is an insulating medium.

Single–contingency condition
: Also known as emergency or N-1 condition, occurs when one major transmission element (e.g., circuit, transformer, circuit breaker) or one generator is out of service.

Solid dielectric cable
: Copper or aluminum conductors that are insulated by solid polyethylene-type insulation and covered by a metallic shield and outer polyethylene jacket.

Special protection scheme/system (SPS)
: An SPS detects a transmission outage (either a single or credible multiple contingency) or an overloaded transmission facility and then trips or runs back generation output to avoid potential overloaded facilities or other criteria violations.

Switchyard
: A power plant switchyard is an integral part of a power plant and is used as an outlet for one or more electric generators.

Thermal rating
: See ampacity.

TSE
: Transmission System Engineering.

Tap
: A transmission configuration creating an interconnection through a sort single circuit to a small- or medium-sized load or generator. The new single circuit line is inserted into an existing circuit by using breakers at existing terminals of the circuit, rather than installing breakers at the interconnection in a new switchyard.

Undercrossing
: A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.

Underbuild
: A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.

ALTERNATIVES

Christopher Meyer

SUMMARY OF CONCLUSIONS

Although the Public Resources Code, Warren-Alquist Act § 25540.6.(b) states, “The commission may also accept an application for a noncogeneration project at an existing industrial site without requiring a discussion of site alternatives if the commission finds that the project has a strong relationship to the existing industrial site and that it is therefore reasonable not to analyze alternative sites for the project”, in the analysis of the proposed Chula Vista Energy Upgrade Project, staff determined that the concern of the local residents and the City of Chula Vista warranted an evaluation of alternative sites. The location of the proposed Chula Vista Energy Upgrade Project is on the site of the existing Chula Vista Power Plant and the applicant proposes the salvage and removal of the existing 44.5-MW gas combustion turbines prior to the start of operation of the proposed project.

The applicant provided an analysis of two alternative sites as possible locations for the proposed project. Staff determined these alternative sites would not reduce or eliminate environmental effects of the proposed project, as the proposed site would be more advantageous over the alternative sites because infrastructure such as the transmission line, water supply system, fire loop, access roads and natural gas interconnections are currently located on the Chula Vista Power Plant site.

Alternative generation technologies (i.e. solar, wind, and biomass) were analyzed as possible alternatives to the project. Staff determined that none of the technologies were feasible. Solar and wind were eliminated for consideration, as significantly more land than is available for the project is needed to implement solar and wind. Current biomass generation is not a viable option because of significant environmental impacts and biomass fuels are not locally available in sufficient quantities to make it a practical alternative.

INTRODUCTION

This section considers potential alternatives to the construction and operation of the proposed Chula Vista Energy Upgrade Project (CVEUP). The purpose of this alternatives analysis is to provide an analysis of a reasonable range of feasible alternative sites which could substantially 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). This section identifies potentially significant impacts of the proposed project and analyzes different technologies and alternative sites that may reduce or avoid significant impacts. Staff has also analyzed the impacts that may be created by locating the project at alternative sites.

The Energy Commission does not have the authority to approve an alternative or require MMC Energy Inc. (MMC) to move the proposed project to another location, even if it identifies an alternative site that meets the project objectives and avoids or substantially lessens one or more of any significant effects of the project. MMC has executed a contract with San Diego Gas and Electric Company (SDG&E) to deliver 100

MW of peaking capacity to SDG&E's Otay Substation. In order to meet that contract, the applicant has stated that Energy Commission certification would be needed by October of 2008 (MMC 2007b, p. 1-9). Implementation of an alternative site would require that the applicant submit a new Application for Certification (AFC), including revised engineering and environmental analysis; this more rigorous AFC-level analysis of any of the alternative sites could reveal environmental impacts, non-conformity with laws, ordinances, regulations, and standards; or potential mitigation requirements that were not identified during the more general alternatives analysis presented herein.

Any alternative presented herein, including the no project alternative, does not include the demolition and removal of the existing Chula Vista Power Plant. The existing facility was permitted by the City of Chula Vista in 2000 under a Special Use Permit (SUP) and is not under the jurisdiction of the Energy Commission. The proposed CVEUP, if approved, would be under the jurisdiction of the Energy Commission and the removal of the existing 44.5-MW Chula Vista Power Plant would be required under the Energy Commission Decision.

CALIFORNIA ENVIRONMENTAL QUALITY ACT CRITERIA

The "Guidelines for Implementation of the California Environmental Quality Act," Title 14, California Code of Regulation, Section 15126.6(a), provides direction by requiring 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. CEQA states that an environmental document does not have to consider an alternative where the effect cannot be reasonably ascertained and whose implementation is remote and speculative (Cal. Code Regs., tit. 14, §15126.6(f)(3)).

PROJECT DESCRIPTION AND SETTING

The proposed CVEUP would be a nominal 100-megawatt (MW) peaking facility which has been proposed to provide local reliability for the area in addition to voltage support to the regional 69 kilovolt (kV) transmission system during both peak demand hours and when other generation is not available. As described in the AFC, the project's quick start capability is designed to respond to unexpected changes in regional demands from higher-than-expected summer temperatures or other facilities tripping off line. Construction is planned to begin in the fall of 2008 and commercial operation planned by the fall of 2009. Primary equipment for the generating facility would include two General Electric (GE) Energy LM6000 natural gas-fired turbine-generators and associated equipment. The project site is located on a 3.8-acre parcel in the City of Chula Vista's Main Street Industrial Corridor and within the City's Light Industrial zoning district. The project site address is 3497 Main Street, Chula Vista, California. The closest noise receptors are located approximately 350 feet west of the site and Otay Elementary School, the closest public school, is located approximately 1300 feet to the north of the site.

This site is currently occupied by MMC's Chula Vista Power Plant, a 44.5-MW simple-cycle, natural gas-fired peaking power plant using Pratt & Whitney FT4 Twinpac™ technology. As part of the CVEUP, the existing power plant and air pollution control equipment would be removed from the southern portion of the project parcel. The proposed plant, using GE Energy LM6000 technology, would be constructed on vacant land in the northern portion of the parcel. Some of the facilities that serve the existing plant would be reused for the new power plant. These facilities include the existing transmission connection to the SDG&E Otay Substation; natural gas, water, and sanitary sewer pipelines; fencing and sound attenuation wall; utility/control building; stormwater runoff retention basin; and the 12,000-gallon aqueous ammonia storage tank and tank refilling station. If the new plant is constructed, the existing plant would be dismantled and removed. The existing power equipment would be sold for salvage and the foundations, piping, and other equipment associated with the existing plant will be removed. The CVEUP would replace the existing older and less efficient technology with newer, more efficient, and cleaner technology.

Because the proposed CVEUP would reuse the existing electrical transmission, natural gas, water service, and sanitary sewer pipelines, the proposed project would have no offsite linear facilities. All connections of the CVEUP to linear facilities would be made on the existing site using the existing facilities.

DETERMINING THE SCOPE OF THE ALTERNATIVES ANALYSIS

The purpose of staff's alternatives analysis is to determine the potential significant impacts of the CVEUP and then focus on alternatives that are capable of reducing or avoiding these impacts.

To prepare this alternative analysis, the staff used the methodology summarized below:

- Describe the basic objectives of the project.
- Identify any potential significant environmental impacts of the project.
- Identify and evaluate alternative locations or sites to determine whether the environmental impacts of the alternatives are the same, better, or worse than the proposed project.
- Identify and evaluate technology alternatives to the project which would mitigate impacts.
- Evaluate the impacts of not constructing the project to determine whether the "no project" alternative is superior to the project as proposed.

In considering site alternatives, staff determined a reasonable geographical area. Since alternatives must consider the underlying objectives of the proposed project, staff confined the geographic area for site alternatives to southern San Diego County. These location alternatives are generally consistent with CVEUP's objectives and siting criteria: proximity to the SDG&E Otay Substation; location in an area appropriate for industrial development and compatible with city general plans and zoning ordinances;

proximity to water service connections and SDG&E's transmission line and gas pipeline; and ability to have no significant impact on the environment with implementation of reasonable mitigation measures.

Alternative generation technologies, as discussed in this analysis, include both methods to reduce the demand for electricity and also alternative methods to generate electricity.

There may also be specific technologies that could be applied to the CVEUP that would reduce impacts of the project. For example, staff has determined that the use of oxidizing soot filters is a viable emissions control technology for all heavy diesel-powered construction equipment that does not use an ARB-certified low emission diesel engine. The in-depth discussion of such technology alternatives is included in the technical area chapters of the Preliminary Staff Assessment (PSA), where appropriate.

BASIC OBJECTIVES OF THE PROJECT

After studying MMC Energy's AFC, Energy Commission staff has determined the CVEUP's objectives to be:

- To construct and operate a cost-effective and efficient nominal 100 MW, natural-gas-fired, peaking load generating facility with quick-start capability;
- To minimize or eliminate the length of any project linears, including gas and water supply lines, discharge lines, and transmission interconnections;
- To deliver electricity to the SDG&E Otay Substation at 69 kV without the need for transmission system reconductoring; and
- To provide voltage support to the local 69 kV transmission system.

POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE PROJECT

Although the Energy Commission staff has not identified any significant environmental impacts related to the construction of the proposed CVEUP, during the November 29, 2007 Informational Hearing and the January 17, 2008 Data Response and Issues Resolution Workshop several members of the public, the City of Chula Vista, and project interveners requested the analysis of alternative sites. In addition, staff has determined that siting of the proposed CVEUP is inconsistent with the Chula Vista General Plan and would require a Conditional Use Permit (CUP) if it were being licensed under the city's jurisdiction.

SITE ALTERNATIVES TO THE PROJECT

This section evaluates the alternative sites identified by MMC Energy and other site possibilities identified by staff or the public.

Staff considered the following criteria in identifying potential alternative sites:

1. void or substantially lessen one or more of the potential significant effects of the project;

2. Satisfy the following criteria:
   a. Site suitability. Approximately 4+ acres are required for the site. The shape of the site also affects its usability;

   b. Availability of infrastructure. The site should be within a reasonable distance of the electric transmission system, natural gas supply, and water supply;

   c. Not located adjacent to moderate or high density residential areas or to sensitive receptors (such as schools and hospitals) or to recreation area;

   d. Compliance with general plan designation and zoning district; and

   e. Availability of the site.

Staff began by identifying an initial study region. The region consisted of the geographic area near the SDG&E Otay Substation. Staff chose this region to determine whether alternative sites (in addition to those identified by MMC Energy) were close enough to SDG&E's Otay Substation to provide power to that substation, similar to the proposed project. Staff also expanded the study region to the greater southern San Diego County area, particularly in response to the concerns of southwest Chula Vista citizens regarding the potential impacts to sensitive receptors in the proposed project area and the City of Chula Vista's revised General Plan. The Energy Commission's analysis of local system effects of the CVEUP indicates that this project would serve load demands in the cities of Chula Vista and San Diego. Although a similar project connecting to the South Bay Substation would provide similar reliability benefits to the local area, it would be incompatible with the City of Chula Vista's redevelopment goals for the area. Therefore, staff focused its assessment on other alternative sites in the City of Chula Vista region.

To narrow the search, staff identified possible alternative sites that had been proposed in connection with other power plants applying for Energy Commission certification. Staff visited these sites to confirm their suitability and continued availability. Staff also did a drive-by search, looking for sites for lease or sale (both vacant parcels and those with buildings). Suggestions by the public for alternative sites were also investigated.

Staff found that potential sites that could meet staff's criteria are rare. Much of the land in the study area has been developed or is in the process of being developed for

residential or commercial/light industrial use or is of significantly higher environmental value. Plans, policies, and ordinances of many local governments in the area either prohibit heavy industry (such as a power plant), discourage new heavy industrial facilities in areas currently devoted to heavy industry, or discourage expansion of heavy industry into areas where it is not currently the predominant land use.

SITES INITIALLY IDENTIFIED FOR FURTHER EVALUATION

Staff examined the two site location alternatives proposed in the CVEUP AFC: MMC Energy Alternative Sites 1 and 2 **(**CVEUP 2007, Figure 6.3-1). The alternative sites are located in the general area of the proposed CVEUP site and share some common attributes. Two additional sites in the City of Chula Vista (Staff Alternative Sites B and C) and one site outside the city boundaries, but still within San Diego County (Staff Alternative Site A) were identified.

Sites not Meeting Screening Criteria

A number of potential sites were investigated but rejected for a variety of reasons. These sites are as follows:

Staff considered the vacant site adjacent to the existing Wildflower Energy Larkspur Energy Facility (Staff Alt. A). The site is located on Otay Mesa Road near the intersection of Harvest Road and is currently covered by undisturbed native habitat. The potential for impacts to the Quino checkerspot butterfly and Otay tarplant habitat is high in this area and the availability of suitable habitat compensation lands is limited. Although the closest residence is over 2,000 feet from the site and no sensitive receptors are in the area, a transmission line of over 7 miles would be necessary to provide the objective of providing peaking power to the area supported by the Otay Substation. The property is not currently available and may be developed as an extension of the existing Larkpur Energy Facility. Staff has eliminated the site for future consideration because of the lack of site availability and the failure to meet the project objective of supplying power to the Otay Substation without the construction of a new 7-mile transmission line.

Staff investigated the possibility of sites at the current South Bay Power Plant or within an undeveloped section of the SDG&E South Bay Substation (Staff Alt. B). Staff was unable to identify a portion of the South Bay Power Plant or substation that would support a peaker facility and be compatible with the Chula Vista Redevelopment Agency plans to develop recreational facilities in the area. Staff Alt. B was eliminated from further consideration because of considerable concern from the public and the City of Chula Vista over the redevelopment plans for the area.

Sites Meeting Screening Criteria

A discussion of those sites which generally meet the screening criteria is provided below. These sites are identified in **Alternatives Figure 1**. The Alternative Sites include the two sites identified in the CVEUP AFC. An additional site identified by Staff is also discussed below.

MMC Alternative Site 1: 4Th Avenue and Main Street Intersection

MMC Alternative Site 1 (MMC Alt. #1) is located approximately 0.5 miles west of the CVEUP site near the intersection of Main Street and 4th Avenue. This property is currently used for strawberry farming and is approximately 3.87 acres in size. The property is zoned limited industrial, and is located near both a gas line and water line that run along Main Street. This site would require construction of a new switch yard and a 3160-foot transmission line to connect to the Otay Substation. Installation of a short pipeline would be required in order to connect with SDG&E's gas pipeline in Main Street. Pipelines would also need to be installed in order to connect with the existing potable water and sewer adjacent to the site. The closest residential noise receptors are located approximately 300 feet from the site and a school is located approximately 1,000 feet east of the site.

As compared to the proposed site, MMC Alt. #1 would require a new transmission line connection to SDG&E's Otay Substation and the line would need to be underground to be compatible with the Chula Vista Redevelopment Agency plan for the Main Street corridor. Although the natural gas and water service pipelines are close to MMC Alt. #1, temporary traffic impacts and new trenching activities would be required for the short tie-ins to these lines. Although temporary, the construction of the linear facilities for this alternative would cause local traffic disruptions, leading to a greater traffic and transportation impact than the proposed CVEUP. The closest noise receptors are approximately 50 feet closer at this site as compared to the proposed site. The distance to public schools would be about approximately 300 feet closer than the proposed site. In addition, 4th Avenue and Main Street are considered Primary Gateways in the City of Chula Vista General Plan (COCV 2007a, Chapter 5, p. LUT-22), increasing the visual sensitivity of this location. The City of Chula Vista General Plan defines Primary Gateways as an entry into an important district of the City that "…*should appear visually inviting, provide adequate direction to key community places of interest, and have high quality architectural design"* (COCV 2007a). The size of the LM6000 turbines, and its associated equipment, would have a greater visual resources impact at MMC Alt. #1 than the proposed CVEUP due to the proximity to Main Street and 4th Avenue gateways. The location of MMC Alt. #1 on undeveloped native soil increases the potential for impacts to both surface and buried cultural resources as compared to the construction of the proposed CVEUP on previously disturbed fill, thereby avoiding impacts to surface or buried cultural resources. In addition, the development of MMC Alt. #1 from farming to power generation could require additional mitigation for impacts to any adjacent biological resources. Although biological surveys have not been conducted at the alternative sites, impacts to biological resources are generally greater from the development of farmed/undeveloped areas than the repowering or reuse of an existing power plant site. It is unknown if site control is possible at MMC Alt. #1.

MMC Alternative Site 2: Faivre Street and Broadway

MMC Alternative Site 2 (MMC Alt. #2) is located approximately 1 mile west of the CVEUP site near the intersection of Faivre Street and Broadway. The approximately 2.57 acre property is zoned limited industrial and is currently undeveloped. Construction of a new switch yard and a 6,336-foot transmission line would be necessary in order to

connect to the existing Otay Substation. The closest noise receptors are located approximately 300 feet from the site and a school is located approximately 2,200 feet northeast of the site.

As compared to the proposed site, MMC Alt. #2 would require a new transmission line connection to SDG&E's Otay Substation and the line would need to be underground to be compatible with the Chula Vista Redevelopment Agency plan for the Main Street corridor. Although the natural gas and water service pipelines are close to MMC Alt. #2, temporary traffic impacts and new trenching activities would be required for the short tie-ins to these lines. Although temporary, the construction of the linear facilities for this alternative would cause local traffic disruptions, leading to a greater traffic and transportation impact than the proposed CVEUP. The size of the LM6000 turbines, and its associated equipment, would have a greater visual resources impact at MMC Alt. #2 than the proposed CVEUP due to the proximity to Broadway. The closest noise receptors are approximately 50 feet closer at this site as compared to the proposed site. The distance to public schools would be slightly closer at about 1,000 feet. The location of MMC Alt. #2 on undeveloped native soil increases the potential for impacts to both surface and buried cultural resources as compared to the construction of the proposed CVEUP on previously disturbed fill, thereby avoiding impacts to surface or buried cultural resources. In addition, the development of MMC Alt. #2 from undeveloped land to power generation could require additional mitigation for impacts to any on-site or adjacent biological resources. Although biological surveys have not been conducted at the alternative sites, impacts to biological resources are generally greater from the development of farmed/undeveloped areas than the repowering or reuse of an existing power plant site. It is unknown if site control is possible at MMC Alt. #2.

Staff Alternative Site C: Otay Landfill

Staff Alternative Site C (Staff Alt. C) is located at 1700 Maxwell Road in the City of Chula Vista. Staff Alt. C, owned by the Allied Waste Company, is a landfill facility which currently includes two 3.4-MW methane-burning power plants owned and operated by Covanta Energy. Covanta Energy leases several acres of land from Allied Waste Company for the methane-burning internal combustion engines and owns the gas rights under the landfill. Sufficient land is available for development adjacent to one of the existing power plants to site two LM6000 gas combustion turbines and the associated equipment. The Otay Landfill is currently designated as both Open Space and General Industrial, with the existing site within the General Industrial Area. Staff Alt. C would not require a Conditional Use Permit if under the jurisdiction of the City of Chula Vista. The Otay Substation is located approximately 3 miles from the site. One possible electrical transmission interconnection route to the substation would be overhead for approximately one mile before going underground to be compatible with the Chula Vista Redevelopment Agency plan for the Main Street corridor. Staff Alt. C would require construction of a 0.45 mile gas pipeline and connection to the potable water pipeline approximately 0.2 miles south of the site. The site is located adjacent to auto wrecking yards and is about 2,000 feet from the nearest residence. The closest school is located approximately one mile from Staff Alt. C.

Staff Alt. C would require the construction of an approximately 3-mile long transmission line, possibly including underground construction in Main Street, compared to the existing transmission line for the proposed site requiring no new construction. A new gas line would be needed as well. Although temporary, the construction of the linear facilities for this alternative would cause local traffic disruptions, leading to a greater traffic and transportation impact than the proposed CVEUP. Distances to sensitive receptors and schools would be much greater than in the proposed project, reducing noise impacts and land use concerns over the proposed CVEUP. Given its industrial setting, significant visual impacts are not expected. It is unknown if Staff Alt. C is available for development.

ALTERNATIVES Table 1 compares the approximate lengths of linears (transmission line, gas pipeline, water and sewer lines) required for the proposed and the three alternative sites retained for consideration. The distances to sensitive receptors and schools are also shown.

ALTERNATIVES Table 2 shows whether impacts of the three alternative sites are less than, similar to, or greater than for the CVEUP site.

ALTERNATIVES Table 1
Comparison of Approximate Length of Linears/Distance to Receptors (feet)

	CVEUP Site	MMC Alternative Site 1	MMC Alternative Site 2	Staff Alternative Site C
Transmission Line Length	On-site	3160	6336	16,000
Gas Pipeline Length	On-site	Adjacent	4,500	2,000
Water/Sewer Connections	On-site	Adjacent	Adjacent	900
Distance to Sensitive Receptors	350	300	300	2,500
Distance to Schools	1,300	1,000	2,200	5,200

ALTERNATIVES Table 2
Comparison of Impacts of Alternatives to the Proposed CVEUP*

*Shaded cells identify impacts greater or less than the proposed project

Issue Area	MMC Alternative Site 1 – Main Street & 4th Avenue	MMC Alternative Site 2 – Faivre Street & Broadway	Staff Alternative Site D – Otay Landfill
Environmental Assessment			
Air Quality	Similar to proposed site	Similar to proposed site	Similar to proposed site
Biological Resources	Greater than proposed site	Greater than proposed site	Greater than proposed site due to linear facilities
Cultural Resources	Greater than proposed site	Greater than proposed site	Greater than proposed site due to linear facilities
Hazardous Materials	Similar to proposed site	Similar to proposed site	Similar to proposed site
Land Use	Less than proposed site although a Conditional Use Permit would apply	Less than proposed site although a Conditional Use Permit would apply	Less than proposed site
Noise and Vibration	Less than proposed site	Less than proposed site	Less than proposed site
Public Health	Similar to proposed site	Similar to proposed site	Similar to proposed site
Socio-economic Resources	Similar to proposed site	Similar to proposed site	Less than proposed site
Soil and Water Resources	Similar to proposed site	Similar to proposed site	Similar to proposed site
Traffic and Transportation	Similar to proposed site	Similar to proposed site	Greater than proposed site due to linear facilities
Visual Resources	Greater than proposed site	Greater than proposed site	Similar to proposed site
Waste Management	Similar to proposed site	Similar to proposed site	Similar to proposed site
Worker Safety	Similar to proposed site	Similar to proposed site	Similar to proposed site
Engineering Assessment			
Geology, Mineral Resources, and Paleontology	Similar to proposed site	Similar to proposed site	Similar to proposed site
Transmission System Engineering	Similar to proposed site	Similar to proposed site	Similar to proposed site

GENERATION TECHNOLOGY ALTERNATIVES

CONSERVATION AND DEMAND SIDE MANAGEMENT

One alternative to meeting California's electricity demand with new generation is to reduce that demand for electricity. Such "demand side" measures include programs that increase energy efficiency, reduce electricity use, or shift electricity use away from "peak" hours of demand.

In California there is a considerable array of demand side programs. At the federal level, the Department of Energy adopts national standards for appliance efficiency and building standards to reduce the use of energy in federal buildings and at military bases. At the state level, the Energy Commission adopts comprehensive energy efficiency standards for most buildings, appliance standards for specific items not subject to federal appliance standards, and load management standards. The Energy Commission also provides grants for energy efficiency development through the Public Interest Energy Research (PIER) program.

The California Public Utilities Commission, along with the Energy Commission, oversees investor-owned utility demand side management programs financed by the utilities and its ratepayers. At the local level, many municipal utilities administer demand side management and energy conservation programs. These include subsidies for the replacement of older appliances through rebates, building weatherization programs, and peak load management programs. In addition, several local governments have adopted building standards which exceed the state standards for building efficiency, or have by ordinance set retrofit energy efficiency requirements for older buildings. New buildings may combine the need for heat and power through a single fuel source or a common source may supply heating and/or heating and cooling to a number of adjacent buildings, increasing overall efficiency.

Even with this great variety of federal, state, and local demand side management programs, the state's electricity use is still increasing as a result of population growth and business expansion. Current demand side programs are not sufficient to satisfy future electricity needs, nor is it likely that even much more aggressive demand side programs could accomplish this at the economic and population growth rates of the last ten years.

Therefore, although it is likely that federal, state, and local demand side programs will receive even greater emphasis in the future, both new generation and new transmission facilities will be needed in the immediate future and beyond in order to maintain adequate supplies.

RENEWABLE RESOURCES

The CVEUP was selected by SDG&E through its Request for Offers (MMC 2007b, p.1-1) indicating that additional peak electrical generation capacity is needed in the project area. A separate solicitation process is conducted for SDG&E's procurement of renewable resources. SDG&E currently obtains approximately 6 percent of its electricity

from resources eligible under California's Renewable Portfolio Standard (RPS) Program. SDG&E is planning to connect to future renewable energy sources in the Imperial Valley through the Sunrise Powerlink Project, a transmission line project currently under review with the California Public Utilities Commission.

Staff compared various alternative technologies with the proposed project, scaled to meet the project's objectives. Technologies examined were those principal electricity generation technologies which do not burn fossil fuels such as natural gas: solar, wind, and biomass. There are no geothermal resources in the project vicinity, making this technology an infeasible alternative to the CVEUP. Hydroelectric power also does not require burning fossil fuels. In addition to the lack of water sources for hydroelectric power in the project area, this power source can cause significant environmental impacts primarily due to the inundation of many acres of potentially valuable habitat and the interference with fish movements during their life cycle. It is unlikely that new hydropower facilities could be developed and permitted in California within the next several years.

Both solar and wind generation can be credited with an absence or reduction in air pollutant emissions and need for related controls, and visible plumes. In the case of biomass, however, emissions can be substantially greater. Solar and wind resources require large land areas in order to generate 100 MW of electricity. Specifically, central receiver solar thermal projects require approximately 5 acres per MW; 100 MW would require approximately 500 acres, or 50 to 100 times the amount of land area taken by the proposed CVEUP facility. Parabolic trough solar thermal technology requires similar acreage per MW. Photovoltaic (PV) arrays mounted on buildings generally require about 4 acres per MW. To generate 100 MW using PV panels, about 400 acres would be needed. Wind generation "farms" generally require about 4.5 acres per MW; about 450 acres would be needed to generate 100 MW. It is unlikely that this amount of acreage, and specifically acreage that offers the specific needs of these renewable resources, would be available in the project area. The need for extensive acreage would also add to the complexities of local discretionary actions for land use modifications.

While there would not be visible plumes, other visual impacts of the large solar arrays and windfarm generators must be considered in an area that has many scenic views associated with the San Diego area. SDG&E is currently pursuing biomass generation, particularly at landfills in the region. While these biomass facilities usually use wood chips or other sources from agricultural operations, several companies are developing technologies that would focus on "gasification combustion" to meet the low emission standards mandated by the state. However, traditional biomass plants are typically sized to generate less than 20 megawatts, which is less than the capacity of the 100-MW CVEUP. In order to generate 100 MW, five 20 MW biomass facilities would be required. A traditional biomass facility would require significantly more land than needed for the CVEUP and several hundred acres could be required for the feedstock. If new biomass technology is developed in the near future, increased energy production could come from the Otay Landfill and other landfills in the area, limiting the necessary power from base-load power plants. Nonetheless, biomass facilities are not designed to operate as quick-start peaking facilities and would not meet the objectives of the proposed project.

Looking outside the San Diego area, the development uncertainties and the potential for impacts at remote resource areas are significant constraints. Furthermore, because alternative generation technologies may not be available on demand, they do not fulfill a basic objective of this plant: to provide quick start peaking capability to respond to unexpected changes in regional demands. Consequently, staff does not believe that geothermal, hydroelectric, solar, wind or biomass technologies present feasible alternatives to the proposed project.

THE "NO PROJECT" ALTERNATIVE

The "no project" alternative under CEQA assumes that the project is not constructed. 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)). CEQA Guidelines and Energy Commission regulations require consideration of the "no project" alternative. The no-action alternative provides a baseline against which the effects of the proposed action may be compared. In short, the site-specific and direct impacts associated with the power plant would not occur at this site if the project does not go forward.

If the "no project" alternative were selected, the construction and operational impacts of the CVEUP would not occur. Demolition of the existing Chula Vista Power Plant would not occur nor would grading of site and installation of new foundations, piping and utility connections be required. MMC Energy, Inc. would continue to operate the existing Chula Vista Power Plant as a peaking power plant under the Special Use Permit issued by the City of Chula Vista in 2000. The existing Chula Vista Power Plant is not under the jurisdiction of the California Energy Commission and the operation of this facility would not be monitored nor would the permit conditions be enforced by the Energy Commission's specialized Compliance Unit under California Code Regulations, Title 20, §1770.

In the absence of the CVEUP, however, MMC Energy, Inc. or another power company would likely propose that other power plants be constructed in the project area to serve the demand that could be met with the CVEUP. These plants could consume more fuel and emit more air pollutants per kilowatt-hour generated than the CVEUP. In the near term, the more likely result is that existing plants, such as the Chula Vista Power Plant and the South Bay Power Plant, many of which produce higher level of pollutants, could operate more. The existing South Bay Power Plant is an older base-load facility that is now being run as a peaker. The technology and design of the proposed CVEUP is considerably more efficient as a peaking power facility than the South Bay Power Plant, which was designed to operate continuously as a base-load facility. The highest levels of air pollution occur during start-ups, further outlining the inefficiency of using South Bay, with its older air pollution control technology, as a peaker when the proposed project is designed as a cleaner, quick-start peaker facility.

If the project is not built, the region will not benefit from the local, relatively clean and efficient source of 100 MW (a net increase of approximately 55 MW with the removal of the existing 44.5-MW Chula Vista Power Plant) of new peaking generation that this facility would provide. A primary benefit of the CVEUP is that it would serve load demands of the cities of Chula Vista and San Diego. Peaking power needs in the City of Chula Vista are currently met by power from the older South Bay Power Plant, as well as imported power via the Otay Mesa, Montgomery, and South Bay substations. The additional peaking power the proposed project would provide would be an integral step in removing the Reliability Must Run status from the South Bay Power Plant and allowing the removal of this older, inefficient facility. It is thus difficult to conclude that "no project" would or would not have serious, long-term consequences on air quality and the cost or reliability of electricity in the region.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff has received comments from the City of Chula Vista regarding alternatives to the CVEUP. On March 28, 2007, the city rejected MMC's application for the Chula Vista Energy Efficiency Upgrade Project and MMC subsequently notified the city that they would be filing an AFC with the Energy Commission (the CVEUP). The city has stated that they suggested alternative sites and incentives to MMC to facilitate the relocation of the power plant to an area away from the Main Street Redevelopment Area (COCV ROC 01/02/08). In addition, the city requested that Energy Commission staff look into possible sites in either the South Bay Power Plant area or in eastern Chula Vista (COCV ROC 01/02/08).

The primary issue with the proposed location of the CVEUP is the concern raised by the local residents over health and safety concerns. Members of the public raised several issues related to both the operation of the existing Chula Vista Power Plant and the proposed CVEUP. The comments were centered on air quality, noise, and health and safety concerns related to the transportation, storage, and use of ammonia near residences and local schools. To address these concerns, staff has analyzed alternative sites away from residential areas and schools, as well as directly addressing the public concerns on ammonia in the **Hazardous Materials** section of this PSA.

CONCLUSIONS AND RECOMMENDATION

As determined by Energy Commission staff in the **Land Use** section of this PSA, the CVEUP as proposed is inconsistent the City of Chula Vista's General Plan. However, staff believes that the project would be consistent the General Plan and any related land use regulations and policies upon compliance with Condition of Certification **LAND-1**. The existing Chula Vista Power Plant was permitted under a Special Use Permit issued by the City of Chula Vista Redevelopment Agency under the direction of the Community Development Department. Since the issuance of that Special Use Permit, the City's Community Development Department has been reorganized and the land use planning functions are now part of the City Planning Department, where that process is referred to as a Conditional Use Permit (CUP). The MMC Alt. #1 and MMC Alt. #2 sites are the same land use zone (Limited Industrial) as the proposed project and would also require

a CUP if the project were licensed under the City of Chula Vista's jurisdiction. The Otay Landfill alternative site (Staff Alt. C) would not need require a Conditional Use Permit if the project were approved by the City of Chula Vista due to the General Industrial land use zoning. Although, the location of this site is farther removed from residential areas and sensitive receptors, the primary concern on the Otay Landfill alternative is over the impacts associated with the construction of the linear facilities such as gas, water, sewer, and transmission lines. As noted previously, the availability of these sites is unknown.

The alternative site located outside of the City of Chula Vista near the Larkspur Energy Facility (Staff Alt. A) would not pose potential impacts to sensitive receptors and residential areas. However, this alternative would connect through the Miguel Substation, not meeting one of the CVEUP objectives. Staff Alt. A would also require construction of a long transmission line and could cause temporary traffic impacts during the construction of the transmission lines and during the connection to other services. In addition to the traffic impacts, the transmission line could have impacts to other environmental areas such as biology, cultural resources, visual resources, and land use.

Staff does not believe that alternative technologies (CHP, geothermal, solar, wind, biomass, hydroelectric) present feasible alternatives to the proposed project. Based on the analysis of alternative sites, the environmental impacts associated with proposed CVEUP site appear less than those for the other alternatives.

REFERENCES

CEC 2007c – Transcript of the Informational Hearing and Site Visit. November 29, 2007.

COCV (City of Chula Vista) 2007a. – City of Chula Vista General Plan.

COCV Record of Conversation (ROC) 01/02/08. – Personal Communication between Michael Meacham, Director of Conservation and Environmental Services, City of Chula Vista and Christopher Meyer, Energy Commission Project Manager. January 2, 2008.

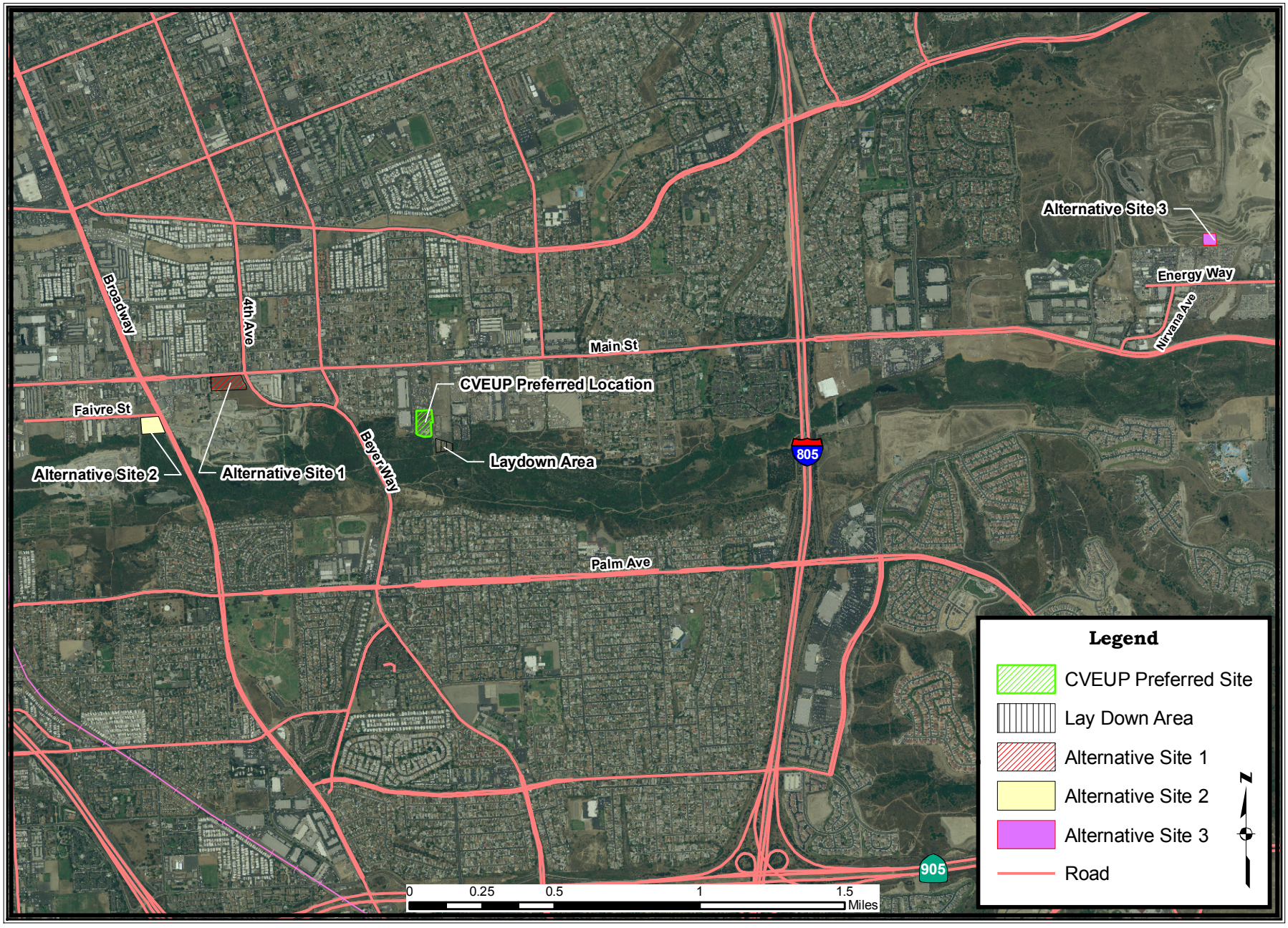
MMC 2007b. – Application for Certification for the Chula Vista Energy Upgrade Project, Volumes 1 and 2. Submitted to the California Energy Commission, August 10, 2007.

MMC 2007c. – Data Adequacy Supplement for the Chula Vista Energy Upgrade Project, Application for Certification. September 25, 2007.

ALTERNATIVES - FIGURE 1

Chula Vista Energy Upgrade Project - Location of Alternate Sites

APRIL 2008



ALTERNATIVES

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, APRIL 2008

SOURCE: AFC Figure 6.3-1 - NAIP Imagery and California Energy Commission Statewide Power Plant Maps 2008

GENERAL CONDITIONS
INCLUDING
COMPLIANCE MONITORING AND CLOSURE PLAN

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INTRODUCTION

The project's General Compliance Conditions of Certification, including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated and closed in compliance with public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California 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 of certification;
- establish requirements for facility closure plans; and
- specify conditions of certification for each technical area containing the measures required to mitigate any and all potential adverse project impacts associated with construction, 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.

DEFINITIONS

The following terms and definitions are used to establish when Conditions of Certification are implemented.

PRE-CONSTRUCTION SITE MOBILIZATION

Site mobilization is limited preconstruction activities at the site to allow for the installation of fencing, construction trailers, construction trailer utilities, and construction trailer parking at the site. Limited ground disturbance, grading, and trenching associated with the above mentioned pre-construction activities is considered part of site mobilization. Walking, driving or parking a passenger vehicle, pickup truck and light vehicles is allowable during site mobilization.

CONSTRUCTION GROUND DISTURBANCE

Construction-related ground disturbance refers to activities that result in the removal of top soil or vegetation at the site beyond site mobilization needs, and for access roads and linear facilities.

CONSTRUCTION GRADING, BORING, AND TRENCHING

Construction-related grading, boring, and trenching refers to activities that result in subsurface soil work at the site and for access roads and linear facilities, e.g., alteration of the topographical features such as leveling, removal of hills or high spots, moving of soil from one area to another, and removal of soil.

CONSTRUCTION

[From section 25105 of the Warren-Alquist Act.] Onsite work to install permanent equipment or structures for any facility. Construction does **not** include the following:

1. the installation of environmental monitoring equipment;

2. a soil or geological investigation;

3. a topographical survey;

4. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; and

5. any work to provide access to the site for any of the purposes specified in "Construction" 1, 2, 3, or 4 above.

START OF COMMERCIAL OPERATION

For compliance monitoring purposes, "commercial operation" begins after the completion of start-up and commissioning, where the power plant has reached reliable steady-state production of electricity at the rated capacity. For example, at the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The CPM will oversee the compliance monitoring 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. resolving complaints;

3. processing post-certification changes to the conditions of certification, project description (petition to amend), and ownership or operational control (petition for change of ownership); (see instructions for filing petitions)

4. documenting and tracking compliance filings; and

5. ensuring that the compliance files are maintained and accessible.

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 Energy Commission staff and management. All submittals must include searchable electronic versions (pdf or word files).

PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings will be to assemble both the Energy Commission's and the project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's conditions of certification to confirm that they have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight, and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

ENERGY COMMISSION RECORD

The Energy Commission shall maintain as a public record, in either the Compliance file or Dockets file, for the life of the project (or other period as required):

1. all documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;

2. all monthly and annual compliance reports filed by the project owner;

3. all complaints of noncompliance filed with the Energy Commission; and

4. all petitions for project or condition of certification changes and the resulting staff or Energy Commission action.

PROJECT OWNER RESPONSIBILITIES

The project owner is responsible for ensuring that the compliance conditions of certification and all of the other conditions of certification that appear in the Commission Decision are satisfied. The compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, conditions of certification, or ownership. Failure to comply with any of the conditions of certification or the 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 Compliance Conditions of Certification is included as **Compliance Table 1** at the conclusion of this section.

COMPLIANCE CONDITIONS OF CERTIFICATION

Unrestricted Access (COMPLIANCE-1)

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 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.

Compliance Record (COMPLIANCE-2)

For the life of the project, the project owner shall maintain project files on-site or at an alternative site approved by the CPM, 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.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.

Compliance Verification Submittals (COMPLIANCE-3)

Each condition of certification is followed by a means of verification. The verification describes the Energy Commission's procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified as necessary by the CPM, and in most cases without full Energy Commission approval.

Verification of compliance with the conditions of certification can be accomplished by:

1. reporting on the work done and providing the pertinent documentation in monthly and/or annual compliance reports filed by the project owner or authorized agent as required by the specific conditions of certification;

2. providing appropriate letters from delegate agencies verifying compliance;

3. Energy Commission staff audits of project records; and/or

4. Energy Commission staff inspections of work or other evidence that the requirements are satisfied.

Verification lead times associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

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 project by AFC number, 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 and CEC submittal number.

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 hardcopy submittals shall be addressed as follows:

Compliance Project Manager
(07-AFC-4C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

Those submittals shall be accompanied by a searchable electronic copy included on a CD disc or via e-mail as agreed upon by the CPM.

If the project owner desires Energy Commission staff action by a specific date, it shall make that request in its submittal cover letter and include a detailed explanation of the effects on the project if this date is not met.

Pre-Construction Matrix and Tasks Prior to Start of Construction (COMPLIANCE-4)

Prior to commencing construction, a compliance matrix addressing only those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner’s first compliance submittal or prior to the first pre-construction meeting, whichever comes first. It will be submitted in the same format as the compliance matrix described below.

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Various lead times for submittal of compliance verification documents to the CPM for conditions of certification are established to allow sufficient staff time to review and comment and, if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

Failure to submit compliance documents within the specified lead-time may result in delays in authorization to commence various stages of project development.

If the project owner anticipates commencing project construction as soon as the project is certified, it may be necessary for the project owner to file compliance submittals prior to project certification. Compliance submittals should be completed in advance where the necessary lead-time for a required compliance event extends beyond the date anticipated for start of construction. The project owner must understand that the

submittal of compliance documents prior to project certification is at the owner's own risk. Any approval by Energy Commission staff is subject to change based upon the Commission Decision.

Compliance Reporting

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Energy Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. 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 monthly or annual compliance reports.

Compliance Matrix (COMPLIANCE-5)

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all conditions of certification in a spreadsheet format. The compliance matrix must identify:

1. the technical area;
2. the condition number;
3. a brief description of the verification action or submittal required by the condition;
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. the expected or actual submittal date;
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable; and
7. the compliance status of each condition, e.g., "not started," "in progress" or "completed" (include the date).
8. if the condition was amended, the date of the amendment.

Satisfied conditions shall be placed at the end of the matrix.

Monthly Compliance Report (COMPLIANCE-6)

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date upon which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include the AFC number and an initial list of dates for each of the events identified on the **Key Events List. The Key Events List Form is found at the end of this section.**

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and an electronic searchable version of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain, at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;

2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, as well as the conditions they satisfy and submitted as attachments to the Monthly Compliance Report;

3. an initial, and thereafter updated, compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

4. a list of conditions that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition;

5. a list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;

6. a cumulative listing of any approved changes to conditions of certification;

7. a listing of any filings submitted to, or permits issued by, other governmental agencies during the month;

8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;

9. a listing of the month's additions to the on-site compliance file; and

10. a listing of complaints, notices of violation, official warnings, and citations received during the month, a description of the resolution of the resolved actions, and the status of any unresolved actions.

All sections, exhibits, or addendums shall be separated by tabbed dividers.

Annual Compliance Report (COMPLIANCE-7)

After 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 include the AFC number, identify the reporting period and shall contain the following:

1. an updated compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

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, with the condition it satisfies, and 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 submitted 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 Compliance 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 matters, and the status of any unresolved matters.

Confidential Information (COMPLIANCE-8)

Any information that the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit 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.

Annual Energy Facility Compliance Fee (COMPLIANCE-9)

Pursuant to the provisions of Section 25806(b) of the Public Resources Code, the project owner is required to pay an annual compliance fee, which is adjusted annually. The amount of the fee for FY2007-2008 was $17,676. The initial payment is due on the date the Energy Commission adopts the final decision. You will be notified of the amount due. All subsequent payments are due by July 1 of each year in which the facility retains its certification. The payment instrument shall be made payable to the California Energy Commission and mailed to: Accounting Office MS-02, California Energy Commission, 1516 9th St., Sacramento, CA 95814.

Reporting of Complaints, Notices, and Citations (COMPLIANCE-10)

Prior to the start of construction, 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 complaints shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and 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 monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies to the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt. 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 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 implements the on-site contingency plan. It can also include unplanned closure where the project owner fails to implement the contingency plan, and the project is essentially abandoned.

COMPLIANCE CONDITIONS FOR FACILITY CLOSURE

Planned Closure (COMPLIANCE-11)

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 12 months (or other period of time agreed to by the CPM) prior to commencement of closure activities. 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, and local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

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.

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.

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 the Energy Commission approves the facility closure plan.

Unplanned Temporary Closure/On-Site Contingency Plan (COMPLIANCE-12)

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 submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial 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 specific conditions of certification 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 12 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).

Unplanned Permanent Closure/On-Site Contingency Plan (COMPLIANCE-13)

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 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.

Post Certification Changes to the Energy Commission Decision: Amendments, Ownership Changes, Insignificant Project Changes and Verification Changes (COMPLIANCE-14)

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, in order to modify the project (including linear facilities) design, operation or performance requirements, 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. Both shall be filed as a "Petition to Amend." Staff will determine if the change is significant or insignificant. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be

submitted to the CPM, who will file it with the Energy Commission's Dockets Unit 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. They reflect the provisions of Section 1769 at the time this condition was drafted. If the Commission's rules regarding amendments are amended, the rules in effect at the time an amendment is requested shall apply.

Amendment

The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, Section 1769(a), when proposing modifications to the project (including linear facilities) 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. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(a). Upon request, the CPM will provide you with a sample petition to use as a template.

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 requires public notice and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(b). Upon request, the CPM will provide you with a sample petition to use as a template.

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 may be authorized by the CPM as an insignificant project change pursuant to section 1769(a) (2). This process usually requires minimal time to complete, and it requires a 14-day public review of the Notice of Insignificant Project Change that includes staff's intention to approve the modification unless substantive objections are filed. These requests must also be submitted in the form of a "petition to amend" as described above.

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.

CBO DELEGATION AND AGENCY COOPERATION

In performing construction and operation monitoring of the project, Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). Energy Commission staff may delegate CBO responsibility to either an independent third party contractor or the local building official. Energy Commission staff retains CBO authority

when selecting a delegate CBO, including enforcing and interpreting state and local codes, and use of discretion, as necessary, in implementing the various codes and standards.

Energy Commission staff may also seek the cooperation of state, regional and local agencies that have an interest in environmental protection when conducting project monitoring.

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.

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 1237, 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 future law or regulations.

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 construction or operation-related questions, complaints or concerns.

Informal Dispute Resolution Process

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 an informal dispute resolution process. Disputes may pertain to actions or decisions made by any party, including the Energy Commission's delegate agents.

This process may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1237, 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 process 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 brought before the full Energy Commission for consideration via the complaint and investigation procedure.

Request for Informal Investigation

Any individual, group, or agency may request the Energy Commission to 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. Within seven working days of the CPM's request, provide a written report to the CPM of the results of the investigation, including corrective measures proposed or undertaken. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to also provide an initial verbal report, within 48 hours.

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 proposed or 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;
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 that fairly and accurately identifies the positions of all parties and any understandings 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

Any person may file a complaint with the Energy Commission's Dockets Unit alleging noncompliance with a Commission decision adopted pursuant to Public Resources Code section 25500. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1237.

KEY EVENTS LIST

PROJECT: _____

DOCKET #: _____

COMPLIANCE PROJECT MANAGER: _____

EVENT DESCRIPTION	DATE
Certification Date	
Obtain Site Control	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	
Start Ground Disturbance	
Start Grading	
Start Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Combustion of Gas Turbine	
Obtain Building Occupation Permit	
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	
Start Gas Pipeline Construction and Interconnection	
Complete Gas Pipeline Construction	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	

COMPLIANCE TABLE 1
SUMMARY of COMPLIANCE CONDITIONS OF CERTIFICATION

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-1	Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COMPLIANCE-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.
COMPLIANCE-3	Compliance Verification Submittals	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 or the project owner or his agent.
COMPLIANCE-4	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until the all of the following activities/submittals have been completed: ▪ property owners living within one mile of the project have been notified of a telephone number to contact for questions, complaints or concerns, ▪ a pre-construction matrix has been submitted identifying only those conditions that must be fulfilled before the start of construction, ▪ all pre-construction conditions have been complied with, ▪ the CPM has issued a letter to the project owner authorizing construction.
COMPLIANCE-5	Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each monthly and annual compliance report which includes the status of all compliance conditions of certification.
COMPLIANCE-6	Monthly Compliance Report including a Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due the month following the Energy Commission business meeting date on which the project was approved and shall include an initial list of dates for each of the events identified on the Key Events List.
COMPLIANCE-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.

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-8	Confidential Information	Any information the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit with a request for confidentiality.
COMPLIANCE-9	Annual fees	Payment of Annual Energy Facility Compliance Fee
COMPLIANCE-10	Reporting of Complaints, Notices and Citations	Within 10 days of receipt, the project owner shall report to the CPM, all notices, complaints, and citations.
COMPLIANCE-11	Planned Facility Closure	The project owner shall submit a closure plan to the CPM at least 12 months prior to commencement of a planned closure.
COMPLIANCE-12	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 no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-13	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 no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-14	Post-certification changes to the Decision	The project owner must petition the Energy Commission to delete or change a condition of certification, modify the project design or operational requirements and/or transfer ownership of operational control of the facility.

ATTACHMENT A

COMPLAINT REPORT/RESOLUTION FORM

PROJECT NAME:
AFC Number:

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 a CEC 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.)

PREPARATION TEAM

CHULA VISTA ENERGY UPGRADE PROJECT
PREPARATION TEAM

Executive Summary	Christopher Meyer
Introduction	Christopher Meyer
Project Description	Christopher Meyer
Air Quality	William Walters
Biological Resources	Susan Sanders
Cultural Resources	Jill K. Gardner
Hazardous Materials Management	Alvin J. Greenberg, Ph.D. and Rick Tyler
Land Use	Negar Vahidi
Noise and Vibration	Steve Baker
Public Health	Obed Odoemelam, Ph.D.
Socioeconomic Resources	Jacob Hawkins, M.E.S.M. and Somer Goulet, M.S.E.L.
Soils and Water Resources	Richard Anderson
Traffic and Transportation	Jason Ricks
Transmission Line Safety and Nuisance	Obed Odoemelam, Ph.D.
Visual Resources	Martha A. Goodavish
Waste Management	Ellie Townsend-Hough
Worker Safety and Fire Protection	Alvin J. Greenberg, Ph.D. and Rick Tyler
Facility Design	Erin Bright and Steve Baker
Geology and Paleontology	Dal Hunter, Ph.D., C.E.G.
Power Plant Efficiency	Erin Bright and Steve Baker
Power Plant Reliability	Erin Bright and Steve Baker
Transmission System Engineering	Laiping Ng and Mark Hesters
Alternatives	Christopher Meyer
General Conditions including Compliance Monitoring & Facility Closure	Donna Stone
Project Secretary	Maria Sergoyan

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

Application for Certification For the *CHULA VISTA ENERGY UPGRADE PROJECT*	***Docket No. 07-AFC-4*** **PROOF OF SERVICE (Revised: 1/3/08)**

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 07-SPPE-1
1516 Ninth Street, MS-14
Sacramento, CA 95814-5512
docket@energy.state.ca.us

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DECLARATION OF SERVICE

I, Maria Sergoyan, declare that on April 29, 2008, I deposited copies of the attached Chula Vista Energy Upgrade Project (07-AFC-4) Preliminary Staff Assessment in the United States mail at Sacramento, CA with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Original signature in Dockets
Maria Sergoyan