

**CALIFORNIA ENERGY COMMISSION**1516 NINTH STREET  
SACRAMENTO, CA 95814-5512**DOCKET**  
**00-AFC-14C**

DATE JUN 14 2010

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**DATE:** June 14, 2010

**TO:** Interested Parties

**FROM:** Joseph Douglas, Compliance Project Manager

**SUBJECT: El Segundo Power Redevelopment Project (00-AFC-14C)  
Revised Staff Analysis of the Proposed Change to Dry Cooling and  
Other Project Changes**

On June 15, 2007, the project owner of the El Segundo Power Redevelopment Project (ESPRP) filed a petition with the California Energy Commission to amend the Energy Commission Decision for the ESPRP. The Energy Commission issued a Staff Analysis (SA) of these proposed changes on June 12, 2008, initiated a 30-day public comment period, and held a site visit and staff workshop on June 25, 2008, to discuss the SA with interested agencies and members of the public. Addendum I, published on October 22, 2008, addressed comments received in all technical areas except air quality.

The permitting of the project was delayed on July 28, 2008, when a ruling by the Superior Court of Los Angeles vacated the South Coast Air Quality Management District (SCAQMD) air emission offset-related program. Effective January 1, 2010, California Law reinstated the offset program and SCAQMD issued the revised permit on May 18, 2010. The Revised Staff Analysis (RSA), which is enclosed, incorporates the information previously published as well as an updated Air Quality/Green House Gas section.

ESPRP was certified by the Energy Commission on February 2, 2005, as a 630 megawatt combined cycle power plant located in the City of El Segundo in Los Angeles County. It is currently in the demolition phase of pre-construction.

The proposed modifications will result in

- Elimination of once-through cooling in favor of the use of dry cooling;
- Use of Siemens Rapid Response Combined Cycle technology as opposed to the GE Frame 7FA turbines originally approved by the Commission, resulting in a reduction of the megawatt output from 630 MW to 560 MW;
- Possible barge delivery and use of a related beach landing ramp for transporting and delivering prefabricated elements of the power plant;
- Elimination of a firewater pump diesel engine on site;
- Use of an existing aqueous ammonia storage tank on site, and elimination of a previously approved second tank;
- Replacement of an offsite laydown area for equipment staging and construction and employee parking;

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- Modification of the plant's access road configuration; and
- Elimination of a wastewater stream by use of zero liquid discharge technology.

It is staff's opinion that, with the implementation of the revised conditions contained in the RSA, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed project modifications will not result in a significant adverse direct or cumulative impact to the environment (Title 20, California Code of Regulations, Section 1769).

The amendment petition, the SA, Addendum I, and RSA have been posted on the Energy Commission's website and can be found at the following website address:  
[http://www.energy.ca.gov/sitingcases/elsegundo\\_amendment/documents/index.html](http://www.energy.ca.gov/sitingcases/elsegundo_amendment/documents/index.html).

The Energy Commission's Order (if approved) will also be posted on the website. If you have comments on the RSA, they must be received in writing by **June 29, 2010**.

Joseph Douglas, Compliance Project Manager  
California Energy Commission  
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Comments may be submitted by fax to (916) 654-3882, or by e-mail to [JDouglas@energy.state.ca.us](mailto:JDouglas@energy.state.ca.us) If you have any questions, please contact me at (916) 653-4677.

Enclosure

# EL SEGUNDO POWER REDEVELOPMENT PROJECT

## Revised Staff Analysis



CALIFORNIA  
ENERGY COMMISSION  
Arnold Schwarzenegger, Governor

JUNE 2010  
CEC-700-2008-006-REV1

DOCKET NUMBER OO-AFC-14C

**CALIFORNIA  
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**EL SEGUNDO POWER REDEVELOPMENT PROJECT (00-AFC-14C)  
REVISED STAFF ANALYSIS  
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# EXECUTIVE SUMMARY

Prepared By Joseph Douglas

## INTRODUCTION

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On June 15, 2007, El Segundo Energy Center, LLC (ESEC), filed a petition to amend the California Energy Commission Decision for the El Segundo Power Redevelopment Project (ESPRP). A Staff Analysis (SA) was published on June 12, 2008, followed by the October 22, 2008, Staff Analysis Addendum I, written in response to public comments received. This Revised Staff Analysis (RSA) incorporates the information previously published as well as a new Air Quality/Green House Gas section.

The purpose of the Energy Commission's amendment review process in this RSA is to assess the direct, indirect, and cumulative impacts of the amendment on the environment, public health and safety, and the electric transmission system. The RSA presents the conclusions, recommendations, and proposed conditions of certification that staff believes are necessary to mitigate or avoid potential significant adverse environmental impacts and to satisfy laws, ordinances, regulations, and standards (LORS) that have changed since the original project was certified.

The review process includes an evaluation of the consistency of the proposed changes with the Energy Commission's Decision and with current applicable LORS (Title 20, Calif. Code of Regulations, section 1769).

This RSA contains Energy Commission staff's final evaluation of the technical areas that include: air quality (including greenhouse gas analysis); biological resources; cultural resources; facility design; geology and paleontology; hazardous material management; land use; noise and vibration; power plant efficiency; power plant reliability; public health; socioeconomic resources; soil and water resources; traffic and transportation; transmission line safety and nuisance; transmission system engineering; visual resources; waste management; and worker safety and fire protection.

## PROJECT LOCATION AND DESCRIPTION

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The Energy Commission certified ESPRP to be built on a 33 acre site at the existing El Segundo Generating Station (ESGS), which it would partially replace. The ESPRP site is at the southernmost city limit of the city of El Segundo on the coast of the Pacific Ocean between Dockweiler State Beach and the City of Manhattan Beach. The address is 301 Vista Del Mar, El Segundo, approximately two miles south of the Los Angeles International Airport. It is located less than a 1/4 mile south of the Los Angeles Department of Water & Power's Scattergood Generating Station, and 1/2 mile south of the City of Los Angeles' Hyperion Wastewater Treatment Plant. The Chevron El Segundo refinery is located across Vista Del Mar from ESPRP. The City of Manhattan Beach is located immediately to the south of the project site.

The project was originally certified by the Energy Commission on February 2, 2005, as a 630 megawatt combined-cycle electrical generating facility. The revised project would be rated at 560 megawatts. ESEC now has a power purchase agreement with Southern California Edison and intends to begin construction of the revised project in the summer of 2011.

The proposed changes to the project include: using new lower-emission power generation technology; a dry-cooling system which eliminates the need for ocean water once-through cooling and wastewater discharge; possible use of a temporary beach delivery ramp system which would be installed to enable off-loading oversize power plant equipment; and use of a new parking/laydown area located at 777 W. 190<sup>th</sup> Street, (Gardena mailing address, but actually within the City of Los Angeles), 13 miles from the project site, to substitute for one that is no longer available. The proposed amendment also includes numerous adjustments to the site layout such as equipment additions, subtractions, and new equipment locations.

## **NECESSITY FOR THE PROPOSED MODIFICATIONS**

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The project owner requests the proposed modifications for the following reasons:

1. To eliminate the impact on the aquatic environment, ESEC proposes replacing the originally proposed once-through cooling technology with new dry-cooling technology.
2. To reduce air emissions, new, low-emission combustion turbine equipment is proposed that significantly reduces air pollutants from the combustion process.
3. To accommodate new site configuration requirements and changes in availability of temporary construction laydown areas, a new construction laydown area is proposed and an alternative equipment delivery option is proposed. This is the beach delivery option for large preassemble components of the project, described more fully in the **Project Description** section of the Staff Analysis.

## **PROJECT OWNERSHIP**

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ESEC is a wholly-owned subsidiary of NRG Energy Corporation.

## **STAFF REVIEW PROCESS**

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After the receipt of the Petition to Amend dated June 15, 2007, Energy Commission technical staff reviewed the document and submitted data requests to the project owner, ESEC. The data requests were submitted to ESEC in two mailings, designated Data Request Sets 1 and 2 on August 14, and August 29, 2007, respectively. ESEC responded to Data Request Set 1 on September 10, 2007, and Data Request Set 2 September 28, 2007. The data requests covered all technical areas except for air quality. The Air Quality SA section was completed on April 18, 2008, after receiving the Notice of Intent to Issue Permit from South Coast Air Quality Management District (SCAQMD), issued on March 19, 2008. A Staff Analysis was published on June 12, 2008, followed by an October 22, 2008, Addendum to respond to public comments.

The permitting of the project was delayed on July 28, 2008, when a ruling by the Superior Court of Los Angeles vacated the SCAQMD air emission offset-related program. Effective January 1, 2010, the California Legislature reinstated the offset program and SCAQMD issued the revised permit on May 18, 2010.

## SUMMARY OF TECHNICAL AREAS

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The **EXECUTIVE SUMMARY Table 1** below shows all the technical areas contained in the SA and indicates where staff has recommended changes to the existing ESPRP Decision and conditions of certifications. The details of the proposed condition changes can be found under their appropriate headings in this SA.

**EXECUTIVE SUMMARY Table 1**  
**Technical Sections with New Conditions or Changes/No Changes to**  
**Conditions of Certification**

Technical Area	New Conditions or Changes to Conditions of Certification	Technical Area	New Conditions or Changes to Conditions of Certification
Air Quality	Yes	T-Line Safety & Nuisance	No
Biological Resources	Yes	Traffic & Transportation	No
Cultural Resources	No	Visual Resources	Yes
Geo/Paleo Resources	No	Waste Management	No
Hazardous Materials Management.	Yes	Worker Safety/Fire Protection	Yes
Land Use	Yes	Power Plant Efficiency	No
Noise and Vibration	No	Power Plant Reliability	No
Public Health	No	Facility Design	Yes
Soil & Water Resources	Yes	Transmission Sys.Eng.	Yes
Socioeconomics	No		

## STAFF RECOMMENDATIONS AND CONCLUSIONS

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Staff concludes that the following required findings mandated by Title 20, section 1769(a)(3) of the California Code of Regulations can be made and will recommend approval of the petition to the Energy Commission:

- A. There will be no new or additional unmitigated significant environmental impacts associated with the proposed changes;
- B. The facility will remain in compliance with all applicable laws, ordinances, regulations and standards; and
- C. The changes will be beneficial to the project owner by increasing operational efficiencies and enhancing the project's economics. Moreover, the change will be beneficial to the State of California by increasing power in an area of need (Southern California).

There has been a substantial change in circumstances since Energy Commission certification justifying the change. The combined-cycle will provide superior fuel economy and environmental performance compared to the present simple-cycle configuration.



# INTRODUCTION

Joseph Douglas

## PURPOSE OF THIS REPORT

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The Revised Staff Analysis (RSA) presents the California Energy Commission (Energy Commission) staff's independent analysis of the El Segundo Energy Center, LLC's (ESEC) June 2007 petition, requesting amendment to the Commission's license for the El Segundo Power Redevelopment Project (ESPRP). This RSA is a staff document. It is neither a Committee document, nor a draft decision.

The RSA describes the following:

- the existing environmental setting;
- the proposed project changes;
- 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 project owner, staff, and interested agencies that may lessen or eliminate potential impacts; and
- the proposed conditions under which the project should be constructed and operated.

The technical area analyses contained in this RSA are based upon information from: 1) the Energy Commission Decision; 2) Petition to Amend; 3) responses to data requests; 4) supplementary information from local and state agencies and interested individuals; 5) existing documents and publications; and 6) independent field studies and research.

The analyses for most technical areas include discussions of proposed changes and additions to the conditions of certification. Each proposed condition of certification is followed by a proposed means of "verification." The verification is not part of the proposed condition, but is the Energy Commission staff's method of ensuring post-certification compliance with adopted requirements.

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. (specifically section 1769 pertaining to amendments), and the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.).

Section 1769(a)(3) authorizes the Commission's approval of the amendment petition if it can make the following findings:

- (A) The findings specified in section 1755(c) [whether all significant environmental impacts can be mitigated or avoided], and (d) [if all significant impacts cannot

be avoided, overriding considerations justify approving the amendment], if applicable;

- (B) That the project would remain in compliance with all applicable laws, ordinances, regulations, and standards, subject to the provisions of Public Resources Code section 25525;
- (C) The change will be beneficial to the public, project owner, or intervenors; and
- (D) There has been a substantial change in circumstances since the Energy Commission certification justifying the change or that the change is based on information that was not available to the parties prior to Commission certification.

The RSA contains an Executive Summary, Introduction, Project Description, and includes environmental, engineering, and public health and safety analysis of the proposed project amendment. The technical areas included in the RSA are: air quality (including greenhouse gas analysis); biological resources; cultural resources; facility design; geology and paleontology; hazardous material management; land use; noise and vibration; power plant efficiency; power plant reliability; public health; socioeconomic resources; soil and water resources; traffic and transportation; transmission line safety and nuisance; transmission system engineering; visual resources; waste management; and worker safety and fire protection.

Each of the technical area assessments includes a discussion of:

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

Staff has added new conditions of certification and in some cases modified or deleted some of the existing conditions of certification contained in the Energy Commission Decision for the project. Implementing the modified and existing conditions, along with the mitigation measures proposed by the project owner, will ensure that the proposed relocation and other site changes would result in no significant environmental impacts. Where conditions of certification have changed from the original Commission Decision, staff displays the revised information in **bold underline** (new text) and ~~strikeout~~ (deleted text).

## **ENERGY COMMISSION AMENDMENT PROCESS**

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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 Petitions to Amend to assess potential environmental and public health and safety impacts, potential

measures to mitigate those impacts (Pub. Resources Code, §25519), and compliance with applicable governmental laws and standards (Pub. Resources Code, §25523 (d)).

The Energy Commission's siting regulations require staff to independently review the Petition to Amend and assess whether the list of environmental impacts it contains is complete, and whether additional or more effective mitigation measures are necessary, feasible and available (Cal. Code Regs., tit. 20, §§ 1742 and 1742.5(a)). Staff's independent review is presented in this report (Cal. Code Regs., tit. 20, §1742.5).

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

Staff conducts its environmental analysis in accordance with the requirements of CEQA. The Energy Commission's site certification and amendment program has been certified by the Resources Agency as CEQA-equivalent (Pub. Resources Code, §21080.5 and Cal. Code Regs., tit. 14, §15251 (k)). The Energy Commission acts in the role of the CEQA lead agency and is subject to all other applicable portions of CEQA.

Staff uses the SA to resolve issues between the parties and to narrow the scope of adjudicated issues in the evidentiary hearings. If controversy or disagreement over the SA arises after it is published, staff may conduct one or more workshops to discuss their findings, proposed mitigation, and proposed compliance monitoring requirements. Based on the workshop(s) and written comments, staff will refine their analyses, correct any errors, and finalize conditions of certification to reflect areas where staff has reached agreement with the parties. These refined analyses, along with responses to written comments on the SA, will be published in an errata.

The Siting Committee has oversight over compliance issues for the Energy Commission and has elected to oversee the ESPRP amendment petition. If significant controversy or disagreement among parties arise following publication of this RSA, all parties will be afforded an opportunity to present evidence and to rebut the testimony of other parties at one or more Committee hearings, thereby creating a hearing record on which a decision on the amendment can be based. The hearing before the Committee would also allow 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. If no significant controversy nor disagreement among parties arise following publication of the RSA, the Siting Committee may choose to not hold hearings on the petition, in which case parties would still be able to address their concerns at the Business Meeting at which the Commission is scheduled to rule upon the petition.

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

the Committee. At the close of that comment period, the PMPD would be submitted to the full Energy Commission for a decision.

Energy Commission staff has made a substantial effort to notify interested parties, encourage public participation and notify property owners within 1000 feet of the ESPRP and 500 feet of the transmission line. Energy Commission staff mailed Notices of Receipt on July 5, 2007, to interested parties, local libraries, responsible and trustee agencies and to property owners within 1000 feet of the ESPRP and 500 feet of the transmission line. Staff also contacted applicable local, regional, state and federal agencies to encourage participation in the amendment process.

## **AGENCY COORDINATION**

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As noted above, Energy Commission approval is in lieu of any permit required by state, regional, local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). However, the Commission typically seeks comments from, and works closely with, other regulatory agencies that administer LORS that may be applicable to proposed projects or would have had permitting authority except for the Energy Commission's exclusive jurisdiction to permit thermal power plants of 50 megawatts or larger. These agencies include, at the local/regional level, the city of El Segundo, the city of Manhattan Beach, the County of Los Angeles Department of Beaches and Harbors and Department of Public Works, the Los Angeles County Fire Department Lifeguard Division, the Regional Water Quality Control Board, and the South Coast Air Quality Management District. At the state level, the Energy Commission has worked with the California Department of Fish and Game, the California Air Resources Board, the Department of Toxic Substances Control, the California Coastal Commission and the State Lands Commission; and at the federal level, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service.

# PROJECT DESCRIPTION

Prepared by: Joseph Douglas

## INTRODUCTION

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El Segundo Power Redevelopment Project (ESPRP) was certified by the Energy Commission on February 2, 2005. It was permitted as a nominally rated 630-megawatt (MW) combined-cycle facility located at the existing El Segundo Generating Station (ESGS), in El Segundo, California. El Segundo Energy Center, LLC (ESEC) is proposing several modifications to the previously permitted project, which requires an amendment to the permitted project design and related conditions of certification. The proposed new amended project design would reduce the megawatt output to 560 MW.

## PROJECT LOCATION

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The Energy Commission certified ESPRP to be built on a 33-acre site at the existing ESGS, which it would partially replace. The site is at the southernmost city limit of the City of El Segundo on the coast of the Pacific Ocean between Dockweiler State Beach and the City of Manhattan Beach, on the site of an existing facility it would partially replace (see **PROJECT DESCRIPTION Figure 1**). The address is 301 Vista Del Mar, El Segundo, approximately two miles south of the Los Angeles International Airport. It is located less than a 1/4 mile south of the Los Angeles Department of Water & Power's Scattergood Generating Station and 1/2 mile south of the City of Los Angeles' Hyperion Wastewater Treatment Plant. The Chevron El Segundo refinery is located across Vista Del Mar from ESPRP. The City of Manhattan Beach is immediately to the south.

## PROJECT FACILITIES

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The key modifications from the original Energy Commission Decision project description include the following proposed changes:

1. The modification of power delivery equipment will change the nominal plant capacity from 630 MW to 560 MW. Specification of different equipment and design will take advantage of new technology (i.e., rapid response with combined cycle) not available during the original project Application for Certification process. The new design will consist of two units with each containing a gas turbine generator (GTG), a heat recovery steam generator (HRSG), one steam turbine generator (STG) and air-cooled heat exchangers for cycle heat rejection. The air cooled design will enable closed-loop circulation of cooling water. Water/steam cycle wastewaters will be recycled back to the single-pressure reverse osmosis water storage tank where they will be diluted for reuse as evaporative cooler makeup or reprocessed by mobile demineralizers. Using a zero liquid discharge system (ZLD), in which water/steam cycle wastewaters will be recycled and reused to the extent practicable eliminating once-through cooling at the site and eliminating discharge of water/steam cycle wastewaters.
2. A different optional method of delivery of oversize equipment to the plant, consisting of ocean delivery by barge over the beach could be used. Under this option, very large components will be constructed off site and transported by barge to the project site. This will significantly reduce construction activities at the site, truck deliveries,

and overall construction time. The beach deliveries would occur during a three-to six-month period, generally following the sequence below:

- Initial construction of a ramp system across the beach fronting the project site;
  - Docking and securing a non-powered “construction” barge at the near-shore zone immediately seaward of the ramp system. This barge is different from the delivery barges that will be arriving, docking, and departing in that it will be anchored in place for the duration of the construction activities;
  - Docking of delivery barges to the construction barge, installation of T-plates (large “T” shaped steel plates) and ramps to connect the two barges stern to stern;
  - Intermittent closure of the bike path located on the western boundary of the proposed project in accordance with prior notification to users;
  - Roll off of the equipment from the delivery barge on to the construction barge;
  - Movement of the equipment (via self propelled motorized transporters) over the beach ramp into the project site on to the finished foundations;
  - The equipment is lifted onto the foundations by cranes; and
  - The construction barge and ramp system will be removed following the completion of the final barge delivery and the beach will be restored as provided for in a restoration plan.
3. Addition of one new offsite laydown area and removal of a previously considered laydown area. The new offsite laydown area at the mailing address of 777 W. 190th Street, Gardena (actually located in the City of Los Angeles), has ample space for component and equipment staging and parking for ESPRP. One laydown area (Fed Ex) will be removed; it is no longer available for staging or parking because the property has been redeveloped into a multi-level commercial building.
  4. Modifications of the plant entrance road and gate area to facilitate delivery of oversize equipment to the plant during the construction phase of ESPRP and to improve future equipment deliveries into the plant.
  5. Elimination of an aqueous ammonia storage tank because they have elected to use the existing tank.
  6. Elimination of a backup diesel-fired fire water pump because backup firewater will be obtained directly from the City of El Segundo’s high-pressure potable water lines.

The benefits of these proposed modifications to ESPRP include the following:

1. The use of new fin-fan air cooling technology eliminates the need for once-through cooling of the project’s combustion process and the associated impingement and entrainment of marine life;
2. The new rapid response – combined cycle design provides comparable start-up rates to simple cycle units with the efficiency of a combined cycle power plant; specifically, each unit can deliver 150 MWs of capacity within 10 minutes of startup;

3. The rapid start capability also complements wind and solar renewable generation by providing reliable localized generation that can quickly respond should wind or solar resources not be available during peak electrical demand periods;
4. Elimination of the discharge of industrial wastewater to the ocean and the associated reliance on the existing intake/outfall 001. There will be no discharge of industrial wastewater from the project;
5. Reduced onsite construction activity associated with the ability to transport larger prefabricated modules via beach delivery and/or via the modified plant entrance road;
6. Modified plant entrance road, which will improve the safety and efficiency of the plant entrance;
7. Significant improvement in the visual aesthetics associated with the change from the previously permitted vertical HRSGs to the low-profile horizontal proposed HRSGS. This removes the need to install an architectural screen to cover the HRSGs as required in the original approved project design. This requirement will be eliminated; and
8. The new low-emission combustion turbine equipment will significantly reduce air pollutants from the combustion process.

In addition to the benefits identified above, this Petition to Amend preserves the following benefits identified in the approved project:

1. Replacement of the existing less efficient, higher emitting 1950s steam generator power plant with an advanced technology power plant with Best Available Control Technology (BACT) pollution controls that will utilize existing transmission and natural gas facilities and existing power plant labor and ancillary equipment resources; and
2. Providing needed, more efficient, additional power supply in the western Southern California Edison load center, replacing aged, former baseload, Units 1 and 2 with rapid starting rapid response – combined cycle technology.

## **NEW PROPOSED SITE PLAN**

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The site plan on **PROJECT DESCRIPTION Figure 2** illustrates the location and size of the proposed generating facility presented in this amendment petition. For comparison, the overall layout of the new facility will be located in the same general area of the facility as previously permitted. The primary changes to the site plan include the following:

- Two 1x1x1 combined cycle power blocks (one gas turbine generator [GTG], one HRSG, and one steam turbine generator [STG]);
- One 2x2x1 power block (two combustion turbine generators [CTGs], two HRSGs, one [STG]) to be referred to as units 5 and 7 (instead of what they were previously referred to as units 5, 6, and 7), in the South Coast Air Quality Management District's Facility Permit to Operate;

- Addition of two air cooled heat exchangers for cycle heat rejection;
- Use of single pressure, single-pass HRSGs instead of three pressure, vertically oriented drum HRSGs;
- Movement of the northern end of the facility seawall to the west to accommodate the slightly larger footprint of the rapid response – combined cycle technology;
- Modification of the plant entrance road including widening and straightening; and
- Location of water storage tanks on the south side of existing units 3 and 4.

The arrangement of two 1x1x1 power blocks occupies a slightly larger footprint than the previously permitted project. Since the two power blocks can operate independently and include more equipment than a 2x2x1 configuration, an access road has been added between the power blocks. Access roads around dimensions and turning radii have been reviewed with the El Segundo Fire Department for compliance with local codes.

Two air-cooled heat exchangers are new to the layout and contribute to the larger site footprint. However, this equipment is significantly smaller than conventional combined cycle air-cooled condensers due to the design of the single pressure HRSGs and due to size and operation of the steam turbines.

The footprint of the HRSGs differs from the previously permitted project in that the heat surface tubes are oriented vertically, perpendicular to the horizontally oriented flue gas flow. Because of this arrangement, the HRSG stacks are located at the end of the equipment instead of near the center.

## **AIR QUALITY EMISSIONS**

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The amendment petition proposes reductions in hourly emission limits and parts per million of criteria air pollutant emissions except volatile organic compounds (VOC) emissions during normal operation from the originally-certified project. This is achieved by use of newer, more efficient technology in the proposed generation equipment. Reductions would also occur from the elimination of duct burners. The project will use Best Available Control Technology (BACT) to control oxides of nitrogen (NO<sub>x</sub>), VOCs, sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM<sub>10/2.5</sub>) emissions.

## **WATER SUPPLY AND WASTE WATER TREATMENT**

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The most significant factor is the elimination of once-through sea water cooling of the combustion equipment and replacement by an air cooled condenser that causes no water dissipation. A zero liquid discharge (ZLD) system, would be added to all wastewater discharge from the facility.

Water required for domestic uses and fire fighting would be provided by the City of El Segundo as originally proposed. The quantities of potable water used would remain nearly the same as under the original design. The quantities of wastewater produced would decrease significantly with the addition of the ZLD system.

## **CONSTRUCTION AND OPERATION**

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ESEC is currently in the demolition process for the existing facility. They propose to begin construction on the access road in January 2011, to begin construction on permanent structures in July 2011, and to complete construction in May 2013. Commercial operation of ESPRP is expected to begin in June 2013. The construction work force is anticipated to peak at 337 workers in month 13 of construction; i.e., July 2013. Once the new units are on line, the operational staff required is expected to be about 25 employees. The capital cost of the project is estimated to range between approximately \$300 and \$500 million.

## **FACILITY CLOSURE**

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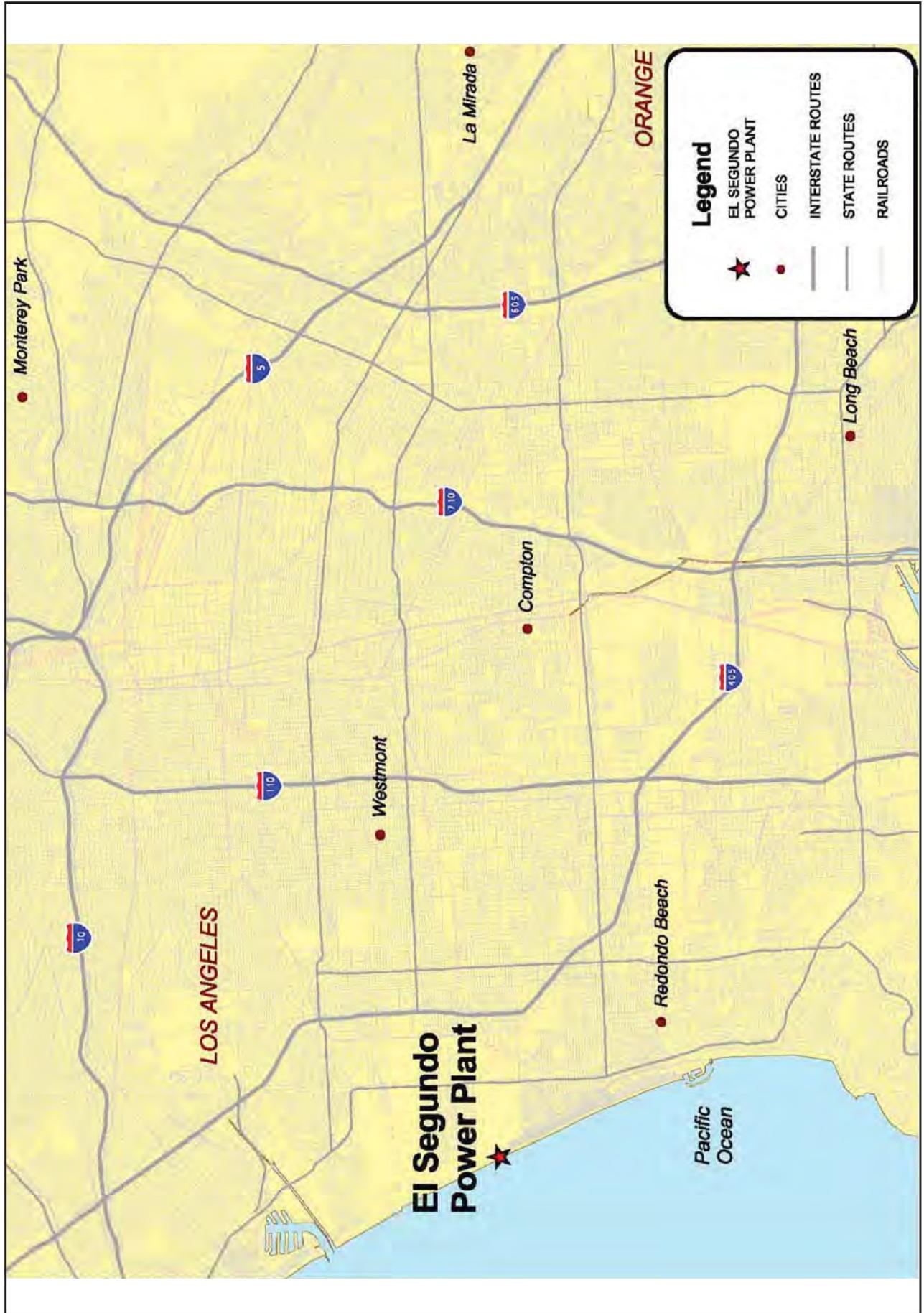
The planned life of the facility is 30 years or longer. Whenever the facility is closed, either temporally or permanently, the closure procedures would follow the described plan provided in the Commission Decision and any additional LORS in effect at that time.

## **REFERENCES**

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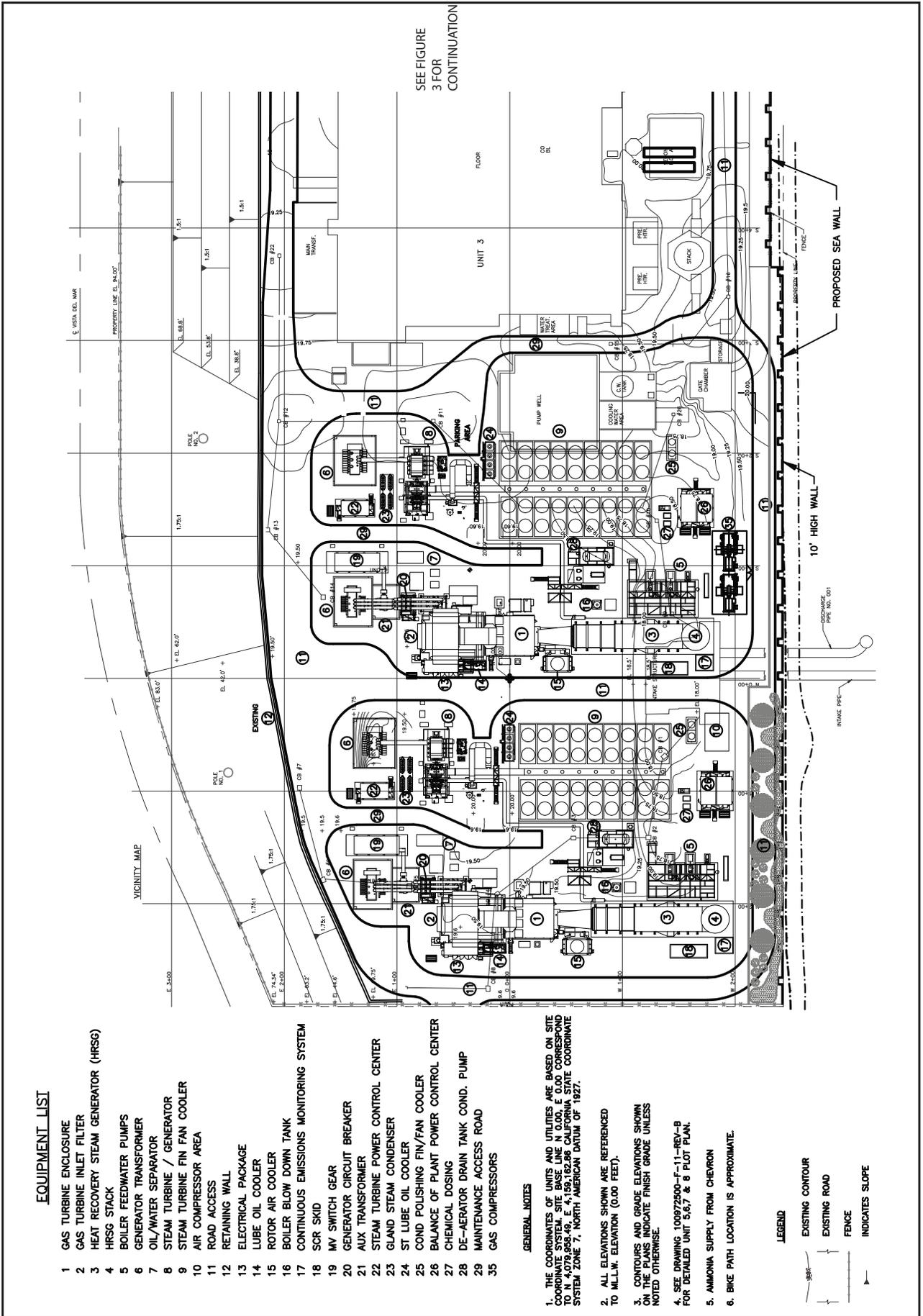
- El Segundo Power Redevelopment Project (ESPRP). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project. Submitted to the California Energy Commission on June 19, 2007.
- California Energy Commission (CEC). 2005. Commission Decision for the El Segundo Power Redevelopment Project. Publication CEC-800-2005-001-CMF.

**PROJECT DESCRIPTION - REGIONAL PROJECT SETTING - FIGURE 1**  
 El Segundo Power Redevelopment Project - Amendment Petition For Dry Cooling



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, JUNE 2010  
 SOURCE: Amendment Petition, Figure 2.0-1

**PROJECT DESCRIPTION - SITE PLAN - FIGURE 2**  
 El Segundo Power Redevelopment Project - Amendment Petition For Dry Cooling



**EQUIPMENT LIST**

- 1 GAS TURBINE ENCLOSURE
- 2 GAS TURBINE INLET FILTER
- 3 HEAT RECOVERY STEAM GENERATOR (HRSG)
- 4 HRSG STACK
- 5 BOILER FEEDWATER PUMPS
- 6 GENERATOR TRANSFORMER
- 7 OIL/WATER SEPARATOR
- 8 STEAM TURBINE / GENERATOR
- 9 STEAM TURBINE FIN FAN COOLER
- 10 AIR COMPRESSOR AREA
- 11 ROAD ACCESS
- 12 RETAINING WALL
- 13 ELECTRICAL PACKAGE
- 14 LUBE OIL COOLER
- 15 ROTOR AIR COOLER
- 16 BOILER BLOW DOWN TANK
- 17 CONTINUOUS EMISSIONS MONITORING SYSTEM
- 18 SCR SKID
- 19 MV SWITCH GEAR
- 20 GENERATOR CIRCUIT BREAKER
- 21 AUX TRANSFORMER
- 22 STEAM TURBINE POWER CONTROL CENTER
- 23 GLAND STEAM CONDENSER
- 24 ST LUBE OIL COOLER
- 25 COND POLISHING FIN/FAN COOLER
- 26 BALANCE OF PLANT POWER CONTROL CENTER
- 27 CHEMICAL DOSING
- 28 DE-AERATOR DRAIN TANK COND. PUMP
- 29 MAINTENANCE ACCESS ROAD
- 30 GAS COMPRESSORS

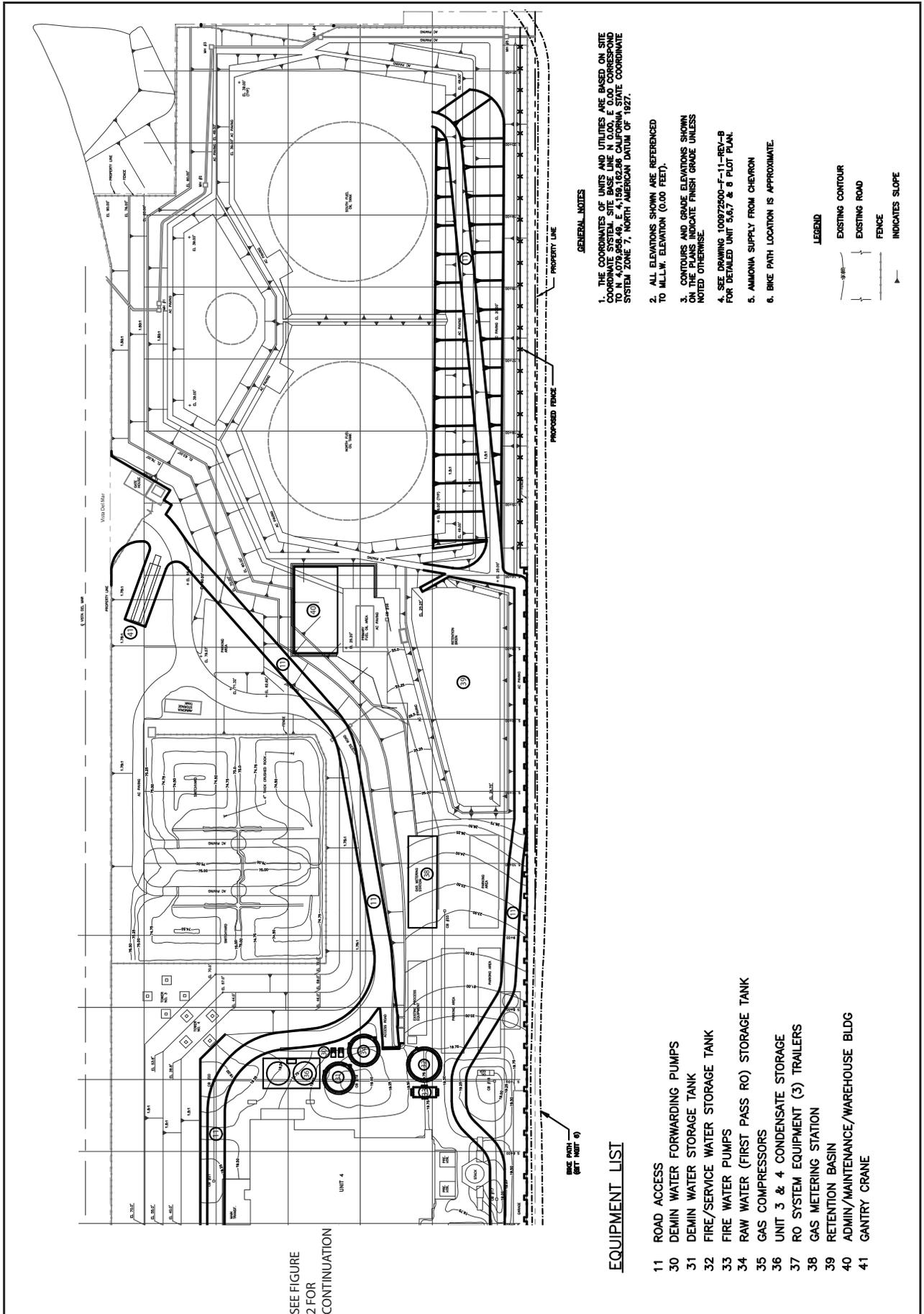
**GENERAL NOTES**

1. THE COORDINATES OF UNITS AND UTILITIES ARE BASED ON SITE COORDINATE SYSTEM. SITE BASE LINE N 0.00, E 0.00 CORRESPOND TO N 4,079,999.49, E 4,195,182.86 CALIFORNIA STATE COORDINATE SYSTEM ZONE 7, NORTH AMERICAN DATUM OF 1927.
2. ALL ELEVATIONS SHOWN ARE REFERENCED TO M.L.L.W. ELEVATION (0.00 FEET).
3. CONTOURS AND GRADE ELEVATIONS SHOWN ON THE PLANS INDICATE FINISH GRADE UNLESS NOTED OTHERWISE.
4. SEE DRAWING 100972500-F-11-REV-B FOR DETAILED UNIT 5.6.7 & 8 PLOT PLAN.
5. AMMONIA SUPPLY FROM CHEVRON
6. BIKE PATH LOCATION IS APPROXIMATE.

**LEGEND**

- BISE — EXISTING CONTOUR
- — — — — EXISTING ROAD
- — — — — FENCE
- ▲ INDICATES SLOPE

**PROJECT DESCRIPTION - SITE PLAN - FIGURE 3**  
 El Segundo Power Redevelopment Project - Amendment Petition For Dry Cooling



SEE FIGURE 2 FOR CONTINUATION

**EQUIPMENT LIST**

- 11 ROAD ACCESS
- 30 DEMIN WATER FORWARDING PUMPS
- 31 DEMIN WATER STORAGE TANK
- 32 FIRE/SERVICE WATER STORAGE TANK
- 33 FIRE WATER PUMPS
- 34 RAW WATER (FIRST PASS RO) STORAGE TANK
- 35 GAS COMPRESSORS
- 36 UNIT 3 & 4 CONDENSATE STORAGE
- 37 RO SYSTEM EQUIPMENT (3) TRAILERS
- 38 GAS METERING STATION
- 39 RETENTION BASIN
- 40 ADMIN/MAINTENANCE/WAREHOUSE BLDG
- 41 GANTRY CRANE

**GENERAL NOTES**

1. THE COORDINATES OF UNITS AND UTILITIES ARE BASED ON SITE COORDINATE SYSTEM. THE UNITS AND UTILITIES COORDINATES ARE TO N. 4,079,293.49, E. 4,159,162.26 CALIFORNIA STATE COORDINATE SYSTEM ZONE 7, NORTH AMERICAN DATUM OF 1927.
2. ALL ELEVATIONS SHOWN ARE REFERENCED TO M.L.L.W. ELEVATION (0.00 FEET).
3. CONTOURS AND GRADE ELEVATIONS SHOWN ARE APPROXIMATE. FINISH GRADE UNLESS NOTED OTHERWISE.
4. SEE DRAWING 100872500-F-11-REV-B FOR DETAILED UNIT 5, 6, 7 & 8 PLOT PLAN.
5. AMMONIA SUPPLY FROM CHEVRON
6. BIKE PATH LOCATION IS APPROXIMATE.

**LEGEND**

- EXISTING CONTOUR
- EXISTING ROAD
- FENCE
- INDICATES SLOPE

# **ENVIRONMENTAL ANALYSIS**



# AIR QUALITY

Testimony of Brenner Munger, Ph.D., P.E.

## SUMMARY OF CONCLUSIONS

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Staff has analyzed the proposed changes for the El Segundo Power Redevelopment Project (ESPRP) and concludes that there are no new or additional significant impacts associated with approval of the petition. Staff concludes that the proposed changes are based on information that was not available during the original licensing process. Staff concludes that the proposed Conditions of Certification retain the intent of the original Commission Decision and Conditions of Certification. Staff finds that with the adoption of the attached Conditions of Certification the proposed project would comply with all applicable laws, ordinances, regulations, and standards (LORS) and would not result in any significant air quality-related impacts. Staff also finds that:

- The project would comply with applicable South Coast Air Quality Management District (SCAQMD or District) Rules and Regulations, including New Source Review (NSR) requirements (SCAQMD 2010a).
- The project would not cause new violations of any NO<sub>2</sub>, SO<sub>2</sub>, or CO ambient air quality standards, and therefore, the project's direct NO<sub>x</sub>, SO<sub>x</sub> and CO emission impacts are not significant.
- Without proper mitigation, the project's NO<sub>x</sub> and VOC emissions would potentially contribute to existing violations of the state and federal ozone air quality standards. Staff has determined that emission reduction credits would mitigate the project's contribution to ozone impacts to a level that is not cumulatively considerable (**AQ-C5** and **AQ-27**).
- Without mitigation, the project's PM<sub>10</sub> emissions and PM<sub>10</sub> precursor emissions of SO<sub>x</sub> would contribute to the existing violations of the state 24-hour and annual PM<sub>10</sub> air quality standards. However, staff has determined that emission reductions credits would mitigate the project's contribution to PM<sub>10</sub> and PM<sub>10</sub> precursor emissions impacts to a level that is not cumulatively considerable.
- Without mitigation, the project's PM<sub>2.5</sub> emissions and PM<sub>2.5</sub> precursor emissions of SO<sub>x</sub> would contribute to existing violations of the federal 24-hour and annual PM<sub>2.5</sub> and the state annual PM<sub>2.5</sub> air quality standards. Therefore, potential impacts are considered significant. However, staff has determined that emission reduction credits would mitigate the project's contribution to PM<sub>2.5</sub> impacts to a level that is not cumulatively considerable.
- Staff has analyzed the potential incremental greenhouse gas (GHG) emission impacts from the proposed project and concludes that they are not cumulatively considerable and thus do not represent a significant impact under the California Environmental Quality Act (CEQA). Refer to the Greenhouse Gas Appendix for details.

## INTRODUCTION

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On December 21, 2000, the owner<sup>1</sup> of the El Segundo Power Plant submitted an AFC to construct and operate a 630 MW combined cycle facility in the footprint and replacing existing Units 1 and 2 (totaling 350 name plate MW). This request was certified by the Energy Commission with errata on February 2, 2005. On June 15, 2007 the owner requested the Energy Commission to amend the 2005 decision to change the prime mover from a GE Frame 7FA turbine to a new, state-of-the-art Siemens Rapid Response Combined Cycle that was not available during the licensing consideration for the original proposal. The owner also requested approval to convert the facility from once-through cooling to a dry cooling system and other, more minor changes.

A July 28, 2008 decision by the Superior Court of Los Angeles County and related actions by the South Coast Air Quality Management District (District) suspended the emission offset program in the District. State legislation effective January 1, 2010 reinstated the District's emission offset program but restricted the types of offsets available to power plant projects. Since only a portion of the original emissions offsets were available to the proposed project, the applicant had to obtain other offsets. As proposed in a January 2010 supplemental application, a portion of these new offsets are now proposed by the current facility owner to come from shutting down Unit 3 of the facility in addition to shutting down Units 1 and 2. The remainder of the offsets will be provided by the South Coast AQMD under District Rule 1304. The result of these changes reduces the new equipment capacity to 573 MW. Since Unit 4 (335 MW) would continue to operate, the total on site capacity would be 908 MW. The previous on site capacity was 1020 MW.

The cumulative effect of the proposed changes will significantly reduce air emissions from the facility during normal operations in comparison with the project that was approved by the Energy Commission on February 2, 2005 in the original decision, with the exception of volatile organic compounds (VOC) which would be fully mitigated with offsets as shown in **AIR QUALITY Table 9**. This analysis updates the February 2, 2005 decision to include the net effect of all the proposed changes since that date.

Staff has analyzed the potential incremental greenhouse gas (GHG) emission impacts from the proposed project and concludes that they are not cumulatively considerable and thus do not represent a significant impact under the California Environmental Quality Act (CEQA). Refer to the Greenhouse Gas Appendix for details.

This staff assessment completely replaces the staff air quality assessment previously published as CEC-700-2008-006, June 2008.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS) COMPLIANCE

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The El Segundo Power Redevelopment Project (ESPRP) is located in the South Coast Air Quality Management District (SCAQMD or District) in the city of El Segundo, and is subject to the applicable District rules and regulations. ESPRP obtained an Authority to

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<sup>1</sup> The ownership of the facility has changed over time. The terms "owner" and "Applicant" refer to the various owners from the year 2000 to the current date, using the same names for ease of reading.

Construct (ATC) with the District on February 12, 2002. The applicant submitted an application to modify that ATC to reflect the revised scope of the project (i.e., change to Siemens prime mover and dry cooling system). That application was deemed complete by the District on June 28, 2007. The revision to the ATC per the amendment petition for the Project was delayed as a result of the July 2008 court ruling that suspended Emission Reduction Credit (ERC) exemptions under District Rule 1304 and access to the Priority Reserve available under District Rule 1309.1. As a result of the recent passage of Senate Bill 827, the permitting of the Project can once again move forward. However, because this bill addresses only the use of ERC exemptions under District Rule 1304 and does not allow access by power plant projects to the Priority Reserve under District Rule 1309.1, it was necessary for the Applicant to revise the emission offset package for the Project to include the shutdown of Unit 3 at the El Segundo Generating Station. With the addition of the Unit 3 shutdown, the total generating capacity of 685 MW associated with the shutdown of the existing units<sup>2</sup> (Units 1, 2, and 3) exceeds the 573 MW capacity of the Project. Therefore, the emissions for the Project will be fully offset by the shutdown of the existing units under the SCAQMD Rule 1304(a)(2) steam boiler to combined cycle gas turbine offset exemption.

The District issued a revised Final Determination of Compliance (FDOC) (SCAQMD 2010) for the revised project on May 18, 2010, which supersedes the previous FDOC issued on February 12, 2002. The revised FDOC accounts for the update to the ERC package for the Project. The revised FDOC also results in a revised Best Available Control Technology (BACT) determination, revision to some of the permit conditions contained in the Commission's 2005 decision, and the addition of several new permit conditions.

Since the Commission Decision for ESPRP was issued on February 2, 2005, several air quality standards have changed. The California 1-hour nitrogen dioxide (NO<sub>2</sub>) ambient air quality standard was lowered from 0.25 ppm to 0.18 ppm which is reflected in this analysis. The federal 8-hour ozone ambient air quality standard was lowered from 0.08 ppm to 0.075 ppm; however, this will not change the Commission Decision because staff previously used the more restrictive state 8-hour ozone ambient air quality standard of 0.070 ppm. There is also a new Federal 1-hour NO<sub>2</sub> ambient air quality standard of 0.1 ppm (U.S.EPA 2010a) that went into effect on April 12, 2010.

In addition, new ambient air quality standards for fine particulate matter (PM<sub>2.5</sub>) were established by the federal United States Environmental Protection agency and the State of California. The 24-hour federal standard is 35 µg/m<sup>3</sup>. There are two annual PM<sub>2.5</sub> standards: 15 µg/m<sup>3</sup> federal, and 12 µg/m<sup>3</sup> California.

The District was also classified as an attainment area with regards to the carbon monoxide (CO) ambient air quality standards on May 11, 2007.

As part of the analysis prepared by the District for the March 13, 2008 draft Title V permit for the Project (SCAQMD 2008), the District concluded that the Project did not trigger PSD review because the net emission increase (emission increases from new units minus emission reductions for the shutdown of El Segundo Generating Station

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<sup>2</sup> Based on a combined generating capacity of 350 MW for El Segundo Boilers 1 and 2 plus 335 MW for El Segundo Boiler 3.

Units 1 and 2) for these pollutants were below the applicable PSD trigger levels. Due to the delay in the final permitting of the Project, it was necessary to reexamine the PSD applicability of the Project. This was done as part of the District's revised FDOC issued on May 18, 2010, and once again the District concluded that the Project did not trigger PSD review due in part to the additional emission decreases associated with the shutdown of El Segundo Generating Station Unit 3. On May 13, 2010, the U.S. Environmental Protection Agency (EPA) issued a final rule (i.e., "tailoring rule") (U.S.EPA 2010b) that established an approach to address greenhouse gas emissions from stationary sources under the Clean Air Act (CAA) permitting programs. This final rule sets a schedule and thresholds for greenhouse gas (GHG) emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. Up until June 30, 2011, only sources currently subject to the PSD permitting program (i.e., those that are newly-constructed or modified in a way that significantly increases emissions of a pollutant other than GHGs) would be subject to permitting requirements for their GHG emissions under PSD. Up to June 30, 2011, no sources would be subject to Clean Air Act permitting requirements due solely to GHG emissions. As stated above, the SCAQMD has determined that the ESPRP does not trigger PSD review and thus the ESPRP would not be subject to the PSD permitting requirements for GHG emissions if the project completes the permitting process before June 30, 2011. After June 30, 2011, PSD permitting requirements will apply to new construction projects that emit GHG emissions of at least 100,000 tons per year (tpy) even if they do not exceed the PSD permitting thresholds for any other pollutant. The estimated GHG emissions for the ESPRP exceed this 100,000 tpy threshold and would be subject to the PSD permitting requirements if the air quality permitting process is not completed by June 30, 2011.

## **ANALYSIS**

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This analysis has focused on those elements that are proposed to be changed from the February 2, 2005 Energy Commission decision. Those elements include the basic motive power of the project, the cooling equipment, the elimination of the new firewater pump and the new aqueous ammonia tank from the project scope, the basic construction method, and the shutdown of El Segundo Generating Station Unit 3. Staff assessed the project against the new ambient air quality standards and District rules.

## **PROJECT DESCRIPTION**

The project that was licensed in February 2005 consisted of a "2 on 1" gas turbine to steam turbine arrangement; that is, two gas turbines, with gas-fired (using duct burners) heat recovery steam generators (HRSGs) providing steam to one steam turbine. Cooling for the facility was to be achieved by making use of the existing once-through sea water cooling system. The original generation equipment approved by the Energy Commission was to be the General Electric (GE) Frame 7FA gas turbines. However, the facility owner experienced significant delays and has determined that the originally proposed equipment is not viable in the current market and that recent technological advancements in combustion turbines are a better fit.

The facility owner is now proposing to use Siemens gas turbines with un-fired HRSGs and a different configuration: "1 on 1." In this arrangement, each gas turbine (proposed

Units 5 and 7) has a separate HRSG with no duct burners, which provides steam to a dedicated steam turbine (proposed Units 6 and 8). The facility owner proposes to use two fast startup Siemens turbines and the Rapid Response Combined Cycle technology. Additionally, the Applicant proposes to use dry cooling as opposed to the once-through sea-water cooling system approved in the original Decision and to shut down El Segundo Generating Station Unit 3.

The rapid starting is accomplished by starting up each combustion turbine (219 MW each) without the steam turbine (67.7 MW each).<sup>3</sup> This is accomplished by routing steam from the heat recovery steam generator to the air-cooled condenser until the steam turbine can accept the steam, bypassing the steam turbine and starting the combustion turbine in simple-cycle mode. This takes approximately 12 minutes. These 12 minutes have higher NOx emissions because the selective catalytic reduction (SCR) device has not reached operating temperature and the only NOx control is the use of dry low-NOx burners in the combustion turbine, which limit NOx emissions to 9 ppmv. The remaining 48 minutes of the hour are fully controlled with both the dry low-NOx burners and the SCR, further reducing NOx emissions to 2 ppm. Similarly, for shutdown, there are 53 minutes of normal operation followed by 7 minutes of relatively elevated emissions when the temperature of the SCR device has dropped below the minimum operating temperature. The rapid start capabilities enable the facility to bring a total of 438 MW online within 12 minutes, much more quickly than a more conventional combined cycle facility. Allowing for the warm-up time for the SCR device enables a reduction in overall system emissions since the rapid starting capability enables faster displacement of other, older power plants with higher emission rates.

## **CONSTRUCTION**

The Applicant has described two options for delivery of pre-fabricated, heavy facility components: (1) using marine barges and beach delivery, or (2) upgrading the current access road to allow deliveries of the heavy components via surface roads. The beach delivery option is discussed below and the road delivery option is described and emissions quantified in the original, approved AFC. The road delivery option was revised slightly for the amended project (e.g., alternate delivery route due to the new, taller equipment encountering height restrictions along original route and plant entrance road improvements to facilitate ingress and egress of large delivery vehicles) and the applicant's analysis concluded that these changes were less than significant (ESPRP 2007a).

Under the beach delivery option, the gas turbines, HRSGs, steam turbines and air cooled condensers (dry cooling) will be constructed off site and transported as relatively complete units by way of a barge landing at the project site. The beach delivery option has the advantage of significantly reducing construction activities at the project site, truck deliveries to the project site and overall construction time. The beach deliveries would occur during a three-to six-month period, generally following the sequence below:

1. Initial construction of a ramp system across the beach fronting the project site;

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<sup>3</sup> The net power output is 560 MW because auxiliary loads require about 13 MW, reducing gross MWs from 573 MW to 560 MW.

2. Docking and securing a non-powered “construction” barge at the near-shore zone immediately seaward of the ramp system. This barge is different from the delivery barges that will be arriving, docking and departing in that it is anchored in place for the duration of the construction activities;
3. Docking of delivery barges to the construction barge, installation of T-plates (large “T” shaped steel plates) and ramps to connect the two barges stern to stern;
4. Closure of the bike path located on the western boundary of the proposed project in accordance with prior notification to users;
5. Roll off of the equipment from the delivery barge on to the construction barge;
6. Movement of the equipment (via self propelled motorized transporters) over the beach ramp into the project site on to the finished foundations;
7. The equipment is lifted onto the foundations by cranes; and
8. The construction barge and ramp system will be removed following the completion of the final barge delivery and the beach will be restored as provided for in a restoration plan.

The Applicant estimates that there will be six separate equipment deliveries by barge in a three- to six-month period during construction. The construction barge and delivery barges will be transported and placed in position by tugboat (estimated to be 7,200 brake horsepower). The construction barge will be pulled onto the beach at high tide with two D-6 dozers. The construction barge will then be secured to the beach by sea fastening (a specific type of anchorage cable) from the barge to the bulldozers. Once the construction barge is ballasted to a grounded position, the construction of the beach ramp system will be completed.

The beach ramp system will extend from the construction barge to the project site. The ramp will be constructed using a combination of geo-tech fiber, wood matting and sandbags filled with clean sand that are similar in nature to the native sand on the beach. A temporary access ramp will be constructed over the bike path to allow transportation of the equipment from the beach to the project site.

The construction barge and ramp system will be removed following the completion of the final equipment delivery by barge. To restore the beach to pre-project conditions, the sand bags will be opened and the sand will be left on the beach; all other materials will be removed.

This modification in construction and delivery method would affect the Commission Decision in two ways. First, the emissions associated with the ramp and construction barge may be minimal, but would extend the earth-moving operations that are necessary for such power plant construction projects. Second, a significant amount of emissions associated with on-site construction activities and truck deliveries would be avoided.

The estimated emissions increases and decreases associated with the barge delivery option are shown in **AIR QUALITY Table 1**. The emissions increases are based on four tug boats per barge delivery and six total round trip deliveries of approximately 57.6 miles from the Los Angeles/Long Beach Harbor. Increases for the beach delivery option

also include support equipment such as the crawler used for off loading, the bulldozers (which are started and made ready for use if necessary) and the ballast pumps on board the delivery and construction barges. Estimated emissions decreases attributable to the barge delivery option are due to reductions occurring from reduced road and onsite activities. The reduced net on-site construction emissions are based on assumptions that were made during the original licensing process and include an increase in construction emissions associated with the new lay down area (staging and parking), a reduction of construction equipment needed, a reduction of work force needed (approximately 103 workers) and elimination of rail deliveries. The avoided truck emissions assume that the six barge deliveries would eliminate a total of 400 truck deliveries.

The Applicant expects there to be an increase in NOx emissions of approximately 2,225 lbs for the barge delivery option relative to the land delivery option and that all other emissions would be reduced. This comparison does not include additional emission reduction benefits of a shortened construction schedule. Fabricating the major mechanical components of the power plant off site means that their fabrication can be started prior to the foundations being completed. This would compress the overall construction schedule and enable major construction equipment and personnel (and their associated emissions) to leave the project site sooner, thus reducing the overall emissions and the associated air quality impacts from the construction of the project. However, it was not possible to quantify these additional incremental benefits of the beach delivery option.

**AIR QUALITY Table 1  
Incremental Emissions (lbs) With Barge Delivery Option**

	<b>NOx</b>	<b>CO</b>	<b>VOC</b>	<b>SOx</b>	<b>PM10</b>
Increases <sup>a</sup>	6,881	2,088	317	9	136
Decreases <sup>b</sup>	4,656	4,575	634	83	216
<b>Net Emissions</b>	<b>+2,225</b>	<b>-2,487</b>	<b>-317</b>	<b>-74</b>	<b>-80</b>

Source: (ESPRP 2007a) Appendix 3.1-A.2  
Assumptions:  
<sup>a</sup> Includes four tug boats (7200 BHP main engine, 150 BHP auxiliary generator) per barge (both delivery and return); Six (6) round trips; also includes off-loading crawler, support equipment, dozer operation and ballast pumps.  
<sup>b</sup> Includes reduced construction equipment, reduced worker travel, reduced construction work force, and the removal of rail deliveries; A reduction of 400 truck deliveries, (165.6 miles average per round trip and approximately 66,240 vehicle miles).

The Applicant may decide not to employ the barge delivery option, dependent upon economic and other considerations. If the surface road delivery option is chosen, then the air quality analysis for the original overland delivery plan would remain essentially unchanged since the road delivery option for the Siemens turbines would require only insignificant changes from the road delivery option for the GE turbines.

The increased geographic distribution of the emissions for the barge delivery option would further reduce the air quality impacts from construction emissions. In the original licensing case, all the construction emissions would occur on the project construction site. With the barge delivery option, the majority of these emissions would be emitted by the tug boats, which are off shore. With this added distance, the pollutants would have more time to disperse and thus result in lower impacts on the ambient air quality on

shore. For the analysis of the barge delivery option relative to the state and federal NO<sub>2</sub> standards, the Applicant completed an air quality modeling analysis (ESPRP 2008), showing the top 100 (rank) highest ambient air quality impacts (total [project impact plus background] 1-hr NO<sub>2</sub> impacts). For simplicity, staff presents the highest (Rank 1) and 100th highest (Rank 100) modeling results to show the overall range of results.

**AIR QUALITY Table 2**  
**Estimated Impacts from Barge Delivery Option**

Rank	Modeled 1-hr NO <sub>2</sub> impact (ug/m <sup>3</sup> )	1-hr Average NO <sub>2</sub> Background (ug/m <sup>3</sup> )	Total 1-hr NO <sub>2</sub> impact (ug/m <sup>3</sup> )	1-hr NO <sub>2</sub> Standard (ug/m <sup>3</sup> )	Percent of Standard
<b>State Standard</b>					
Rank 1	296.4	18.8	315.2	339	93%
Rank 100	168.8	16.9	185.7	339	55%
<b>Federal Standard</b>					
n/a	n/a	n/a	139.0 <sup>a</sup>	188 <sup>b</sup>	74%
Sources: (ESPRP 2008; Sierra 2010)					
Notes:					
<sup>a</sup> Based on a 3-year average of the annual 98 <sup>th</sup> percentile of the daily maximum 1-hour average modeled impact plus background.					
<sup>b</sup> 3-year average of annual 98 <sup>th</sup> percentile of the daily maximum 1-hour level.					

The modeling results in **AIR QUALITY Table 2** assume that the transportation barge and the four tug boats that accompany it use EPA Tier II diesel engines (as required in **AQ-C6**). The analysis is slightly less conservative than what staff routinely requires; however, staff has determined that the modeling analysis represents a reasonably conservative estimate of the likely ambient air quality impacts of the proposed barge deliveries.

The modeling for the state 1-hr NO<sub>2</sub> standard is less conservative because it compares the hour-by-hour NO<sub>2</sub> impact predictions (from the modeling results) to the corresponding hour of measured NO<sub>2</sub> in the ambient air. The Applicant chose to model a single year (2004) that represents the most recent and highest measurements of NO<sub>2</sub> concentrations (measured at the West Los Angeles VA Hospital) in the ambient air, in combination with available meteorological data and ozone monitoring data for that same year. Comparing the hour-by-hour NO<sub>2</sub> modeling results with the corresponding background measurements is reasonably representative because the same meteorological events that precipitated the ambient NO<sub>2</sub> and ozone measurements were also used to predict the NO<sub>2</sub> modeling results. Given that the model (AERMOD) tends to over-estimate ambient impacts from emission sources and that these are moving sources that will not emit NO<sub>2</sub> at a constant rate (as the model must assume), staff has determined that the modeling analysis performed by the Applicant is a reasonably conservative representation of the likely emission impacts from the barge deliveries.

For the analysis of the federal 1-hr NO<sub>2</sub> standard (Sierra 2010), the modeled hourly NO<sub>2</sub> project impact for each receptor for the years 2005 through 2007 was added to the corresponding background hourly NO<sub>2</sub> concentration to determine the total NO<sub>2</sub>

concentration for that receptor for each hour. The daily maximum total hourly NO<sub>2</sub> concentration for each day was determined for each receptor. For each year, the 98<sup>th</sup> percentile of the daily maximum total hourly concentrations was determined for each receptor. Once this was established, the three-year average of the annual 98<sup>th</sup> percentile of the daily maximum total hourly concentrations was calculated for each receptor. The receptor with the highest three-year average was selected to represent the maximum total hourly NO<sub>2</sub> concentration. This is the value shown in **AIR QUALITY Table 2** that is compared to the federal standard.

## **MINOR CONSTRUCTION CHANGES**

The minor construction changes include the following elements:

- The addition of offsite laydown areas for equipment staging and construction employee parking; and
- Modification to the plant's access road configuration.

These elements are subject to the construction conditions (**AQ-C1** through **AQ-C4**) and thus are not expected to cause or contribute to exceedances of the ambient air quality standards. Therefore, staff is reasonably certain that any impacts that may occur from these elements will not be significant under the California Environmental Quality Act. In addition, since the El Segundo Generating Station Unit 3 will remain in place for the foreseeable future following its shutdown, there are no demolition/construction impacts associated with the proposed shutdown of this unit.

## **COMMISSIONING**

The initial commissioning of a power plant refers to the time frame between completion of construction and the consistent production of electricity for sale on the market. Normal operating emission limits usually do not apply during initial commissioning procedures. The Applicant will go through several tests during initial commissioning. During the first set of tests, post-combustion controls will not be operational (i.e., the SCR and oxidation catalyst).

These tests start with a Full Speed-No Load test. This test runs the turbine at approximately 20 percent of its maximum heat input rate. Components tested include the ignition system, synchronization with the electric generator and the turbine-overspeed safety system. Part Load testing runs the turbines to approximately 60 percent of the maximum heat input rating. During this test, the turbine and HRSG will be tuned and the HRSG steam lines will be checked. Full Load testing runs the turbines to their maximum heat input rate. This testing entails further tuning of the turbine and HRSG as well as the steam lines. Full Load Partial Selective Catalytic Reduction (SCR) testing runs the turbines at 100 percent of their maximum heat input rate and operates the SCR ammonia injection grid for the first time at a reduced ammonia injection rate. Finally, Full Load Full SCR testing runs the turbines at their maximum heat input rate and operates the SCR ammonia injection grid at its full capacity to minimize NO<sub>x</sub> emissions. It is during this test that the SCR system will be completely tuned to operate at design levels (i.e., NO<sub>x</sub> control at 2.0 ppm and ammonia slip emissions of 5 ppmv at 15% oxygen).

The Applicant has stated that the manufacturer estimates that 415 hours over two months is sufficient to complete each turbine train commissioning. Daily operation of the turbines during the commissioning period is typically limited to several hours a day. The Applicant has estimated that the approximate total emissions during commissioning are as shown in **AIR QUALITY Table 3**. This table also compares the commissioning emissions from the Siemens turbines to the original project's use of the GE Frame 7FA turbines.

**AIR QUALITY Table 3**  
**Maximum Expected Total Emissions from Commissioning**  
**(Units in Pounds)**

	<b>NOx</b>	<b>CO</b>	<b>VOC</b>	<b>PM10</b>
Commissioning Emissions Per Turbine Train <sup>a</sup>	12,478	130,337	6,952	3,911
Total for two Turbine Trains <sup>a</sup>	24,956	260,674	13,904	7,822
Original Licensing Case <sup>b</sup>	34,535	111,463	1,803	7,128
Notes: <sup>a</sup> Source: ESPRP 2007b, Appendix G <sup>b</sup> Source: CEC 2002, Air Quality Table 13				

The Applicant did not estimate the expected SOx emissions during commissioning. However, the SOx emissions were estimated in the original licensing case and were reported as 664 lbs of SOx for the commissioning of both combustion trains. Both SOx and respirable PM10 emissions are a function of the amount of fuel burned because there is no post-combustion pollution control equipment for either pollutant (such as SCR for NOx or the oxidation catalyst for CO and VOC). The Applicant is estimating an increase in the commissioning emissions of PM10 by 10 percent over the original licensing case (i.e., from **AIR QUALITY Table 3**: 7,822 compared to 7,128 shows a 10 percent increase). ESPRP is burning the same fuel as was originally proposed; therefore staff finds it reasonable to estimate the SOx commissioning emission for the proposed amendment as approximately 10 percent increase from the original licensing case. That is 730.4 (1.10 times 664) lbs SOx for the commissioning of both turbine trains.

Given that the proposed combustion turbines have not been on the market long, it is not surprising that there may be insufficient data to warrant lower commissioning phase emission guarantees from the manufacturer. Estimating the emissions during commissioning relies almost solely on the manufacturer's research and guarantees.

However, the commissioning phase emissions of CO and VOC are estimated to be significantly higher than the original licensing case; in the case of VOC, more than seven times higher. Based on the modeling provided, staff believes that it is unlikely that the CO emissions will cause or contribute to an exceedance of the state or federal CO ambient air quality standards even at their proposed emission levels. However, a contribution to the ongoing ozone violations in the SCAQMD is possible from the increased VOC emissions since VOC emissions are a known precursor emission to ozone formation. Therefore, staff recommends a condition requiring the Applicant to mitigate the VOC commissioning emissions by installing the oxidation catalyst early in the commissioning process and, if necessary, replacing the oxidation catalyst prior to

initial performance testing which follows commissioning (**AQ-C7**). This mitigation was proposed and successfully implemented by the City of Vernon for the Malburg Generating Station (01-AFC-25) for smaller capacity combustion turbines (Alstom GTX 100).

The Applicant modeled the expected air quality impacts from the commissioning activities outlined above. The delay in the permitting caused by the July 28, 2008 court decision also affects the background ambient concentrations used for the ambient air quality modeling analyses performed for the Project. In the previous ambient air quality impact analyses included in the Staff Analysis Report (CEC 2008), the background ambient concentrations for the project area were based on data collected at nearby monitoring stations during the three-year period from 2004 to 2006. Consequently, it was necessary to update these values to account for more recent data collected during the three-year period from 2006 to 2008. These updated background concentrations are shown in **AIR QUALITY Tables 4 through 7**. The air quality impact results shown in **AIR QUALITY Table 4** demonstrate that the emissions from commissioning will not cause or contribute to an exceedence of the ambient air quality standards. The commissioning impacts for SO<sub>2</sub> and PM<sub>10</sub> are not shown in **AIR QUALITY Table 4** because the impacts during commissioning are not expected to be higher than the normal operating impacts shown in **AIR QUALITY Table 5**.

**AIR QUALITY Table 4  
Commissioning Air Quality Impacts**

<b>Pollutant</b>	<b>Averaging Time</b>	<b>Predicted Project Impact<sup>c</sup> (µg/m<sup>3</sup>)</b>	<b>Background<sup>d</sup> (µg/m<sup>3</sup>)</b>	<b>Total Impact (µg/m<sup>3</sup>)</b>	<b>Ambient Air Quality Standard (µg/m<sup>3</sup>)</b>	<b>Percent of Standard</b>
NO <sub>2</sub> – State Standard	1-hour	118	169	287	339	85%
NO <sub>2</sub> – Federal Standard	1-hour	n/a	n/a	122.0 <sup>a,e</sup>	188 <sup>b</sup>	65%
CO	1-hour	2,248	3,335	5,583	23,000	24%
CO	8-hour	1,028	2,300	3,328	10,000	33%
Notes:						
<sup>a</sup> Based on the 3-year average of the annual 98 <sup>th</sup> percentile of the daily maximum 1-hour average modeled impact plus background.						
<sup>b</sup> 3-year average of annual 98 <sup>th</sup> percentile of the daily maximum 1-hour level.						
<sup>c</sup> Source (ESPRP 2007b) Appendix P, Table P.1						
<sup>d</sup> Source (ESPRP 2010) Table 3.1-2						
<sup>e</sup> Source (Sierra 2010)						

## OPERATION

The Applicant proposes to operate the Siemens turbines differently than was originally licensed for the GE turbines. The GE turbines were licensed to operate at a 100 percent annual capacity factor, whereas the Applicant is now proposing to operate the Siemens turbines at an annual capacity factor ranging from 40 percent to 60 percent. The project would have the potential, or be permitted, to operate each turbine approximately 5,456 hours/year, which would be equivalent to an annual capacity factor of approximately 62

percent. The Siemens turbines would also have a slightly different emission profile than the GE turbines. Thus, the Applicant proposes to modify the project emission limits. These modifications have been accepted by the SCAQMD in the revised FDOC issued on May 18, 2010. The 2005 Commission decision included several hourly emission limits not explicitly stated in the District's revised FDOC. However, since the other emission limits in the District's FDOC are in most cases equivalent to the hourly emission limits for the worst case operating scenario (i.e., full load operation), staff concludes that the permit limits in the District's revised FDOC are consistent with the original objectives of the Commission's 2005 Decision.

The current amendment request would lower all emissions with the exception of VOC even though the VOC emission rate during operation will decrease and the number of hours of operation of the facility would significantly decrease. The overall increase in VOC emissions is due to the higher VOC emissions for the Siemens CTG during startup and shutdown compared to the GE CTG. This is a characteristic difference between the Siemens Rapid Response Combined Cycle technology and the GE Frame 7FA turbines. The VOC startup and shutdown emission estimate for the GE turbines was 2.56 lbs/hour, while the VOC emission rate for the Siemens turbine is 17.30 lbs/hour for startup and 9.74 lbs/hour for shutdown. This is an emissions increase of 528 percent for one startup/shutdown cycle. However, as noted above, the VOC emission rate during operation will decrease and the number of hours of operation will decrease such that the total permitted VOC emissions would increase by only 30 percent.

## **AMBIENT AIR QUALITY IMPACTS**

The proposed emission limits were modeled by the Applicant, with the results shown in **AIR QUALITY Table 5**. The background ambient air quality monitoring (shown in the Background column) are the highest values recorded at the monitoring stations (West Los Angeles VA Hospital and North Long Beach monitoring stations) during the years of 2006 through 2008. **AIR QUALITY Table 5** shows that only the facility's PM10 and PM2.5 emissions have the potential to contribute to an on-going violation of ambient air quality standards. This result is due to high background values for PM10 and PM2.5.

**AIR QUALITY Table 5**  
**Modeled Maximum Impacts for Units 5 and 7**  
**For Post-Commissioning Operations**

Pollutant	Averaging Time	Predicted Project Impact <sup>e</sup> (µg/m <sup>3</sup> )	Background <sup>f</sup> (µg/m <sup>3</sup> )	Total Impact (µg/m <sup>3</sup> )	Ambient Air Quality Standard (µg/m <sup>3</sup> )	Project Impact Percent of Standard	Total Impact Percent of Standard
NO <sub>2</sub>	1-hour (State Standard)	53.72 <sup>a</sup>	169	222.7	339	16%	66%
	1-hour (Federal Standard)	n/a	n/a	120.8 <sup>a,c</sup> <sub>,g</sub>	188 <sup>d</sup>	n/a	64%
	Annual	0.29 <sup>b</sup>	36	36.3	56	0.5%	65%
SO <sub>2</sub>	1-hour	1.40 <sup>b</sup>	228	229.4	655	0.2%	35%
	3-hour	1.25 <sup>b</sup>	97	98.3	1300	0.1%	8%
	24-hour	0.30 <sup>b</sup>	26	26.3	105	0.3%	25%
	Annual	0.025 <sup>b</sup>	8	8.0	80	0.0%	10%
CO	1-hour	485.44 <sup>a</sup>	3,335	3,820.4	23,000	2.1%	17%
	8-hour	222.01 <sup>a</sup>	2,300	2,522.0	10,000	2.2%	25%
PM10	24-hour	1.25 <sup>b</sup>	78	79.25	50	2.5%	159%
	Annual	0.17 <sup>b</sup>	34	34.2	20	0.9%	171%
PM2.5	24-hour	1.25 <sup>b</sup>	41	42.3	35	3.6%	121%
	Annual	0.17 <sup>b</sup>	15	15.2	12	1.4%	127%

Notes: All impacts include both combustion turbine trains units 5 and 7.  
<sup>a</sup> Startup/shutdown emission impacts  
<sup>b</sup> Normal operation emission impacts including startups and shutdowns.  
<sup>c</sup> Based on a 3-year average of the annual 98<sup>th</sup> percentile of the daily maximum 1-hour average modeled impact plus background.  
<sup>d</sup> 3-year average of annual 98<sup>th</sup> percentile of the daily maximum 1-hour level.  
<sup>e</sup> Source (ESPRP 2007b) Appendix P, Table P.1  
<sup>f</sup> Source (ESPRP 2010) Table 3.1-2  
<sup>g</sup> Source (Sierra 2010)

## **Fumigation**

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 the vertical mixing (both rising and sinking) 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 ground level potentially causing relatively high concentrations at ground level. As the sun rises and continues to heat the ground, the depth of this vertical mixing layer increases and the emissions plume becomes better dispersed. This early morning air pollution event, called fumigation, usually lasts approximately 30 to 90 minutes.

The Applicant used the SCREEN 3 model, which is an EPA-approved model, for the calculation of fumigation impacts. **AIR QUALITY Table 6** shows the modeled fumigation results and impacts on the short-term NO<sub>2</sub>, CO, SO<sub>2</sub>, PM10 and PM2.5 standards. Since fumigation impacts will not typically occur much beyond a 1-hour period, only impacts on the short-term standards were addressed. **AIR QUALITY Table 6** shows

that only PM10 and PM2.5 emissions from the facility have the potential to contribute to an on-going violation of the ambient air quality standards due to fumigation. This result is due to high background values for PM10 and PM2.5.

**AIR QUALITY Table 6**  
**Modeled Fumigation Shoreline Impacts for Units 5 and 7**

Pollutant	Averaging Time	Predicted Project Impact <sup>a</sup> (µg/m <sup>3</sup> )	Background <sup>b</sup> (µg/m <sup>3</sup> )	Total Impact (µg/m <sup>3</sup> )	Ambient Air Quality Standard (µg/m <sup>3</sup> )	Project Impact Percent of Standard	Total Impact Percent of Standard
<b>NO<sub>2</sub></b>	1-hour	10.73	169	179.7	339	3.2%	53%
<b>SO<sub>2</sub></b>	1-hour	3.04	228	231.0	655	0.5%	35%
	3-hour	1.59	97	98.6	1,300	0.1%	8%
	24-hour	0.26	26	26.3	109	0.2%	24%
<b>CO</b>	1-hour	9.80	3,335	3,344.8	23,000	0.0%	15%
	8-hour	2.18	2,300	2,302.2	10,000	0.0%	23%
<b>PM10</b>	24-hour	1.09	78	79.09	50	2.2%	158%
<b>PM2.5</b>	24-hour	1.09	41	42.1	35	3.1%	120%

<sup>a</sup> Source (ESPRP 2007b) Appendix P, Table P.1

<sup>b</sup> Source (ESPRP 2010) Table 3.1-2

The Applicant provided staff with a modeling analysis of the impacts of the entire El Segundo facility with the two Siemens RRCC generating units and the existing El Segundo Units 3 and 4. The applicant used the AERMOD model to quantify the potential impacts of the project for both turbines during normal steady-state operation and during start-up conditions. This modeling analysis consisted of a screening level and a refined level analysis. The screening level analysis tested basic operating conditions, which combined various load levels with several ambient air temperatures. The refined modeling was developed from these screening level runs.

In modeling the operational emission impacts for the entire El Segundo facility, the Applicant chose to include emissions from the base load operation of the existing boiler units 3 and 4, even though these emissions would normally be considered part of the background concentrations and Unit 3 would be shutdown as part of the emission offset package for the project. This conservative approach will overestimate the project's potential ambient air quality impacts. The Applicant has modeled the startup emissions and steady-state operational emissions of the CTG systems alone as well. **AIR QUALITY Table 7** shows that only the PM10 and PM2.5 emissions from the facility have the potential to contribute to on-going violation of the ambient air quality standards. This result is due to high background values for PM10 and PM2.5.

**AIR QUALITY Table 7**  
**Modeled Maximum Impacts for the Entire El Segundo Facility**

Pollutant	Averaging Time	Predicted Facility Impact <sup>f</sup> (µg/m <sup>3</sup> )	Background <sup>g</sup> (µg/m <sup>3</sup> )	Total Impact (µg/m <sup>3</sup> )	Ambient Air Quality Standard (µg/m <sup>3</sup> )	Project Impact Percent of Standard	Total Impact Percent of Standard
NO <sub>2</sub>	1-hour (State Standard)	152.71 <sup>a</sup>	169	321.7	339	45.2%	95%
	1-hour (Federal Standard)	n/a	n/a	123.0 <sup>a,d,h</sup>	188 <sup>e</sup>	n/a	65%
	Annual	1.43 <sup>b</sup>	36	37.4	56	2.6%	67%
SO <sub>2</sub>	1-hour	5.10 <sup>c</sup>	228	233.1	655	0.8%	36%
	3-hour	3.24 <sup>c</sup>	97	100.2	1,300	0.3%	8%
	24-hour	0.93 <sup>b</sup>	26	26.9	105	0.9%	26%
	Annual	0.092 <sup>b</sup>	8	8.1	80	0.1%	10%
CO	1-hour	2536.21 <sup>a</sup>	3,335	5,871.2	23,000	11.0%	26%
	8-hour	1203.28 <sup>a</sup>	2,300	3,503.3	10,000	12.0%	35%
PM <sub>10</sub>	24-hour	8.26 <sup>b</sup>	78	86.26	50	16.5%	173%
	Annual	1.03 <sup>b</sup>	34	35.0	20	5.2%	175%
PM <sub>2.5</sub>	24-hour	8.26 <sup>b</sup>	41	49.3	35	23.6%	141%
	Annual	1.03 <sup>b</sup>	15	16.0	12	8.6%	133%

Notes: All impacts include combustion turbine trains units 5 and 7 and boiler units 3 and 4. All boiler emissions assumed normal base load operation activities.

<sup>a</sup> Turbine emission impacts from commissioning activities

<sup>b</sup> Turbine emissions impacts from normal operation

<sup>c</sup> Turbine emission impacts from fumigation impact analysis

<sup>d</sup> Based on the 3-year average of the annual 98<sup>th</sup> percentile of the daily maximum 1-hour average modeled impact plus background.

<sup>e</sup> 3-year average of annual 98<sup>th</sup> percentile of the daily maximum 1-hour level.

<sup>f</sup> Source (ESPRP 2007b) Appendix P, Table P.5

<sup>g</sup> Source (ESPRP 2010) Table 3.1-2

<sup>h</sup> Source (Sierra 2010)

## MITIGATION

The ESPRP qualifies under SCAQMD Rule 1304(b)(2) for an exemption from the New Source Review (NSR) offset requirements in Rule 1303 because the project replaces existing boiler units with advanced combustion turbine units. With the shutdown of the additional boiler Unit 3, the total generating capacity of 685 MWs associated with the shutdown of the existing units (Units 1, 2, and 3) exceeds the 573 MW capacity of the Project. This means that with the shutdown of the three boiler units at the existing El Segundo Generating Station, the Project is fully offset under Rule 1304 and the SCAQMD will draw upon the District Account (Rule 1315) of emission reduction credits (ERCs) to provide the necessary ERCs for the Project. **AIR QUALITY Table 8** shows the California Environmental Quality Act (CEQA) mitigation that is provided for the ESPRP emission impacts, which is based on the new source review (NSR) offsets identified in the SCAQMD revised FDOC issued on May 18, 2010 (SCAQMD 2010). Because the project area is classified as attainment for CO, the District NSR regulations do not require ERCs for this pollutant, and other than the installation of BACT and

modeling to show that the Project does not cause or contribute to a violation of a CO ambient air quality standard, the staff does not require mitigation for this pollutant.

**AIR QUALITY Table 8**  
**CEQA Mitigation (30-day average lbs/day)**

	<b>NOx (lbs/year)</b>	<b>VOC</b>	<b>SOx</b>	<b>PM10</b>
Emission Reduction Credits or RECLAIM Trading Credits	181,910 (209,730 <sup>a</sup> )	0	0	0
1304 Exemption Credits	0	328 (364 <sup>a</sup> )	72	462
Total Credits	181,910 (209,730 <sup>a</sup> )	328 (364 <sup>a</sup> )	72	462

Source: (SCAQMD 2010)

Notes:

<sup>a</sup> Emissions for NOx and VOC for Commissioning Year would be higher than Non-Commissioning Years. All emissions for both Commissioning Year and Non-Commissioning Years would be offset by ERCs, RECLAIM Trading Credits or Rule 1304 exemption credits.

## EMISSION REDUCTION CREDITS

Because all of the emissions reduction credits (ERCs) required for the project will now be provided under Rule 1304 by the replacement of the three boiler units at the El Segundo Generating Station, these ERCs are now shown in **AIR QUALITY Table 9**.

The ESPRP emissions shown in **AIR QUALITY Table 9** are calculated from the monthly emissions limits in the revised FDOC divided by 30 to produce the 30-day average lbs/day values (with the exception of NOx, which is pounds per year). Staff has found it appropriate to use the 30-day average lbs/day value for characterizing the project emission profile in the SCAQMD. That is due to the fact that the SCAQMD calculates ERCs on a 30-day lb/day average value as described below.

The project emissions 30-day average is calculated by totaling the worst case month that the project is expected to have and dividing that total by 30 to create an lbs/day 30-day average. A project must obtain ERCs for the 30-day average lbs/day value. A lbs/day average based on an annual average is always going to be lower than a lbs/day average based on a worst case month for the same emitting source. Any emitting source will always have a month where it emits more pollutants than any other month, but in an annual average this peak month is washed out over the year. Thus the lbs/day ERC calculation is more conservative than the lbs/day annual average emission calculation. Therefore, for projects located in the SCAQMD, staff uses the 30-day average lbs/day value to characterize the project emissions profile when comparing it to the ERCs being offered.

## CUMULATIVE ASSESSMENT

The Applicant proposes to decrease all criteria pollutant emissions with the exception of VOC emissions. Thus, if left unmitigated, the increase in VOC emissions is presumed to contribute to the ongoing violations of the ozone ambient air quality standards. **AIR QUALITY Table 9** shows the ESPRP emissions and the proposed mitigation from **AIR QUALITY Table 8**, demonstrating that the petition to amend the ESPRP is fully

mitigated. Therefore, staff concludes that the potential ESPRP emission air quality impacts are not cumulatively considerable.

**AIR QUALITY Table 9  
Balance of Project Emissions and Mitigation <sup>a</sup>  
(30-day average - lbs/day)**

	<b>NOx</b>	<b>SOx</b>	<b>VOC</b>	<b>PM10</b>
ESPRP Emissions (lbs/month) (SCAQMD 2010)	181,910 (lbs/year)	2,130	9,860	13,870
ESPRP Emissions (lbs/day)	n/a	72	328	462
ESPRP Mitigation (AIR QUALITY Table 8)	181,910 (lbs/year)	72	328	462
Further Mitigation Needed	None	None	None	None
Notes: <sup>a</sup> Emissions for NOx and VOC for Commissioning Year would be higher than Non-Commissioning Years. All emissions for both Commissioning Year and Non-Commissioning Years would be offset by ERCs, RECLAIM Trading Credits or Rule 1304 exemption credits.				

## SCAQMD MODIFICATION TO THE DETERMINATION OF COMPLIANCE

The revised FDOC accounts for the update to the ERC package for the Project based on the proposed shutdown of El Segundo Generating Station Units 1, 2 and 3. The revised FDOC also includes a revised Best Available Control Technology (BACT) determination, revision to some of the permit conditions contained in the Commission's 2005 decision, and the addition of several new permit conditions. In addition, the revised FDOC includes minor changes in response to the Environmental Protection Agency comments on other recent power plant projects in SCAQMD jurisdiction. These changes generally clarify emissions source testing procedures.

The Applicant has revised the project scope to use the existing aqueous ammonia storage tank and firewater pump on the property site. Staff will remove Condition of Certification **AQ-28** for the firewater pump. The Applicant has voluntarily opted to install additional controls on the existing ammonia tank and this is reflected in the change to **AQ-29** and the addition of **AQ-30** and **AQ-31**.

## CONCLUSION

Staff has analyzed the proposed changes and concludes that there are no new or additional significant impacts associated with approval of the petition. Staff concludes that the proposed changes are based on information that was not available during the original licensing process. Staff concludes that the proposed language retains the intent of the original Commission Decision and Conditions of Certification. Based on this additional information, staff recommends the deletion of Conditions of Certification **AQ-9, -10, -13, -21, and -28**; the following modifications to Conditions of Certification **AQ-2, -3, -4, -5, -6, -7, -11, -12, -14, -15, -16, -17, -18, -19, -20, -22, -23, -24, -25, -26, -27 and --29** and the addition of Conditions of Certification **AQ-C6, -C7, -C8 and AQ-30** through **AQ-40**. Because the ERC package proposed for the Project has been updated since the 2005 Commission decision, it was necessary for the Staff to revise Condition of Certification **AQ-C5** to reflect the new ERCs based on SCAQMD Rule 1304.

In addition to these changes, on July 14, 2008, the Applicant submitted comments on the Air Quality Conditions of Certification in the June 2008 Staff Analysis (CEC-700-2008-006). This Applicant package requested changes to Air Quality Conditions of Certification **AQ-C6, -C7, AQ-3, -4, -6, -7, -9, -11, -16, -17, -26, -30, and -36**. The staff generally concurs with these requested changes (except for **AQ-C7**), and these changes have been incorporated in the following proposed modifications to the Conditions of Certifications.

## PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

Staff has proposed modifications to the Air Quality Conditions of Certification as shown below. For completeness, all Conditions of Certification are shown, those that need changes and those that do not change. (Note: Deleted text is shown in ~~strikethrough~~ and new text is shown in **bold and underline**.)

**AIR QUALITY Table 10** maps out the relationship between Energy Commission condition numbering and District condition numbering.

**AIR QUALITY Table 10**  
**Mapping of Energy Commission and District Condition Numbering**

<b>Energy Commission</b>	<b>District</b>	<b>Energy Commission</b>	<b>District</b>
AQ-C1	(none)	AQ-20	A433.1
AQ-C2	(none)	AQ-21	(deleted)
AQ-C3	(none)	AQ-22	E179.5
AQ-C4	(none)	AQ-23	E179.6
AQ-C5	(none)	AQ-24	A195.9
AQ-C6	(none)	AQ-25	A195.8
AQ-C7	(none)	AQ-26	A195.11
AQ-C8	(none)	AQ-27	I296.2
AQ-1	(deleted)	AQ-28	(deleted)
AQ-2	D12.11	AQ-29	C157.1
AQ-3	D12.12	AQ-30	E144.2
AQ-4	D12.13	AQ-31	E57.2
AQ-5	D29.8	AQ-32	A99.9
AQ-6	D29.7	AQ-33	A195.10
AQ-7	D29.9	AQ-34	B61.2
AQ-8	K40.4	AQ-35	C1.6
AQ-9	(deleted)	AQ-36	K67.5
AQ-10	(deleted)	AQ-37	F2.1
AQ-11	A63.2	AQ-38	A327.1
AQ-12	D12.10	AQ-39	E193.2
AQ-13	(deleted)	AQ-40	E193.3
AQ-14	D82.4		
AQ-15	D82.5		
AQ-16	A99.7		
AQ-17	A99.8		
AQ-18	A99.10		
AQ-19	A99.11		

**AQ-C1:** The project owner shall submit the resume(s) of their selected Construction Mitigation Manager(s) (CMM) to the **Compliance Project Manager** (CPM for approval). The CMM shall preferably have a minimum of 8 years experience as follows; however, the CPM will consider all resumes submitted regardless of experience:

- 5 years construction experience, as a subcontractor or general contractor;
- 1 year experience in construction project management;
- 2 year experience in air quality assessment; and
- Must have an engineering degree or equivalent or an additional 5 years construction experience.

The project owner shall make available a dedicated office for the CMM. The CMM shall be responsible for implementing all mitigation measures related to construction, as outlined in Conditions of Certification for construction **AQ-C1** through **AQ-C4**. The CMM shall be on-site or available to be on-site at any time. The CMM will be granted access to all areas of the main and related linear facility construction-sites. The CMM shall have the authority to stop construction on either the main or the related linear facility construction-sites as warranted by specific mitigation measures. The CMM position may not be terminated prior to the cessation of all construction activities unless written approval is granted by the CPM.

**Verification:** The project owner shall submit the CMM resume at least 60 days prior to site mobilization.

**AQ-C2:** The CMM shall prepare and submit for approval to the CPM, a Fugitive Dust Mitigation Plan that will specifically identify fugitive dust mitigation measures that will be employed during the construction phase of the main and related linear construction sites. The CMM will be responsible for implementing and maintaining all measures identified in the Fugitive Dust Mitigation Plan. The Fugitive Dust Mitigation Plan must address at a minimum the following:

- the identification of the employee parking area(s) and surface of the parking area(s);
- the frequency of watering of unpaved roads;
- the application of chemical dust suppressants;
- the use of gravel in high traffic areas;
- the use of paved access aprons;
- the use of sandbags to prevent run off;
- the use of posted speed limit signs;
- the use of wheel washing areas prior to large trucks leaving the project site;
- the methods that will be used to clean tracked-out mud and dirt from the project site onto public roads;
- the transport of borrowed fill material,
- the use of vehicle covers;
- the use of wetting of the transported material;
- the use of appropriate freeboard;
- the method for the stabilization of storage piles and disturbed areas;
- the use of windbreaks at appropriate locations;

- the suspension of all earth moving activities under windy conditions; and
- the use of on-site monitoring devices.

**Verification:** The CMM shall submit the Fugitive Dust Mitigation Plan to the CPM for approval at least 30 days prior to site mobilization.

**AQ-C3:** The CMM shall prepare and submit to the CPM a Diesel Construction Equipment Mitigation Plan that will specifically identify diesel engine mitigation measures that will be employed during the construction phase of the main and related linear construction-sites. The CMM will be responsible for implementing and maintaining all measures identified in the Diesel Construction Equipment Mitigation Plan. The CMM shall submit to the CPM, in the Monthly Compliance Report, a construction mitigation report that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the AQCMP mitigation measures shall require prior and CPM notification and approval.

The Diesel Construction Equipment Mitigation Plan shall include will address the following mitigation measures:

- a. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMC showing that the engine meets the conditions set forth herein.
- b. All construction diesel engines with a rating of 50 hp or higher shall meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the CPM that is certified by the on-site AQCMC demonstrates that such engine is not available for a particular item of equipment. In the event that a Tier 3 engine is not available for any off-road equipment larger than 100 hp, that equipment shall be equipped with a Tier 2 engine, or an engine that is equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOx) and diesel particulate matter (DPM) to no more than Tier 2 levels unless certified by engine manufacturers or the on-site AQCMC that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is “not practical” for the following, as well as other, reasons:
  1. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question to Tier 2 equivalent emission levels and the highest level of available control using retrofit or Tier 1 engines is being used for the engine in question; or
  2. The construction equipment is intended to be on site for 10 days or less.

The CPM may grant relief from this requirement if the AQCOMM can demonstrate a good faith effort to comply with this requirement and that compliance is not practical.

- c. The use of a retrofit control device may be terminated immediately, provided that the CPM is informed within 10 working days of the termination and that a replacement for the equipment item in question meeting the controls required in item "b" occurs within 10 days of termination of the use, if the equipment would be needed to continue working at this site for more than 15 days after the use of the retrofit control device is terminated, if one of the following conditions exists:
  1. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.
  2. The retrofit control device is causing or is reasonably expected to cause engine damage.
  3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.
  4. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.
- d. All heavy earth-moving equipment and heavy duty construction-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.
- e. All diesel heavy construction equipment shall not idle for more than five minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement.
- f. Construction equipment will employ electric motors when feasible.
  - ~~the use of catalyzed diesel particulate filters (CDPF);~~
  - ~~the use of CARB certified ultra low sulfur diesel fuel, containing 15ppm sulfur or less (ULSD);~~
  - ~~the use of diesel engines certified to meet EPA and/or CARB 1996 or better offroad equipment emission standards; and~~
  - ~~the practice of restricting diesel engine idle time, to the extent practical, to no more than 10 minutes.~~

~~The Diesel Construction Equipment Mitigation Plan must include the following:~~

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

~~contractors become available. Prior to a contractor gaining access to the main or related linear construction sites, the CMM will submit to the CPM for approval, an update of this list with regard to that contractor's diesel construction equipment.~~

- ~~2. Each piece of construction equipment listed under item (1) must demonstrate compliance by the following mitigation requirements with the exceptions described in items (3), (4) and (5):~~

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

- ~~3. If the construction equipment is intended to be operated on-site for 10 days or less, then no mitigation measures identified in item (2) are required.~~
- ~~4. The CPM may grant relief from the mitigation measures listed under item (2) for a specific piece of equipment if the CMM can demonstrate that they have made a good faith effort to comply with said mitigation measures and that compliance is otherwise not possible.~~
- ~~5. Any implemented mitigation measure in item (2) may be terminated immediately if one of the following conditions exists, however the CPM must be informed within 10 working days of the termination:~~
- ~~a) The measure is excessively reducing normal availability of the construction equipment due to increased downtime for maintenance, and/or power output due to an excessive increase in back pressure.~~
  - ~~b) The measure is causing or is reasonably expected to cause significant engine damage.~~
  - ~~c) The measure is causing or is reasonably expected to cause a significant risk to nearby workers or the public.~~
  - ~~d) Any other seriously detrimental cause which has approval by the CPM prior to the termination being implemented.~~
  - ~~e) All contractors must agree to limit diesel engine idle time on all diesel powered equipment, to the extent practical, to no more than 10 minutes.~~

**Verification:** The CMM shall submit the initial Diesel Construction Equipment Mitigation Plan to the CPM for approval at least 30 days prior to site mobilization. The CMM will update the initial Diesel Construction Equipment Mitigation Plan as necessary, no less than 10 days prior to a specific contractor gaining access to either the main or related linear construction-sites. The CMM will notify the CPM of any emergency termination within 10 working days of the termination.

**AQ-C4:** The CMM will submit to the CPM for approval, the Monthly Construction Compliance Report that will summarize all compliance actions taken germane to Conditions of Certification **AQ-C2** and **AQ-C3**. The Monthly Construction Compliance Report will include the following elements:

Fugitive Dust Mitigation Monthly Report (see Condition of Certification **AQ-C2**):

- Identification of each mitigation measure approved by the CPM.

- Identification of specific mitigation measure performed, the location performed, date performed and date enforced or verified as remaining effective.
- Identification of any transgressions or circumventions of mitigation measure and the actions taken to correct the situation.
- Identification of any observation by the CMM of dust plumes beyond the property boundary of the main construction-site or beyond an acceptable distance from the linear construction-site and what actions (if any) were taken to abate the plume.

Diesel Construction Equipment Mitigation Monthly Report (see Condition of Certification **AQ-C3**).

- Identification of any changes, as approved by the CPM, to the Diesel Construction Equipment Mitigation Plan from the initial report or the last monthly report including any new contractors and their diesel construction equipment.
- A copy of all receipts or other documentation indicating type and amount of fuel purchased, from whom, where delivery occurred and on what date for the main and related linear construction-sites.
- Identification and verification of all diesel engines required to meet EPA or CARB **Tier 3 or better** off-road diesel equipment emission standards.
- The identification of any suitability report being initiated, pursued or the completed report should be included in the monthly report (in the month that it was completed) as should the verification of any subsequent installation of a catalyzed diesel particulate filter. The suitability of the use of a catalyzed diesel particulate filter for a specific piece of construction equipment is to be determined by a qualified mechanic or engineer who must submit a report through the CMM to the CPM for approval.
- Identification of any observation by the CMM of dark plumes emanating from diesel-fired construction equipment that extend beyond the property boundary of the main construction-site or beyond an acceptable distance from the linear construction-site and what actions (if any) were taken to abate the plume or future expected plumes.

**Verification:** CMM shall submit to the CPM for approval, the Monthly Construction Compliance Report by the 10<sup>th</sup> day of each month while construction is occurring at the main or related linear construction-sites.

**AQ-C5** Within 90 days of startup of the combined cycle gas turbines, the project owner shall **shutdown El Segundo Generating Station Units 1, 2, and 3 and use the SCAQMD Rule 1304 boiler replacement offset exemption to fully offset the project SOx, VOC, and PM10 emissions.** ~~commit specific emission reduction credits certificates for the ESPRP to offset the project emissions as provided for in **Table AQ-05-1**. The project owner shall not use of any ERCs to be surrendered in the **Table AQ-05-1** for purposes other than offsetting the ESPRP.~~

TABLE AQ-05-1 — Emission Offset Requirements

Certificate Number	Amount	Pollutant
AQ003331	47	SO <sub>2</sub>
AQ003332	13	SO <sub>2</sub>
AQ003333	17	SO <sub>2</sub>
AQ003334	75	SO <sub>2</sub>
AQ003336	19	SO <sub>2</sub>
AQ003463	4	SO <sub>2</sub>
AQ003464	4	SO <sub>2</sub>
AQ004450	10	SO <sub>2</sub>
AQ004498	10	SO <sub>2</sub>
Total of Certificates Identified	193	SO <sub>2</sub>
Total to be surrendered	43	SO <sub>2</sub>
District Exempted Emission Offsets	29	SO <sub>2</sub>
Total surrendered & exempted emissions	72	SO <sub>2</sub>
AQ003327	70	VOG
AQ004580	20	VOG
AQ003722	95	VOG
AQ006559	6	VOG
AQ004686	25	VOG
Total of Certificates Identified	185	VOG
Total to be surrendered	140	VOG
Total surrendered emissions	140	VOG
AQ003352	6	PM <sub>10</sub>
AQ003462	2	
AQ003550	2	
AQ003568	3	
AQ004145	4	PM <sub>10</sub>
AQ004322	5	PM <sub>10</sub>
AQ004323	3	PM <sub>10</sub>
AQ004326	2	PM <sub>10</sub>
Total of Certificates Identified	24	PM <sub>10</sub>
Total to be surrendered	24	PM <sub>10</sub>
1304 Exempted Emission Offsets	173	PM <sub>10</sub>
Priority Reserve Purchased	291	PM <sub>10</sub>
Priority Reserve from District	58	PM <sub>10</sub>
Total surrendered & exempted emissions	546	PM <sub>10</sub>

The project owner shall request from the District a report of the NSR Ledger Account for the ESPRP after the District has granting the ESPRP a Permit to Construct. Such report to specifically identify the ERCs, Priority Reserve Credits and Rule 1304 Exempted Emissions used to offset the project emissions. The project owner shall submit this report to the CPM prior to turbine first fire.

**Verification:** No more than 15 days following the issuance of the District's Permit to Construct, the project owner shall request from the District the report of the NSR Ledger Account for the ESPRP. The project shall submit the report of the NSR Ledger Account for the ESPRP to the CPM no less than 30 days prior to turbine first fire.

**AQ-C6 The owner/operator shall employ tug boats and self-propelled motorized transporters (SPMT) for all barge delivery operations that are equipped with EPA Tier 2 diesel engines or better, unless certified by the onsite environmental compliance manager that tugboats equipped with Tier 2 diesel engines are not available. For purposes of this condition, “not available” means that proper size tugboats equipped with Tier 2 diesel engines are not in existence at the Ports of Los Angeles/Long Beach and cannot readily be made available for use by the project owner at or near the time of the barge deliveries to the project site.**

**As a contract element for the employment of any and all SPMT and tug boats for the purpose of barge delivery operations, the project owner shall include a provision to certify that the SPMT or tug boat primary source of power is based on an EPA Tier 2 diesel engine or that SPMTs or tugboats with Tier 2 diesel engines are not available.**

**Verification: No less than 5 days prior to a SPMT or tug boat being used for any type of barge delivery operation, the owner/operator shall submit the certification to the CPM for approval.**

**AQ-C7 The owner/operator shall install and make operational an oxidation catalyst at the earliest point practical during the initial commissioning phase of each combustion turbine train. The installation must seek to maximize the reduction of VOC emissions and must not compromise safety in any way.**

**Verification: The owner/operator shall submit to the CPM for approval a letter stating that the installation of the oxidation catalyst is complete and operational and include the estimated effectiveness in terms of percent of VOC emission reduction achieved. This letter shall be signed and stamped by a California Registered Professional Engineer.**

**AQ-C8: The project owner shall submit to the Commission, Quarterly Operational Reports that include the fuel use associated with each gas turbine train (both gas turbine and duct burner), in addition to the CO and NOx CEMS recorded data for each gas turbine exhaust stack on an hourly basis in order to verify the following emissions limits.**

**Except during startup, shutdown and initial commissioning, emissions from each gas turbine exhaust stack shall not exceed the following limits:**

**NOx (measured as NO<sub>2</sub>): 2.0 ppm at 15% oxygen on a dry basis averaged over 1 hour.**

**CO: 2.0 ppm at 15% oxygen on a dry basis averaged over 1 hour.**

**VOC: 2.0 ppm at 15% oxygen on a dry basis averaged over 1 hour.**

**Ammonia: 5 ppm at 15% oxygen on a dry basis.**

**Verification:** The project owner shall submit the Quarterly Operational Reports as specified herein to the CPM no later than 30 days following the end of each calendar quarter.

AQ-1 Deleted.

**Conditions of Certification AQ-1 through AQ-27, below, pertain to the following equipment:**

- ~~1. 1,896 MMBTU/HR Gas Turbine (ID No. D46) (A/N 378766) No. 5 GE Model 7241FA with Dry Low NOx combustors and steam injection for power augmentation connected directly to a 170 MW (nominal) Electric Generator (ID No. B47) and a Heat Recovery Steam Generator (ID No. B49) with 600 MMBTU/HR Duct Burners (ID No. D48) connected in common with Gas Turbine No. 7 to a 288 MW (nominal) steam turbine (ID No. B50). Selective Catalytic Reduction (ID No. C52) (A/N 378771) with 4379 cubic feet of total volume 3 feet height, 44 feet long, 41 feet wide with an ammonia injection grid (ID No. B53) and a CO oxidation catalyst (ID No. C51) with 1000 cubic feet of total volume connected to an exhaust stack (ID No. S54) (A/N 378771) No 5.~~
- ~~2. 1,896 MMBTU/HR Gas Turbine (ID No. D55) (A/N 378767) No. 7 GE Model 7241 FA with Dry Low NOx combustors and steam injection for power augmentation connected directly to a 179 MW (nominal) Electric Generator (ID No. B56) and a Heat Recovery Steam Generator (ID No. B58) with 600 MMBTU/HR Duct Burners (ID No. D57) connected in common with Gas Turbine No. 5 to a 288 MW (nominal) steam turbine (ID No. B59). Selective Catalytic Reduction (ID No. C61) (A/N 378773) with 4379 cubic feet of total volume 3 feet height, 44 feet long, 41 feet wide with a ammonia injection grid (ID No. B62) and a CO oxidation catalyst (ID No. C60) with 1000 cubic feet of total volume connected to an exhaust stack (ID No. S63) (A/N 378773) No 7.~~

**AQ-2:** The operator shall install and maintain a flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH<sub>3</sub>) to the SCR in combined cycle turbines 5 and 7. The operator shall also install and maintain a device to continuously record the parameter being measured. The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every twelve months. **The ammonia injection rate shall remain between 4.8 gallons per hour and 11.5 gallons per hour.**

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-3:** The operator shall install and maintain a temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor in combined cycle turbines 5 and 7. The operator shall also install and maintain a device to continuously record the parameter being measured. The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every twelve months. **The temperature shall remain between**

**400 degrees F and 750 degrees F. The catalyst temperature shall not exceed 750 degrees F during the startup period.**

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-4:** The operator shall install and maintain a pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches water column in combined cycle turbines 5 and 7. The operator shall also install and maintain a device to continuously record the parameter being measured. The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every twelve months. **The pressure drop across the catalyst shall remain between 1 inch of water column and 4 inches of water column. The pressure drop across the catalyst shall not exceed 4 inches of water column during the startup period.**

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-5:** The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutants to be Tested	Test Method	Averaging Time	Test Location
NH <sub>3</sub> Emissions	District Method 207.1 and 5.3 or EPA Method 17	1 hour	Outlet of SCR serving this equipment

**The test shall be conducted and the results submitted to the District within 45 days after the test date. The District shall be notified of the date and time of the test at least 7 days prior to the test.**

The test shall be conducted at least quarterly during the first twelve months of operation and at least annually thereafter. The NOx concentration, as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NOx emissions using District Method 100.1 measured over a 60 minute averaging time period.

**The test shall be conducted to demonstrate compliance with the Rule 1303 concentration limit.**

**If the equipment is not operated in any given quarter, the operator may elect to defer the required testing to a quarter in which the equipment is operated.**

**Verification:** The project owner shall submit the proposed protocol for the source tests **no later than 45** 60-days prior to the proposed source test date to both the District and

CPM for approval. The project owner shall notify the District and CPM no later than 10~~7~~ days prior to the proposed source test date and time. The project owner shall submit source test results no later than 60~~45~~ days following the source test date to both the District and CPM.

**AQ-6:** The operator shall conduct ~~start-up~~ source test(s) for the pollutant(s) identified below on combined-cycle turbine units 5 and 7.

<b>Pollutants To be Tested</b>	<b>Required Test Method</b>	<b>Averaging Time</b>	<b>Test Location</b>
NOx Emissions	District Method 100.1	1 hour	Outlet of SCR serving this equipment
CO Emissions	District Method 100.1	1 hour	Outlet of SCR serving this equipment
SOx Emissions	<del>Approved District &amp; CPM Method</del> <b><u>District Method 307-91</u></b>	<del>1 hour</del> <b><u>Not Applicable</u></b>	<del>Outlet of SCR serving this equipment</del> <b><u>Fuel Sample</u></b>
<b>ROG</b> <del>VOC</del> Emissions	<del>Approved District Method</del> <b><u>25.3</u></b>	1 hour	Outlet of SCR serving this equipment
PM <del>10</del> Emissions	<del>Approved District &amp; CPM Method</del> <b><u>5</u></b>	<b><u>4 hours</u></b>	Outlet of SCR serving this equipment
NH <sub>3</sub> Emissions	District Method 207.1 and 5.3 or EPA Method 17	1 hour	Outlet of SCR serving this equipment

The test shall be conducted after District and CPM approval of the source test protocol, but no later than 180 days after initial start-up. **The District and CPM shall be notified of the date and time of the test at least 10 days prior to the test.**

The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (CFH), the flue gas flow rate, and the ~~turbine and steam~~ turbine generating output in MW.

The test shall be conducted in accordance with a District and CPM approved source test protocol. The protocol shall be **submitted to the District and the CPM no later than 45 days before the proposed test date and shall be approved by the District and CEC before the test commences.** The test protocol shall include the proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of District Rule 304, and a description of all sampling and analytical procedures.

The test shall be conducted ~~with and without duct firing~~, when this equipment is operating at **maximum, average and minimum loads.** ~~loads of 100, 75 and 50 percent of maximum load.~~

**The test shall be conducted for compliance verification of the BACT VOC 2.0 ppmv limit.**

**For natural gas-fired turbines only, VOC compliance shall be demonstrated as follows: a) Stack gas samples are extracted into Summa canisters maintaining a final canister pressure between 400-500 mm Hg**

**absolute, b) Pressurization of canisters is done with zero gas analyzed/certified to contain less than 0.5 ppmv total hydrocarbon as carbon, and c) Analysis of canisters are per EPA method TO-12 (with preconcentration) and temperature of canisters when extracting samples for analysis is not below 70 deg. F. The use of this alternative method for VOC compliance determination does not mean that it is more accurate than District method 25.3, nor does it mean that it may be used in lieu of District method 25.3 without prior approval except for the determination of compliance with the VOC BACT level of 2.0 ppmv calculated as carbon for natural gas fired turbines. The test results shall be reported with two significant digits.**

**For the purpose of this condition, alternative test methods may be allowed for each of the above pollutants upon concurrence of the District, EPA and CPM.**

**Verification:** The project owner shall submit the proposed protocol for the initial source tests **no later than** 45 days prior to the proposed source test date to both the District and CPM for approval. The project owner shall submit source test results no later than 60 days following the source test date to both the District and CPM. The project owner shall notify the District and CPM no later than 10 days prior to the proposed initial source test date and time.

**AQ-7:** The operator shall conduct source test(s) for the pollutant(s) identified below on combine cycle turbine units 5 and 7.

<b>Pollutants to be Tested</b>	<b>Required Test Method</b>	<b>Averaging Time</b>	<b>Test Location</b>
SOx Emissions	Approved District & CPM Method <b><u>AQMD Method 307-91</u></b>	1 hour <b><u>Not Applicable</u></b>	Outlet of SCR serving this equipment <b><u>Fuel Sample</u></b>
<b><u>VOC</u></b> ROG Emissions	Approved District Method <b><u>25.3</u></b>	1 hour	Outlet of SCR serving this equipment
PM Emissions	Approved District & CPM Method <b><u>5</u></b>	<b><u>4 hours</u></b>	Outlet of SCR serving this equipment

**The tests shall be conducted at least once every three years for SOx and PM10, and annually for VOC.**

**The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the test shall measure the fuel flow rate (CFH), the flue gas flow rate, and the turbine generating output in megawatts (MW).**

**The test shall be conducted in accordance with District- approved test protocol. The protocol shall be submitted to the District and the CPM no later than 45 days before the proposed test date and shall be approved by the District and the CEC before the test commences. The test protocol shall include the proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the**

testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.

The test shall be conducted when this equipment is operating at 100 percent load.

The test shall be conducted for compliance verification of the BACT VOC 2.0 ppmv limit.

For natural gas-fired turbines only, VOC compliance shall be demonstrated as follows: a) Stack gas samples are extracted into Summa canisters maintaining a final canister pressure between 400-500 mm Hg absolute, b) Pressurization of canisters is done with zero gas analyzed/certified to contain less than 0.5 ppmv total hydrocarbon as carbon, and c) Analysis of canisters are per EPA method TO-12 (with preconcentration) and temperature of canisters when extracting samples for analysis is not below 70 deg. F. The use of this alternative method for VOC compliance determination does not mean that it is more accurate than District method 25.3, nor does it mean that it may be used in lieu of District method 25.3 without prior approval except for the determination of compliance with the VOC BACT level of 2.0 ppmv calculated as carbon for natural gas fired turbines. The test results shall be reported with two significant digits.

For the purpose of this condition, alternative test methods may be allowed for each of the above pollutants upon concurrence of the District, EPA and CPM.

**Verification:** The project owner shall submit the proposed protocol for the source tests no later than 45 ~~60~~ days prior to the proposed source test date to both the District and CPM for approval. The project owner shall notify the District and CPM no later than 10 ~~7~~ days prior to the proposed source test date and time. The project owner shall submit source test results no later than 60 ~~45~~ days following the source test date to both the District and CPM.

**AQ-8:** The operator shall provide to the District and CPM any source test report in accordance with the following specifications:

- Source test results shall be submitted to the District and CPM no later than 60 days after the source test was conducted.
- Emission data shall be expressed in terms of concentration (ppmvd), corrected to 15 percent oxygen (dry basis), mass rate (lbs/hr), and lbs/MM cubic feet. In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.
- All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).
- All moisture concentration shall be expressed in terms of percent corrected to 15 percent oxygen.

- Source test results shall also include the oxygen levels in the exhaust, the fuel flow rate (CFH), the flue gas temperature, and the generator power output (MW) under which the test was conducted.

**Verification:** See verifications for **AQ-5, -6, and -7.**

**AQ-9:** ~~The project owner shall submit to the Commission, Quarterly Operational Reports that include the fuel use associated with each gas turbine train (both gas turbine and duct burner), in addition to the CO and NOx CEMS recorded data for each gas turbine exhaust stack on an hourly basis in order to verify the following emissions limits.~~

~~Except during startup, shutdown and initial commissioning, emissions from each gas turbine exhaust stack shall not exceed the following limits:~~

~~NOx (measured as NO<sub>2</sub>): 2.0 ppm at 15% oxygen on a dry basis averaged over one hour and 18.27 lbs/hour.~~

~~CO: 4 ppm at 15% oxygen on a dry basis averaged over 1 hour and 11.12 lbs/hr.~~

~~SOx (measured as SO<sub>2</sub>): 1.76 lbs/hr~~

~~VOC: 6.37 lbs/hr~~

~~PM<sub>10</sub>: 15.0 lbs/hr~~

~~Ammonia: 5 ppm at 15% oxygen on a dry basis.~~

**Verification:** ~~The project owner shall submit the Quarterly Operational Reports as specified herein to the CPM no later than 30 days following the end of each calendar quarter.~~ **Deleted.**

**AQ-10:** ~~The operator shall vent the combined cycle turbine units 5 and 7, as well as their associated duct burners to the CO oxidation and SCR control whenever this equipment is in operation.~~

**Verification:** ~~The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).~~ **Deleted**

**AQ-11:** The operator shall limit emissions from this equipment as follows:

Contaminant	Emissions Limit
CO	<del>20,566 LBS IN ANY 1 MONTH</del>
PM <sub>10</sub>	<b>6,935</b> <del>20,336 LBS IN ANY 1 MONTH</del>
VOC	<b>4,930</b> <del>7,588 LBS IN ANY 1 MONTH</del>
SOx	<b>1,065</b> <del>2,342 LBS IN ANY 1 MONTH</del>

The operator shall calculate the **monthly emissions** ~~emission limits for VOC, PM10 and SOx using the equation below~~ and the ~~limit(s) by using monthly fuel use data and the following emission factors:~~ PM<sub>10</sub> **4.66** ~~6.26~~ lbs/mmscf, VOC **2.93** ~~2.39~~ lbs/mmscf, and SOx 0.72 lbs/mmscf.

**Monthly Emissions, lb/month = X (E. F.)**

**Where X = monthly fuel use, mmscf/month and E. F = emission factor indicated above.**

~~Written records of startups shall be maintained and made available to the District.~~

~~The operator shall calculate the emission limit(s) for CO<sub>2</sub> during the commissioning period using fuel use data and the following emissions factors: 501 lbs/MMscf during the full speed no load tests and the part load tests when the turbine is operating at or below 60 per cent load, and 14 lbs/MMscf during the full load tests when the turbine is operating above 50 per cent load.~~

~~The operator shall calculate the emission limit(s) for CO<sub>2</sub> after the commissioning period and prior to the CO CEMS certification, using fuel use data and the following emission factors: 100 lbs per startup and 4.55 lbs/MMscf for all other operations.~~

~~The operator shall calculate the emission limit(s) for CO<sub>2</sub> after the CO CEMS certification, based on readings from the certified CEMS. In the event the CO CEMS is not operating or the emissions exceed the valid upper range of the analyzer, the emissions shall be calculated in accordance with the approved CEMS plan.~~

~~For the purposes of this condition, the limit(s) shall be based on the total combined emissions from **each individual** combined cycle gas turbine No. 5 and No. 7.~~

**Verification:** The project owner shall submit the monthly fuel use data and emission calculations to the CPM in the Quarterly Operation Reports (**AQ-C89**).

**AQ-12:** ~~The operator shall keep records, in a manner approved by the District, for natural gas fuel use during the commissioning period.~~ **The operator shall install and maintain a flow meter to accurately indicate the fuel usage for each of the turbines. The operator shall also install and maintain a device to continuously record the parameter being measured.**

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-13:** ~~The operator may, at his discretion, choose not to use ammonia injection if the following requirement is met:~~

- ~~• The inlet exhaust temperature to the SCR is 450 degrees F or less, not to exceed 3 hours during a cold startup, 2 hours during a warm startup, and 1 hour during a hot startup.~~

**Verification:** ~~The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United~~

States Environmental Protection Agency (EPA) and the California Energy Commission (Commission). ~~Deleted~~

**AQ-14:** The operator shall install and maintain a CEMS to measure CO concentration in ppmv. Concentrations shall be corrected to 15 percent oxygen on a dry basis. ~~The CEMS will convert the actual CO concentrations to mass emission rates (lbs/hr) and record the hourly emission rates on a continuous basis.~~ The CEMS shall be installed and operated, in accordance with an approved District Rule 218 CEMS plan application. The operator shall not install the CEMS prior to receiving initial approval from District. The CO CEMS shall be installed and operated within 90 days after the initial start-up (first firing) of the gas turbines. The CEMS shall be installed and operated to measure CO concentration over a 15 minute averaging time period. **Within two weeks of turbine start-up, the operator shall provide written notification to the District of the exact date of start-up.**

**The CEMS shall convert the actual CO concentrations to mass emission rates (lbs/hr) using the equation below and record the hourly emission rates on a continuous basis:**

$$\text{CO Emission Rate (lb/hr)} = K * C_{co} * F_d * \left( \frac{20.9}{20.9\% - \%O_2} \right) * \left( \frac{Q_g * HHV}{1E6} \right),$$

**where:**

$$K = 7.267E-8 \text{ (lb/scf)/ppm}$$

**C<sub>co</sub> = Hourly average ppm based on four consecutive 15-min average CO concentrations, ppm**

**F<sub>d</sub> = 8710 dscf/mmBtu natural gas**

**%O<sub>2</sub> d = Hourly average % by volume O<sub>2</sub>, dry basis, corresponding to C<sub>co</sub>**

**Q<sub>g</sub> = Fuel gas usage during the hour, scf/hr**

**HHV = Gross high heating value of fuel, Btu/scf**

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-15:** The operator shall install and maintain a CEMS to measure NO<sub>x</sub> concentration in ppmv. Concentrations shall be corrected to 15 percent oxygen on a dry basis. The CEMS shall be installed and operating **(for BACT purposes only)** no later than ~~42 months~~ **90 days** after initial start-up of the turbine and shall comply with the requirements of Rule 2012. During the interim period between the initial start-up and the provisional certification date of the CEMS, the operator shall comply with the monitoring requirements of Rule 2012(h)(2) and 2012(h)(3). Within two weeks of the turbine startup date,

the operator shall provide written notification to the District of the exact date of start-up.

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-16:** The 2.0 PPM NO<sub>x</sub> emission limit(s) shall not apply during turbine commissioning, ~~and startup~~ **and shutdown** periods. **The commissioning period shall not exceed 415 gas turbine operating hours.** Startup time shall not exceed ~~3 hours per day~~ **60 minutes for each startup.** **Shutdown periods shall not exceed 60 minutes for each shutdown.** **The turbine shall be limited to a maximum of 200 startups per year.** ~~The commissioning period shall not exceed 33 operating days from the date of initial start-up. The operator shall provide the AQMD with written notification of the start-up date. No more than one turbine shall be in start-up mode at any one time. Written records of commissioning, and start-ups~~ **and shutdowns** shall be maintained and made available upon request from AQMD ~~the District.~~

**A gas turbine operating hour during the commissioning period consists of 60 operating minutes. An operating minute occurs when the gas turbine fuel flow during that minute is greater than zero.**

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-17:** The ~~2.0~~ 4 PPM CO emission limit(s) shall not apply during turbine commissioning, ~~and startup~~ **and shutdown** periods. **The commissioning period shall not exceed 415 gas turbine operating hours.** Startup time shall not exceed ~~3 hours per day~~ **60 minutes for each startup.** **Shutdown periods shall not exceed 60 minutes for each shutdown.** **The turbine shall be limited to a maximum of 200 startups per year.** ~~The commissioning period shall not exceed 33 operating days from the date of initial start-up. The operator shall provide the AQMD with written notification of the start-up date. No more than one turbine shall be in start-up mode at any one time. Written records of commissioning, and start-ups~~ **and shutdowns** shall be maintained and made available upon request from AQMD ~~the District.~~

**A gas turbine operating hour during the commissioning period consists of 60 operating minutes. An operating minute occurs when the gas turbine fuel flow during that minute is greater than zero.**

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-18:** The ~~16.55~~ 109 LBS/MMCF NOx emission limit(s) shall only apply during the interim reporting period during the initial turbine commissioning period during the full speed no load tests and the part load tests when the turbine is operating at or below 60% load to report RECLAIM emissions. The interim reporting period shall not exceed 12 months from entry into RECLAIM.

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-19:** The ~~8.66~~ 33.9 LBS/MMCF NOx emission limit(s) shall only apply during the interim reporting period after initial turbine commissioning period during the full load tests when the turbine operating above 60% load to report RECLAIM emissions. This emission limit shall also apply during the interim reporting period to report RECLAIM emissions. The interim reporting period shall not exceed 12 months from the initial startup date entry into RECLAIM.

**Verification:** The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

**AQ-20:** The ~~80 lbs/hour~~ NOx emission limit(s) shall only apply during turbine startups. Only one turbine shall be in startup mode at any one time. Startups shall not exceed 3 hours per day per turbine. The owner/operator shall comply at all times with the 2.0 ppm 1-hour BACT limit for NOx, except as defined in condition AQ-16 and with the following additional restriction on startup.

NOx emissions shall not exceed 112 lbs total per startup per turbine. Each turbine shall be limited to 200 startups per year with each startup not to exceed 60 minutes in duration.

**Verification:** The project owner shall submit CEMS records demonstrating compliance with this condition as part of the Quarterly Operational Report required in ~~AQ-C89~~.

**AQ-21:** The ~~102 LBS/MMCF~~ NOx emission limit(s) shall only apply to report RECLAIM emissions during the interim period for the duct burner. The interim reporting period shall not exceed 12 months from the initial start up date.

**Verification:** ~~The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).~~ Deleted

**AQ-22:** For the purpose of the following condition numbers, the phrase “continuously record” shall be defined as recording at least once every hour and shall be calculated based upon the average of the continuous monitoring for that hour.

Condition no. **AQ-2**  
Condition no. **AQ-3**  
~~Condition no. **AQ-24**~~

**Verification:** See verifications for **AQ-2, and 3, and 24.**

**AQ-23:** For the purpose of the condition number **AQ-4**, the phrase “continuously record” shall be defined as recording at least once every **month** hour and shall be calculated based upon the average of the continuous monitoring for that month. **See condition AQ-4.**

**Verification:** See verifications for **AQ-4.**

**AQ-24:** The 2.0 PPMV NOx emission limit(s) are **is** averaged over 60 minutes at 15 percent oxygen, dry.

**Verification:** The project owner shall submit CEMS records demonstrating compliance with this condition as part of the Quarterly Operational Report required in **AQ-C89.**

**AQ-25:** The **2.0** 4 PPMV CO emission limit(s) are **is** averaged over 60 minutes at 15 percent oxygen, dry.

**Verification:** The project owner shall submit CEMS records demonstrating compliance with this condition as part of the Quarterly Operational Report required in **AQ-C89.**

**AQ-26:** The 5 PPMV NH<sub>3</sub> emissions limit(s) are averaged over 60 minutes at 15 percent O<sub>2</sub>, dry. **The operator shall calculate and continuously record the NH<sub>3</sub> slip concentration using the following:**

$$\text{NH}_3 \text{ (ppmv)} = [a - b * c / 1E6] * 1E6 / b$$

**Where:**

**a = NH<sub>3</sub> injection rate (lb/hr) / 17(lb/lb-mol),**

**b = dry exhaust gas flow rate (scf/hr) / 385.3 (scf/lb-mol),**

**c = change in measured NOx across the SCR (ppmvd at 15% O<sub>2</sub>)**

**The owner/operator shall install and maintain a NOx analyzer to measure the SCR inlet NOx ppm accurate to within +/- 5 percent calibrated at least once every 12 months. The NOx analyzer shall be installed and operated within 90 days of initial startup. The owner/operator shall use the above described method or another alternative method approved by the District's Executive Officer. The above described ammonia slip calculation procedure shall not be used for compliance determination or emission information determination without corroborative data using a reference method approved by the District for the determination of ammonia.**

**Verification: The project owner shall include ammonia slip concentrations averaged on an hourly basis as part of the Quarterly Operational Report required in Condition of Certification AQ-C8. The project owner shall submit all calibration results performed to the CPM within 60 days of the calibration date. The project owner shall submit all calibration results performed to the CPM within 60 days of**

the calibration date. Exceedances of the ammonia limit shall be reported as prescribed herein. Chronic exceedances of the ammonia slip limit shall be identified by the project owner and confirmed by the CPM within 60 days of the fourth quarter Quarterly Operational Report (AQ-SC8) being submitted to the CPM. If a chronic exceedance is identified and confirmed, the project owner shall work in conjunction with the CPM to develop a reasonable compliance plan to investigate and redress the chronic exceedance of the ammonia slip limit within 60 days of the above confirmation.

~~—The project owner shall submit CEMS records and all calculations demonstrating compliance with this condition as part of the Quarterly Operational Report required in AQ-9.~~

**AQ-27:** This equipment shall not be operated unless the operator demonstrates to the **District's** Executive Officer that the facility holds sufficient RTCs to offset the prorated annual emissions increase for the first compliance year of operation. In addition, this equipment shall not be operated unless the operator demonstrates to the **District's** Executive Officer that, at the commencement of each compliance year after the first compliance year of operation, the facility holds sufficient RTCs in an amount equal to the annual emissions increase. The project owner shall submit all such information to the CPM for approval.

The operator shall, prior to the 1st compliance year, hold a minimum NOx Reclaim Trading Credits (RTCs) of 104,864 lbs/yr. This condition shall apply during the 1<sup>st</sup> months of operation, commencing with the initial operation of the gas turbine.

The operator shall, prior to the beginning of all years subsequent to the 1st compliance year, hold a minimum of lbs/yr of 90,953 NOx RTC's for operation of the gas turbine. In accordance with District Rule 2005 (f), unused RTC's may be sold only during the reconciliation period for the fourth quarter of the applicable compliance year inclusive of the 1st compliance year.

This condition shall apply to each turbine individually.

**Verification:** The project owner shall submit to the CPM copies of all RECLAIM reports filed with the District in each Quarterly Operational Report (see **AQ-C89**).

~~Condition of Certification AQ-28, below, pertains to the following equipment:~~

~~Internal combustion engine, emergency fire pump, diesel Clarke, Model JDFP-06WA, turbocharged, aftercooled, 265 BHP A/N 378769 (ID. No. D45).~~

~~**AQ-28**—The operator shall limit the operating time to no more than 199 hours in any one year.~~

- ~~• To comply with this condition, the operator shall install and maintain a non-resettable elapsed time meter to accurately indicate the elapsed operating time of the engine.~~

- ~~The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.~~
- ~~The records shall include, date of operation, the elapsed time in hours, and the reason for operation. Records shall be kept and maintained on file for a minimum of 5 years and made available to AQMD upon request.~~

~~**Verification:** The project owner shall submit the recorded data specified in this condition on an annual basis as part of the fourth Quarter Operation Report (see AQ-8).~~

~~**Deleted**~~

Conditions of Certification AQ-29 **through AQ-31**, below, pertain to the following equipment:

Underground Aqueous Ammonia Storage Tank, TK-001, carbon steel, double walled with three transfer pumps and a PVR set at 50 PSIG, 20000 gallons capacity. A/N 379904-(ID. No. D30)

**(Ammonia Storage Tank)**

**AQ-29** The operator shall install and maintain a pressure relief valve **with a minimum pressure** set at 50 psig.

**Verification:** The project owner shall make the site available for inspection by representatives of the District, CARB, EPA and the Commission.

**AQ-30** **The operator shall vent this equipment, during filling, only to the vessel from which it is being filled.**

**Verification:** **The project owner shall make the site available for inspection by representatives of the District, CARB, EPA and the Commission.**

**AQ-31** **The operator shall vent this equipment to the two-stage venture scrubber described as Device C64 whenever the tank is undergoing loading of ammonia.**

**Verification:** **The project owner shall make the site available for inspection by representatives of the District, CARB, EPA and the Commission.**

**AQ-32** **The 2.0 PPM VOC emission limit shall not apply during turbine commissioning, startup and shutdown periods. The commissioning period shall not exceed 415 operating hours. Startup time shall not exceed 60 minutes for each startup. Shutdown periods shall not exceed 60 minutes for each shutdown. The turbine shall be limited to a maximum of 200 startups per year. Written records of commissioning, startups and shutdowns shall be maintained and made available upon request from the District.**

A gas turbine operating hour during the commissioning period consists of 60 operating minutes. An operating minute occurs when the gas turbine fuel flow during that minute is greater than zero.

Verification: The project owner shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and the California Energy Commission (Commission).

AQ-33 The 2.0 ppmv VOC emission limit is averaged over 60 minutes at 15 percent O<sub>2</sub>, dry basis.

Verification: The project owner shall submit CEMS records demonstrating compliance with this condition as part of the Quarterly Operational Report required in AQ-C8.

AQ-34 The project owner/operator shall not use natural gas containing H<sub>2</sub>S greater than 0.25 grains per 100 scf. This concentration limit is an annual average based on monthly samples of natural gas composition or gas supplier documentation. The gaseous fuel samples shall be tested using District Method 307-91 for total sulfur calculated as H<sub>2</sub>S.

Verification: The project owner shall submit fuel usage records and all other records and calculations required to demonstrate compliance with this condition as part of the Quarterly Operational Report required in AQ-C8.

AQ-35 The owner/operator shall limit the total fuel usage for each turbine to no more than 1,500 million cubic standard feet (mmcsf) in any one calendar month.

The operator shall maintain records in a manner approved by the District to demonstrate compliance with this condition.

Verification: The project owner shall submit fuel usage records and all other records and calculations required to demonstrate compliance with this condition as part of the Quarterly Operational Report required in AQ-C8.

AQ-36 The owner/operator shall keep records, in a manner approved by the District, for the following parameters or items:

- Natural gas fuel use after CEMS certification.
- Natural gas fuel use during the commissioning period.
- Natural gas fuel use after the commissioning period and prior to the CEMS certification.

Verification: The project owner shall submit fuel usage records and all other records and calculations required to demonstrate compliance with this condition as part of the Quarterly Operational Report required in AQ-C8.

AQ-37 The owner/operator shall limit PM emissions from this facility to less than 100 tons in any one year. For the purpose of this condition, the PM

emission limit shall be applicable to particulate matter with an aerodynamic diameter of less than 2.5 microns. For the purpose of this condition, any one year shall be defined as a period of twelve (12) consecutive months determined on a rolling basis with a new 12 month period beginning on the first day of each calendar month.

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report of Condition of Certification AQ-C8.

AQ-38 For the purpose of determining compliance with District Rule 475, combustion contaminants emissions may exceed the concentration limit or the mass emission limit listed, but not both limits at the same time.

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report of Condition of Certification AQ-C8.

AQ-39 The operator shall on completion of construction, operate and maintain this equipment according to the following specifications:

In accordance with all air quality mitigation measures stipulated in the final California Energy Commission decision for the 00-AFC-14C project.

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

AQ-40 The operator shall on completion of construction, operate and maintain this equipment according to the following specifications:

The combined cycle gas turbine units 5 and 7 shall not operate simultaneously with boiler units 1,2, or 3 except for the 90 day period as stipulated in District Rule 1313. El Segundo Power shall surrender the Permit to Operate (P/N F14448) for boiler no. 3 within 90 days of the start-up of the combined cycle gas turbines.

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

## ACRONYMS

AAQS	Ambient Air Quality Standard
AERMOD	ARMS/EPA Regulatory Model
AFC	Application for Certification
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMD	Air Quality Management District
ARB	California Air Resources Board
ATC	Authority to Construct
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
bhp	brake horsepower
BLM	Bureau of Land Management
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CPM	(CEC) Compliance Project Manager
DPM	Diesel Particulate Matter
dscf	dry standard cubic feet
EIS	Environmental Impact Statement
ERC	Emission Reduction Credit
ESPRP	El Segundo Power Redevelopment Project
FDOC	Final Determination Of Compliance
FID	Flame Ionization Detector
GHG	Greenhouse Gas
gpm	gallon per minute
H <sub>2</sub> S	Hydrogen Sulfide
hp	horsepower
HSC	Health and Safety Code
ISC	Interruptible Service Contract
kV	Kilovolt
lbs	Pounds
LORS	Laws, Ordinances, Regulations and Standards
LRP	Load Reduction Program
µg/m <sup>3</sup>	microgram per cubic meter
mg/m <sup>3</sup>	milligrams per cubic meter
MW	Megawatts (1,000,000 Watts)
MWh	Megawatt-hour
NAAQS	National Ambient Air Quality Standard

NEPA	National Environmental Protection Act
NMHC	non-methane-hydrocarbons
NO	Nitric Oxide
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen or Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O <sub>2</sub>	Oxygen
O <sub>3</sub>	Ozone
OLM	Ozone Limiting Method
PDOC	Preliminary Determination Of Compliance
PID	photoionization detector
PM	Particulate Matter
PM10	Particulate Matter less than 10 microns in diameter
PM2.5	Particulate Matter less than 2.5 microns in diameter
ppm	Parts Per Million
ppmv	Parts Per Million by Volume
ppmvd	Parts Per Million by Volume, Dry
PSD	Prevention of Significant Deterioration
PTO	Permit to Operate
RACT	Reasonably Available Control Technology
SA	Staff Assessment (this document)
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
SO <sub>4</sub>	Sulfate
SO <sub>x</sub>	Oxides of Sulfur
SWPPP	Storm Water Pollution Prevention Plan
TDS	total dissolved solids
tpy	tons per year
U.S.EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

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# AIR QUALITY APPENDIX AIR-1

## GREENHOUSE GAS EMISSIONS

Testimony of Brenner Munger, Ph.D., P.E.

### SUMMARY OF CONCLUSIONS

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The El Segundo Power Redevelopment Project (ESPRP) is a proposed addition to the state's electricity system that would produce greenhouse gas (GHG) emissions while generating electricity for California consumers. The proposed project would be a nominally rated 573 megawatt (MW) electrical generating facility that would be located on the existing footprint of El Segundo Units 1 and 2, on a 33 acre site in the City of El Segundo, California. The proposed project consists of two Siemens Rapid Response Combined Cycle generating units comprising one combustion turbine generator rated at 219 MW, one heat recovery steam generator and a 67.7 MW steam turbine generator. Each combustion turbine is expected to operate up to 5,456 hours per year with up to 200 start ups per year. The exhaust from each combustion turbine would exit from a 210-foot tall, 20-foot diameter stack. The nominal heat rate of each combined cycle generating unit would be 7,311 BTU/kWh (HHV).

The addition of the ESPRP to the system would displace other less efficient, higher GHG-emitting generation and facilitate the integration of renewable resources. Because the project's GHG emissions per megawatt-hour (MWh) would be lower than those of other power plants that the project would displace, the addition of ESPRP would contribute to a reduction of the California and overall Western Electricity Coordinating Council system GHG<sup>4</sup> emissions and GHG emission rate average.

While ESPRP would emit GHG emissions, the relative efficiency of the project and the system build-out of renewable resources in California would result in a net cumulative reduction of energy and GHG emissions from new and existing fossil resources. Electricity is produced by operation of inter-connected generation resources. Operation of one power plant, like ESPRP, affects all other power plants in the interconnected system. The operation of ESPRP would affect the overall electricity system operation and GHG emissions in several ways:

- ESPRP would provide flexible, rapid-start dispatchable power necessary to integrate some of the growing generation from intermittent renewable sources, such as wind and solar generation.
- The project would provide for capacity needs identified by the California ISO for the Los Angeles Basin Local Reliability Area.
- ESPRP would facilitate the divestiture of high GHG emitting (e.g., coal-fired) electricity generation required to meet the State's new Emissions Performance Standard.

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<sup>4</sup> Fuel-use closely correlates to the efficiency of and carbon dioxide (CO<sub>2</sub>) emissions from natural gas-fired power plants. And since CO<sub>2</sub> emissions from the fuel combustion dominate greenhouse gas (GHG) emissions from power plants, the terms CO<sub>2</sub> and GHG are used interchangeably in this section.

- ESPRP could replace capacity and generation provided by once-through cooled merchant power plants, which are likely to require substantial capital investment to comply with the State Water Resource Control Board's (SWRCB) policy on the use of coastal estuarine waters for power plant cooling.
- The ESPRP would utilize two Siemens-Westinghouse SGT6-5000F rapid response combined cycle units, each comprising a combustion turbine generator, an unfired heat recovery steam generator and steam turbine generator.
- The ESPRP would help one or more load-serving entities (LSE) meet local, zonal, and system-wide resource adequacy (RA) requirements.

The ESPRP would be consistent with the precedent decision regarding GHG emissions established by the Avenal Energy Project's Final Commission Decision. Staff concludes that the short-term minor emission of greenhouse gases during construction that are necessary to create this new low GHG-emitting peaking/intermediate resource would be sufficiently reduced by "best practices" and would, therefore, not be significant.

The project would meet the Greenhouse Gases Emission Performance Standard (EPS) (Title 20, California Code of Regulations, section 2900 et seq.) that applies to utility purchases of base load power from power plants. Any utility that enters into a contract with ESPRP would be required to seek a finding from the Energy Commission that the project meets the EPS based on the operation of the project at that time, under a proposed PPA, and any other conditions that dictate the operation of the ESPRP. The ESPRP would meet the EPS of 0.500 metric tonnes CO<sub>2</sub> per megawatt-hour, with a rating of 0.399 metric tonnes CO<sub>2</sub> per megawatt-hour.

Staff notes that mandatory reporting of the GHG emissions provides the necessary information for the California Air Resources Board to develop greenhouse gas regulations and/or trading markets required by the California Global Warming Solutions Act of 2006 (AB 32 Núñez, Statutes of 2006, Chapter 488, Health and Safety Code sections 38500 et seq.). The project may be subject to additional reporting requirements and GHG reductions or trading requirements as these regulations are more fully developed and implemented. On a federal level, 40 CFR 98 requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO<sub>2</sub> equivalent emissions per year.

## INTRODUCTION

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GHG emissions are not criteria pollutants, but are discussed in the context of cumulative impacts. The State has demonstrated a clear willingness to address global climate change through research, adaptation<sup>5</sup>, and GHG inventory reductions. In that context, staff evaluates the GHG emissions from the proposed project, presents information on GHG emissions related to electricity generation, and describes the applicable GHG standards and requirements.

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<sup>5</sup> While working to understand and reverse global climate change, it is prudent to also adapt to potential changes in the state's climate (for example, changing rainfall patterns).

Generation of electricity using any fossil fuel, including natural gas, can produce greenhouse gases with the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. For fossil fuel-fired power plants, the GHG emissions include primarily carbon dioxide, with much smaller amounts of nitrous oxide (N<sub>2</sub>O, not NO or NO<sub>2</sub>, which are commonly known as NO<sub>x</sub> or oxides of nitrogen), and methane (CH<sub>4</sub> – often from unburned natural gas). Also included are sulfur hexafluoride (SF<sub>6</sub>) from high voltage equipment and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO<sub>2</sub> emissions from the carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented here as some of the compounds have very high relative global warming potentials.

Global warming potential is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO<sub>2</sub>E) metric tonnes (MT) for ease of comparison.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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The following federal, state, and local laws and policies in **GREENHOUSE GAS Table 1** pertain to the control and mitigation of greenhouse gas emissions. Staff's analysis examines the project's compliance with these requirements.

## **GLOBAL CLIMATE CHANGE AND ELECTRICITY PRODUCTION**

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There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps significantly) to that change. Man-made emissions of greenhouse gases, if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Indeed, the California Legislature finds that “[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California” (Cal. Health & Safety Code, sec. 38500, division 25.5, part 1).

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 require reporting of greenhouse gases or global climate change<sup>6</sup> emissions as a condition of state licensing of new electric generating facilities (CEC 2003, IEPR p. 42). In 2006, California enacted the California Global Warming Solutions Act of 2006 (AB 32). It requires the California Air Resources Board (ARB) to adopt standards that will reduce statewide GHG emissions to statewide GHG emissions levels in 1990, with such reductions to be achieved by 2020.<sup>7</sup> To achieve this, ARB has a mandate to define the 1990 emissions

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<sup>6</sup> Global climate change is the result of greenhouse gases, or air emissions with global warming potentials, affecting the global energy balance, and thereby, climate of the planet. The terms greenhouse gases (GHG) and global climate change (GCC) gases are used interchangeably.

<sup>7</sup> Governor Schwarzenegger has also issued Executive Order S-3-05 establishing a goal of 80 percent below 1990 levels by 2050.

level and achieve the maximum technologically feasible and cost-effective GHG emission reductions.

**GREENHOUSE GAS Table 1  
Laws, Ordinances, Regulations, and Standards (LORS)**

<b>Applicable Law</b>	<b>Description</b>
<b>Federal</b>	
40 Code of Federal Regulations (CFR) Part 98	This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tonnes of CO <sub>2</sub> equivalent emissions per year.
<b>State</b>	
California Global Warming Solutions Act of 2006, AB 32 (Stats. 2006; Chapter 488; Health and Safety Code sections 38500 et seq.)	This act requires the California Air Resource Board (ARB) to enact standards that will reduce GHG emission to 1990 levels by 2020. Electricity production facilities will be regulated by the ARB.
California Code of Regulations, tit. 17, Subchapter 10, Article 2, sections 95100 et. seq.	These ARB regulations implement mandatory GHG emissions reporting as part of the California Global Warming Solutions Act of 2006 (Stats. 2006; Chapter 488; Health and Safety Code sections 38500 et seq.)
Title 20, California Code of Regulations, section 2900 et seq.; CPUC Decision D0701039 in proceeding R0604009	The regulations prohibit utilities from entering into long-term contracts with any base load facility that does not meet a greenhouse gas emission standard of 0.5 metric tonnes carbon dioxide per megawatt-hour (0.5 MTCO <sub>2</sub> /MWh) or 1,100 pounds carbon dioxide per megawatt-hour (1,100 lbs CO <sub>2</sub> /MWh)

The ARB adopted early action GHG reduction measures in October 2007, adopted mandatory reporting requirements and the 2020 statewide target in December 2007, and adopted a statewide scoping plan in December 2008 to identify how emission reductions will be achieved from significant sources of GHG via regulations, market mechanisms, and other actions. ARB staff is developing regulatory language to implement its plan and holds ongoing public workshops on key elements of the recommended GHG reduction measures, including market mechanisms (ARB 2006). The regulations must be effective by January 1, 2011 and mandatory compliance commences on January 1, 2012. The mandatory reporting requirements are effective for electric generating facilities over 1 megawatt (MW) capacity, and the due date for initial reports by existing facilities was June 1, 2009.

Examples of strategies that the state might pursue for managing GHG emissions in California, in addition to those recommended by the Energy Commission and the Public Utilities Commission, were identified in the California Climate Action Team's Report to the Governor (CalEPA 2006). The scoping plan approved by ARB in December 2008 builds upon the overall climate policies of the Climate Action Team report and shows the recommended strategies to achieve the goals for 2020 and beyond. 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 scoping plan includes a 33 percent

Renewables Portfolio Standard (RPS), aggressive energy efficiency targets, and a cap-and-trade system that includes the electricity sector (ARB 2008).

It is possible that GHG reductions mandated by ARB will be non-uniform or disproportional across emitting sectors, in that most reductions will be based on cost-effectiveness (i.e., the greatest effect for the least cost). For example, the ARB proposes a 40 percent reduction in GHG from the electricity sector, even though that sector currently only produces about 25 percent of the state's GHG emissions. In response, in September 2008 the Energy Commission and the Public Utilities Commission provided recommendations (CPUC 2008) to ARB on how to achieve such reductions through both programmatic and regulatory approaches and identified points of regulation should ARB decide that a multi-sector cap and trade system is warranted.

The Energy Commission's *2007 Integrated Energy Policy Report* (IEPR) also addressed climate change within the electricity, natural gas, and transportation sectors (CEC 2007). For the electricity sector, it recommends such approaches as pursuing all cost-effective energy efficiency measures and meeting the Governor's stated goal of a 33 percent renewable portfolio standard. The Energy Commission's *2009 Integrated Energy Policy Report* continues to emphasize the importance of meeting greenhouse gas emissions reduction goals along with other important statewide issues such as backing out use of once-through cooling in coastal California power plants (CEC 2009d).

SB 1368,<sup>8</sup> enacted in 2006, and regulations adopted by the Energy Commission and a Public Utilities Commission decision (D.07-01-039; January 25, 2007) pursuant to the bill, prohibits California utilities from entering into long-term commitments with any base load facilities that exceed the Emission Performance Standard (EPS) of 0.500 metric tonnes CO<sub>2</sub> per megawatt-hour<sup>9</sup> (1,100 pounds CO<sub>2</sub>/MWh). Specifically, the SB 1368 Emission Performance Standard (EPS) applies to 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 of California.<sup>10</sup> If a project, in-state or out of state, that is designed or intended to provide base load energy plans to sell electricity to California utilities, the utilities will have to demonstrate that the project meets the EPS. *Base load* units are defined as units that operate at a capacity factor higher than 60 percent. As a project applying for the flexibility to operate in peaking scenarios and not intended for use as a base load facility, ESPRP would have to meet the SB 1368 EPS. As shown in **GREENHOUSE GAS Table 3**, GHG emissions from ESPRP are below the limit of SB 1368 requirements.

In addition to these programs, California is involved in the Western Climate Initiative, a multi-state and international effort to establish a cap and trade market to reduce greenhouse gas emissions in the Western United States and the Western Electricity Coordinating Council (WECC). The timelines for the implementation of this program are

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<sup>8</sup> Public Utilities Code § 8340 et seq.

<sup>9</sup> The Emission Performance Standard only applies to carbon dioxide and does not include emissions of other greenhouse gases converted to carbon dioxide equivalent.

<sup>10</sup> See Rule at [http://www.cpuc.ca.gov/PUBLISHED/FINAL\\_DECISION/64072.htm](http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm)

similar to those of AB 32, with full roll-out beginning in 2012. And as with AB 32, the electricity sector has been a major focus of attention.

## **ELECTRICITY PROJECT GREENHOUSE GAS EMISSIONS**

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Electricity use can be as simple as turning on a switch to operate a light or fan. The system to deliver the adequate and reliable electricity supply is complex and variable. But it operates as an integrated whole to meet demand, such that the dispatch of a new source of generation generally curtails or displaces one or more less efficient or less competitive existing sources. Within the system, generation resources provide electricity, or energy, generating capacity, and ancillary services to stabilize the system and facilitate electricity delivery, or movement, over the grid. *Capacity* is the instantaneous output of a resource, in megawatts. It is also the potential output of a resource; hence ESPRP has a capacity of 573 MW. *Energy* is the capacity output over a unit of time, for example an hour or year, generally reported as megawatt-hours or gigawatt-hours (GWh). Ancillary services<sup>11</sup> include regulation, spinning reserve, non-spinning reserve, voltage support, and black start capability. Individual generation resources can be built and operated to provide only one specific service. Alternatively, a resource may be able to provide one or all of these services, depending on its design and constantly changing system needs and operation.

California is actively pursuing policies to reduce GHG emissions that include adding non-GHG emitting renewable generation resources to the system mix. In this context, and because fossil-fueled resources produce GHG emissions, it is important to consider the role and necessity of also adding fossil-fuel resources such as ESPRP. On October 8, 2008, the Energy Commission adopted an order initiating an informational (OII) proceeding (08-GHG OII-1) to solicit comments on how to assess the greenhouse gas impacts of proposed new power plants in accordance with the California Environmental Quality Act (CEQA). A report prepared as a response to the GHG OII (CEC 2009a) defines five roles that gas-fired power plants are likely to fulfill in a high-renewables, low-GHG system (CEC 2009b, pp 93 and 94):

1. Intermittent generation support
2. Local capacity requirements
3. Grid operations support
4. Extreme load and system emergency
5. General energy support.

The Energy Commission staff-sponsored report reasonably assumes that non-renewable power plants added to the system would almost exclusively be natural gas-fueled. Nuclear, geothermal, and biomass plants are generally base load and not dispatchable. Solid fueled projects are also generally base load, not dispatchable, and carbon sequestration technologies needed to reduce the GHG emission rates to meet the EPS are not yet developed (CEC 2009b, p. 92). Further, California has almost no sites available to add dispatchable hydroelectric generation.

This analysis provides the staff's conclusions concerning greenhouse gas emissions for this siting case. Future power plant siting and amendment cases are likely to be

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<sup>11</sup> See page CEC 2009b, page 95.

reviewed with the benefit of new information and policy direction from the Energy Commission in response to the OII. This analysis recognizes that the “prudent use” of natural gas for electricity generation will facilitate development of a low-GHG electricity system (i.e., allow integration of large amounts of intermittent renewable generation and provide reliability), but further analysis and policy direction by the Commission is needed to refine this analysis (CEC 2009a, page 29).

The Energy Commission established a precedent decision in the Final Commission Decision for the Avenal Energy Project. This decision requires all new natural gas fired power plants certified by the Energy Commission to: (a) not increase the overall system heat rate for natural gas plants, (b) not interfere with generation from existing renewable facilities nor interfere with the integration of new renewable generation, and (c) take into account these factors to ensure a reduction of systemwide GHG emissions and support the goals and policies of AB 32 (CEC 2009e). The proposed project, with its low heat rate, rapid start and rapid ramping capabilities, meets all these conditions.

## PROJECT CONSTRUCTION

Construction of industrial facilities such as power plants requires coordination of numerous equipment and personnel. The concentrated on-site activities result in short-term, unavoidable increases in vehicle and equipment emissions that include greenhouse gases. Construction of ESPRP would involve approximately 18 months of activity. The project owner provided a GHG emission estimate for the entirety of the construction phase (Sierra 2010a). The GHG emissions estimate, presented below in **GREENHOUSE GAS Table 2**, includes the total emissions for the 18 months of construction activity in terms of CO<sub>2</sub>-equivalent.

## PROJECT OPERATIONS

The proposed project would be a nominal 573 megawatt (MW) electrical generating facility located within the existing footprint of El Segundo Units 1 and 2, at the existing 33-acre El Segundo Electric Generating Station located in the city of El Segundo, California. The proposed project consists of two natural gas-fired Siemens combustion turbine generators (CTGs), each with a heat recovery steam generator and steam turbine generator. Each combustion turbine generator would be operated up to a maximum of 5,456 hours per year with a maximum of 200 startups per year.

**GREENHOUSE GAS Table 2**  
**ESPRP, Estimated Potential Construction Greenhouse Gas Emissions**

<b>Construction Source <sup>a</sup></b>	<b>Construction-Phase GHG Emissions (over 18 months) (MTCO<sub>2</sub>e) <sup>b</sup></b>
Site Grading and Preparation	260
Main Site Construction	3,410
<b>Construction Total</b>	<b>3,670</b>

Source: (Sierra 2010a)

Notes:

a. Includes emissions from workers commuting to work site.

b. One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.

The primary sources of GHG from operations would be the natural gas fired combustion turbines. There will also be a small amount of GHG emissions from sulfur hexafluoride emissions from electrical component equipment.

**GREENHOUSE GAS Table 3** shows what the proposed project, as permitted, could potentially emit in greenhouse gases on an annual basis. All emissions are converted to CO<sub>2</sub>-equivalent and totaled. Electricity generation GHG emissions are generally dominated by CO<sub>2</sub> emissions from the carbon-based fuels; other sources of GHG are typically small and also are more likely to be easily controlled or reused/recycled, but are nevertheless documented here as some of the compounds have very high relative global warming potentials. A small amount of SF<sub>6</sub> containing equipment would be required for this project; the analysis includes CO<sub>2</sub> equivalent SF<sub>6</sub> emissions.

The proposed project would be permitted, on an annual basis, to emit approximately 1,221,188 metric tonnes of CO<sub>2</sub>-equivalent per year if operated at its maximum permitted level. The new ESPRP facility would be more efficient than the existing power plants in the Los Angeles Basin Local Capacity Requirements Area, which has facilities with GHG performance ranging from 0.452 to 0.900 MTCO<sub>2</sub>/MWh. The proposed ESPRP project would emit at 0.399 MTCO<sub>2</sub>/MWh, which would easily meet the SB 1368 Greenhouse Gas Emission Performance Standard of 0.500 MTCO<sub>2</sub>/MWh.

**GREENHOUSE GAS Table 3**  
**ESPRP, Estimated Potential Greenhouse Gas (GHG) Emissions**

<b>Emissions Source</b>	<b>Operational GHG Emissions (MTCO<sub>2</sub>e/yr)<sup>a</sup></b>
Turbines – Carbon Dioxide (CO <sub>2</sub> )	1,218,000
Turbines – Methane (CH <sub>4</sub> )	478
Turbines – Nitrous Oxide (N <sub>2</sub> O)	714
Sulfur Hexafluoride (SF <sub>6</sub> ) Leakage	1,188 <sup>c</sup>
<b>Total Project GHG Emissions (MTCO<sub>2</sub>e/yr)</b>	<b>1,221,188</b>
Estimated Annual Energy Output (MWh/yr) <sup>b</sup>	3,055,360
<b>Estimated Annualized GHG Performance (MTCO<sub>2</sub>/MWh)</b>	<b>0.399</b>
<b>Estimated Annualized GHG Performance (MTCO<sub>2</sub>e/MWh)</b>	<b>0.400</b>

Sources: Sierra 2010b; CECP 2009

Notes:

- a. One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
- b. Annualized basis uses the project owner's assumed maximum permitted operating basis.
- c. SF<sub>6</sub> estimate based on Carlsbad Energy Center Project which also consists of two Siemens RRCC generating units (CECP 2009).

The proposed project would increase the energy and capacity available to the electricity system. Both the California ISO control area and its southern half (the SP26 zone) The Los Angeles Basin Local Reliability Area would benefit from the incremental increase in energy and capacity provided by ESPRP. As a project currently located inside a major load pocket, ESPRP would provide local reliability services and facilitate the retirement of other less-efficient power plants in the Los Angeles basin.

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

Staff assesses the cumulative effects of GHG emissions caused by both construction and operation. 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. Staff is continuing to monitor development of AB 32 Scoping Plan implementation efforts and general trends and developments affecting GHG regulation in the construction and electricity sectors.

The impact of GHG emissions caused by this natural gas-fired facility is characterized by considering how the power plant would affect the overall electricity system. The integrated electricity system depends on fossil-fueled generation resources to provide energy and satisfy local capacity needs. As directed by the OII (CEC 2009a), staff is refining and implementing the concept of a “blueprint” that describes the long-term role of fossil-fueled power plants in California’s electricity system. The five separate roles that gas-fired power plants are most likely to fulfill in the future of a high-renewables, low-GHG system include: 1) Intermittent generation support; 2) Local capacity requirements; 3) Grid operations support; 4) Extreme load and system emergencies support; and 5) General energy support (CEC 2009b, p. 93). ESPRP is analyzed here for its role in providing local capacity and generation and general energy support for expected generation retirements or replacements.

## **CONSTRUCTION IMPACTS**

Staff believes that the small GHG emission increases from construction activities would not be significant for several reasons. First, the period of construction will be short-term and the emissions intermittent during that period, not ongoing during the life of the project. Additionally, control measures that staff recommends to address criteria pollutant emission, such as limiting idling times and requiring, as appropriate, equipment that meets the latest criteria pollutant emissions standards would further minimize greenhouse gas emissions to the extent feasible. The use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of future ARB regulations to reduce GHG from construction vehicles and equipment.

## **DIRECT/INDIRECT OPERATION IMPACTS AND MITIGATION**

New, efficient, natural gas-fired generation promotes the state’s efforts to improve GHG electrical generation efficiencies and, therefore, reduces greenhouse gas emissions and the amount of natural gas used by electricity generation. As the *2007 Integrated Energy Policy Report* (CEC 2007, p. 184) noted:

New natural gas-fueled electricity generation technologies offer efficiency, environmental, and other benefits to California, specifically by reducing the amount of natural gas used—and with less natural gas burned, fewer greenhouse gas emissions. Older combustion and steam turbines use outdated technology that makes them less fuel- and cost-efficient than newer, cleaner plants.... The 2003 and 2005 IEPRs noted that the state could help reduce natural gas consumption for electric generation by taking steps to retire older, less efficient natural gas power plants and replace or repower them with new, more efficient power plants.

Thus, in the context of the Energy Commission’s *Integrated Energy Policy Report*, the ESPRP’s likely replacement of older existing plant capacity and higher GHG-emitting energy furthers the state’s strategy to promote efficiency and reduce fuel use and GHG emissions. As stated in the *2009 Framework for Evaluating Greenhouse Gas Implications of Natural Gas-Fired Power Plants in California* (CEC 2009b, p.20):

When one resource is added to the system, all else being held equal, another resource will generate less power. If the new resource has a lower cost and fewer emissions than the existing resource mix, the aggregate system characteristics will change to reflect the cheaper power and lower GHG emissions rate.

Net GHG emissions for the integrated electric system will decline when new gas-fired power plants are added to: 1) permit the penetration of renewable generation to the 33 percent target; 2) improve the overall efficiency of the electric system; or 3) serve load growth or capacity needs more efficiently than the existing fleet (CEC 2009b, p. 98). ESPRP, with its lower heat rate than a substantial share of existing load-following and peaking capacity in the WECC, will displace higher GHG-emitting resources whenever it operates.

### **The Role of ESPRP in Local Generation Displacement**

The proposed ESPRP project would have a net heat rate of 7,311 Btu/kWh<sup>12</sup> under normal operating conditions. The heat rate, energy output and GHG emissions of Los Angeles basin and Southern California generation resources that ESPRP would likely supplant as a provider of local and zonal reliability services are listed in **GREENHOUSE GAS Table 4**. Compared to these resources, ESPRP would be more efficient, and emit fewer GHG emissions per MWh of generation. Generating units with the best (lowest) heat rate and thus the best GHG performance factor generally operate more than other units with higher heat rates, as shown by the relative amount of energy (GWh) produced in 2009 from the Southern California units.

To the extent that energy is needed from ESPRP to meet local or zonal reliability needs, ESPRP will more likely displace output from the less efficient, higher GHG-emitting gas-fired resources located closer the Los Angeles load center. In These power plants are shown in the upper section of **GREENHOUSE GAS Table 4** labeled LA Basin.

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<sup>12</sup> Based on the High Heating Value (HHV) of the fuel(s) used. HHV is used for all heat rate and fuel conversions to GHG mass emissions that are discussed in this document.

**GREENHOUSE GAS Table 4**  
**Los Angeles Basin Local Capacity Requirements Area, Local Generation Heat Rates and 2009 Energy Outputs**

<b>Plant Name</b>	<b>2009 BTUs of Fuel Used</b>	<b>Heat Rate (Btu/kWh)</b>	<b>2009 Energy Output (GWh)</b>	<b>GHG Performance (MT CO2/MWh)</b>
<b><u>LA Basin</u></b>				
Alamitos	19,094,686	10,918	1749	0.579
Alliance Century	8,058	13,867	1	0.736
Alliance Colton Draws - Agua Mansa	8,015	13,762	1	0.567
El Segundo Power	6,093,086	12,035	506	0.639
Etiwanda Generating Station	5,902,802	12,431	475	0.660
Huntington Beach (AES)	11,712,498	11,194	1046	0.594
Indigo Generation LLC	706,270	10,459	68	0.555
Long Beach Generation LLC	560,345	16,300	34	0.865
Redondo Beach LLC (AES)	7,308,892	10,757	679	0.571
<b>Subtotals</b>	<b>51,394,652</b>	<b>11,273</b>	<b>4,559</b>	<b>0.598</b>
<b><u>Surrounding Region</u></b>				
Cal Peak Power	581,539	11,007	53	0.584
El Cajon	16,089	19,040	1	1.010
Ellwood Generating Station	22,658	14,936	2	0.793
Encina	9,672,244	13,220	732	0.701
Escondido, LLC	21,851	16,031	1	0.851
Kearny	96,153	16,661	6	0.884
Larkspur Energy LLC	632,548	10,587	60	0.562
Mandalay Generating Station	3,529,293	11,533	306	0.612
Miramar 1A 1B	32,710	18,284	2	0.970
NRG Energy Inc	19,087	13,872	1	0.736
Ormond Beach Generating Station	3,506,995	12,0081	292	0.637
<b>Subtotals</b>	<b>14,605,085</b>	<b>10,038</b>	<b>1,455</b>	<b>0.533</b>
<b>TOTALS</b>	<b>65,999,737</b>	<b>10,974</b>	<b>6,014</b>	<b>0.589</b>
El Segundo Power Redevelopment Project		7,331	3,055	0.399

Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER); with independent Energy Commission staff analysis for ESPRP based on maximum utilization.

Notes:

- a. Based on the Higher Heating Value (or HHV) of the fuel.

To a certain extent, ESPRP would also displace capacity, energy and inertial support currently provided by generation located farther away from the Los Angeles load center.

This generation is less likely to be displaced by ESPRP and is shown in the Surrounding Region section of **GREENHOUSE GAS Table 4**.

However, dispatch order can change, or deviate from economic or efficiency dispatch, in any one year or due to other concerns such as permit limits, contractual obligations, local reliability needs or emergencies. Because ESPRP is inside the Los Angeles Basin Local Capacity Requirements Area, it would be able to provide capacity during most system operating conditions.

### **The Role of ESPRP in the Renewable Goals/Load Growth**

As California moves towards an increased reliance on renewable energy, the bulk of renewable generation available to and used in California in the near to intermediate future will be intermittent wind and solar generation (CEC 2009b, p.3). To accommodate the increased variability in generation due to increasing renewable penetration, compounded by increasing load variability, control area operators such as the California Independent System Operator (CAISO) need increased flexibility from other generation resources such as hydro generation, dispatchable pumping loads, energy storage systems, and fast ramping and fast starting fossil fuel generation resources (CAISO 2007, p. 14).

ESPRP would provide flexible, dispatchable and fast ramping<sup>13</sup> power that would facilitate the integration of additional renewable energy onto the system. Each of the Siemens Rapid Response Combined Cycle generating units can delivery 219 MWs of power generation within 12 minutes of unit startup (SCAQMD 2010). This faster startup time allows the GTG to ramp up to maximum efficiency more quickly and provides the following benefits:

- Reduced start up fuel consumption,
- Reduced air emissions (GTGs reach optimal emissions performance faster), and
- Reduced steam loss associated with steam seal warming during start up.

The amount of dispatchable fossil fuel generation used as regulation resources, fast ramping resources, or load following or supplemental energy dispatches will have to be significantly increased due to the planned intermittent resources needed to meet the 20 percent RPS (CAISO 2007, p.113); the 33 percent RPS will require even more dispatchable generation to integrate the renewables. However, this does not suggest the existing and new fossil fuel capacity will operate more in terms of total generation, but will need to operate more in a supplementary rather than base load role.

**GREENHOUSE GAS Table 5** shows how the build-out of either the 20 percent or the 33 percent Renewable Portfolio Standards will affect generation from new and existing non-renewable resources. Should California reach its goal of meeting 33 percent of its retail demand in 2020 with renewable energy, non-renewable, most likely fossil-fueled, energy needs will fall by more than 36,500 GWh/year. In other words, all growth will need to come from renewable resources to achieve the 33 percent RPS, and some

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<sup>13</sup> The CAISO categorizes *fast-ramping* as a generator capable of going from lowest power to highest in under 20 minutes, or greater than 10 MW per minute.

existing and new fossil units will generate less energy than they currently do, given the expected growth rate in retail sales.

These assumptions are conservative in that the forecasted growth in retail sales assumes that the impacts of planned increases in expenditures on (uncommitted) energy efficiency are already embodied in the current retail sales forecast.<sup>14</sup> Energy Commission staff estimates that as much as 18,000 GWh of additional savings due to uncommitted energy efficiency programs may be forthcoming.<sup>15</sup> This would reduce non-renewable energy needs by a further 12,000 GWh given a 33 percent RPS.

**GREENHOUSE GAS Table 5  
Estimated Changes in Non-Renewable Energy Potentially Needed to Meet  
California Loads, 2008-2020**

<b>California Electricity Supply</b>	<b>Annual GWh</b>	
Statewide Retail Sales, 2008, estimated <sup>a</sup>	264,794	
Statewide Retail Sales, 2020, forecast <sup>a</sup>	289,697	
Growth in Retail Sales, 2008-20	24,903	
Growth in Net Energy for Load <sup>b</sup>	29,840	
<b>California Renewable Electricity</b>	<b>GWh @ 20% RPS</b>	<b>GWh @ 33% RPS</b>
Renewable Energy Requirements, 2020 <sup>c</sup>	57,939	95,600
Current Renewable Energy, 2008	29,174	
Change in Renewable Energy-2008 to 2020 <sup>c</sup>	28,765	66,426
Resulting Change in Non-Renewable Energy	176	(36,586)

Source: Energy Commission staff 2010.

Notes:

- a. 2009 IEPR Demand Forecast, Form 1.1c. Excludes pumping loads for entities that do not have an RPS.
- b. 2009 IEPR Demand Forecast, Form 1.5a..
- c. RPS requirements are a percentage of retail sales.

### **The Role of ESPRP in Retirements/Replacements**

ESPRP would be capable of annually providing up to 3,055 GWh of natural gas-fired energy at permitted levels to replace resources that are or will likely be precluded from serving California loads. State policies, including GHG goals, are discouraging or prohibiting new contracts and new investments in high GHG-emitting resources, such as coal-fired generation, generation that relies on water for once-through cooling, and aging power plants (CEC 2007). Some of the existing plants that are likely to require significant capital investments to continue operation in light of these policies may be unlikely to undertake the investments and will retire or be replaced.

<sup>14</sup> Energy efficiency savings are already represented in the current Energy Commission demand forecast adopted December 2009 (CEC 2009c).

<sup>15</sup> See *Incremental Impacts of Energy Efficiency Policy Initiatives Relative to the 2009 Integrated Energy Policy Report Adopted Demand Forecast* (CEC-200-2010-001-D, January, 2010), page 2. Table 1 indicates that additional conservation for the three investor-owned utilities may be as high as 14,374 GWh. Increasing this value by 25 percent to account for the state's publicly-owned utilities yields a total reduction of 17,967 GWh.

## Replacement of High GHG-Emitting Generation

High GHG-emitting resources, such as coal, are effectively prohibited from entering into new contracts for California electricity deliveries as a result of the Emissions Performance Standard adopted in 2007 pursuant to SB 1368. Between now and 2020, more than 18,000 GWh of energy procured by California utilities under these contracts will have to reduce GHG emissions or be replaced; these contracts are presented in **GREENHOUSE GAS Table 6**.

**GREENHOUSE GAS Table 6**  
**Expiring Long-term Contracts with Coal-fired Generation 2009 – 2020**

Utility	Facility <sup>a</sup>	Contract Expiration	Annual GWh Delivered to CA
PG&E, SCE	Misc In-state Qual. Facilities <sup>a</sup>	2009-2019	4,086
LADWP	Intermountain	2009-2013	3,163 <sup>b</sup>
City of Riverside	Bonanza, Hunter	2010	385
Department of Water Resources	Reid Gardner	2013 <sup>c</sup>	1,211
SDG&E	Boardman	2013	555
SCE	Four Corners	2016	4,920
Turlock Irrigation District	Boardman	2018	370
LADWP	Navajo	2019	3,832
<b>TOTAL</b>			<b>18,522</b>

Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER) filings.

Notes:

- All facilities are located out-of-state except for the Miscellaneous In-state Qualifying Facilities.
- Estimated annual reduction in energy provided to LADWP by Utah utilities from their entitlement by 2013.
- Contract not subject to Emission Performance Standard, but the Department of Water Resources has stated its intention not to renew or extend.

This represents almost half of the energy associated with California utility contracts with coal-fired resources that will expire by 2030. If the State enacts a carbon adder<sup>16</sup>, all the coal contracts (including those in **GREENHOUSE GAS Table 6**, which expire by 2020, and other contracts that expire beyond 2020 and are not shown in the table) may be divested at an accelerated rate as coal-fired energy becomes uncompetitive due to the carbon adder or the capital needed to capture and sequester the carbon emissions. Also shown are the approximate 500 MW of in-state coal and petroleum coke-fired capacity that may not be able to contract with California utilities for base load energy due to the SB1368 Emission Performance Standard. As these contracts expire, new and existing generation resources will replace the lost energy and capacity. Some will come from renewable generation; some will come from new and existing natural gas fired generation. All will emit significantly less GHG than the coal and petroleum coke-fired generation, which average about 1.0 MTCO<sub>2</sub>/MWh without carbon capture and sequestration, or up to almost three times more than a natural gas-fired turbine project like ESPRP which would emit 0.399 MTCO<sub>2</sub>/MWh, resulting in a significant net reduction in GHG emissions from the California electricity sector.

<sup>16</sup> A carbon adder or carbon tax is a specific value added to the cost of a project per ton of associated carbon or carbon dioxide emissions. Because it is based on, but not limited to, actual operations and emission and can be trued up at year end, it is considered a simple mechanism to assign environmental costs to a project.

## Retirement of Generation Using Once-Through Cooling

New, dispatchable resources like ESPRP would also be required to provide generation capacity (that is, the ability to meet fluctuating, intermittent electricity loads) in the likely event that facilities utilizing once-through cooling (OTC) are retired. The SWRCB has proposed significant restrictions on the operation of OTC units, which will likely require retrofit, retirement, or significant curtailment of dozens of generating units. In 2008, these units collectively produced about 58,000 GWh. While those OTC facilities owned and operated by utilities and recently-built combined cycles may well install dry or wet cooling towers, it is unlikely that the aging, merchant plants will do so. Most of these units operate at low capacity factors, suggesting a limited ability to compete in the current electricity market and rely on capacity contracts, offered as these facilities are needed for reliability.. Although the timing would be uncertain, new resources are expected to out-compete aging plants, displace the energy provided by OTC facilities, and facilitate, if not accelerate their retirements.

Any additional costs associated with complying with the SWRCB regulation would be amortized over a limited revenue stream today and into the foreseeable future. Their energy and much of their dispatchable, load-following capability will have to be replaced. These units constitute over 15,000 MW of merchant capacity and 17,800 GWh of merchant energy. Of this, much but not all of the capacity and energy are in local reliability areas, requiring a large share of replacement capacity – absent transmission upgrades – to locations in the same local reliability area. **GREENHOUSE GAS Table 7** provides a summary of the statewide utility and merchant energy supplies affected by the OTC regulations.

New generation resources that can either provide local capacity or energy will emit significantly less GHGs than existing OTC natural gas generation. Existing aging and OTC natural gas generation average 0.6 to 0.7 MTCO<sub>2</sub>/MWh. They are less efficient and higher GHG-emitting than a new natural gas-fired turbine project like ESPRP. When a project can provide energy and capacity, given its location, it can provide a significant net reduction in GHG emissions from the California electricity sector. A project located in a coastal load pocket, like the Los Angeles Local Reliability Area, would more likely provide local reliability support as well as facilitate the retirement of aging and/or OTC power plants.

**GREENHOUSE GAS Table 7**  
**Aging and Once-Through Cooling Units: 2008 Capacity and Energy Output <sup>a</sup>**

Plant, Unit Name	Owner	Local Reliability Area	Aging Plant?	Capacity (MW)	2008 Energy Output (GWh)	GHG Performance (MTCO <sub>2</sub> /MWh)
Diablo Canyon 1, 2	Utility	None	No	2,232	17,091	Nuclear
San Onofre 2, 3	Utility	L.A. Basin	No	2,246	15,392	Nuclear
Broadway 3 <sup>b</sup>	Utility	L.A. Basin	Yes	75	90	0.648
El Centro 3, 4 <sup>b</sup>	Utility	None	Yes	132	238	0.814
Grayson 3-5 <sup>b</sup>	Utility	LADWP	Yes	108	150	0.799
Grayson CC <sup>b</sup>	Utility	LADWP	Yes	130	27	0.896
Harbor CC	Utility	LADWP	No	227	203	0.509
Haynes 1, 2, 5, 6	Utility	LADWP	Yes	1,046	1,529	0.578
Haynes CC	Utility	LADWP	No	560	3,423	0.376
Humboldt Bay 1, 2 <sup>a</sup>	Utility	Humboldt	Yes	107	507	0.683
Olive 1, 2 <sup>b</sup>	Utility	LADWP	Yes	110	11	1.008
Scattergood 1-3	Utility	LADWP	Yes	803	1,327	0.618
<b>Utility-Owned</b>				<b>7,776</b>	<b>39,988</b>	<b>0.693</b>
Alamitos 1 – 6	Merchant	L.A. Basin	Yes	1,970	2,533	0.661
Contra Costa 6, 7	Merchant	S.F. Bay Area	Yes	680	160	0.615
Coolwater 1-4 <sup>b</sup>	Merchant	None	Yes	727	576	0.633
El Segundo 3, 4	Merchant	L.A. Basin	Yes	670	508	0.576
Encina 1-5	Merchant	San Diego	Yes	951	997	0.674
Etiwanda 3, 4 <sup>b</sup>	Merchant	L.A. Basin	Yes	666	848	0.631
Huntington Beach 1, 2	Merchant	L.A. Basin	Yes	430	916	0.591
Huntington Beach 3, 4	Merchant	L.A. Basin	No	450	620	0.563
Mandalay 1, 2	Merchant	Ventura	Yes	436	597	0.528
Morro Bay 3, 4	Merchant	None	Yes	600	83	0.524
Moss Landing 6, 7	Merchant	None	Yes	1,404	1,375	0.661
Moss Landing 1, 2	Merchant	None	No	1,080	5,791	0.378
Ormond Beach 1, 2	Merchant	Ventura	Yes	1,612	783	0.573
Pittsburg 5-7	Merchant	S.F. Bay	Yes	1,332	180	0.673
Potrero 3	Merchant	S.F. Bay	Yes	207	530	0.587
Redondo Beach 5-8	Merchant	L.A. Basin	Yes	1,343	317	0.810
South Bay 1-4	Merchant	San Diego	Yes	696	1,015	0.611
<b>Merchant-Owned</b>				<b>15,254</b>	<b>17,828</b>	<b>0.605</b>
<b>Total In-State OTC</b>				<b>23,030</b>	<b>57,817</b>	

Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER) filings.

Notes:

- a. OTC Humboldt Bay Units 1 and 2 are included in this list. They must retire in 2010 when the new Humboldt Bay Generating Station (not ocean-cooled), currently under construction, enters commercial operation.
- b. Units are aging but are not OTC.

## 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 entire assessment is a cumulative impact assessment. The project alone would not be sufficient to change global climate, but would emit greenhouse gases and therefore has been analyzed as a potential cumulative impact in the context of existing GHG regulatory requirements and GHG energy policies.

## COMPLIANCE WITH LORS

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Ultimately, ARB’s AB 32 regulations may address both the degree of electricity generation sector emissions reductions (through cap-and-trade), and the method by which those reductions will be achieved (e.g., through command-and-control). However, the exact approach is currently under development. That regulatory approach may address emissions not only from the newer, more efficient, and lower emitting facilities licensed by the Commission, but also the older, higher-emitting facilities not subject to Energy Commission jurisdiction. This programmatic approach is likely to be more effective in reducing GHG emissions overall from the entire electricity sector than one that merely relies on displacing out-of-state coal plants (“leakage”) or older, “dirtier” facilities.

The Energy Commission and the Public Utilities Commission provided recommendations (CPUC 2008) to ARB on how to achieve such reductions through both programmatic and regulatory approaches and identified the points of regulation should ARB decide that a multi-sector cap-and-trade system is warranted. As ARB codifies improved GHG inventories and methods, it may become apparent that emission reductions from the generation sector are less cost-effective than other sectors, and that other sectors of sources can achieve reductions with relative ease and cost-effectiveness.

The project would be subject to ARB’s mandatory reporting requirements and potentially other future requirements mandating compliance with AB 32 that are being developed by ARB. How the project would comply with these ARB requirements is speculative at this time, but compliance would be mandatory. The ARB’s mandatory GHG emissions reporting requirements do not indicate whether the project, as defined, would comply with the potential GHG emissions reduction regulations being formulated under AB 32. The project may have to provide additional reports and GHG reductions, depending on the future regulations expected from ARB.

Reporting of GHG emissions would enable the project to demonstrate consistency with the policies described above and the regulations that ARB adopts and to provide the information to demonstrate compliance with any future AB 32 requirements that could be enacted in the next few years. Since this power project would be permitted for more

than a 60 percent annual capacity factor, the project is subject to the requirements of SB 1368 and the current Emission Performance Standard. ESPRP's GHG emission performance would be well below the SB 1368 EPS. Source testing will be conducted to demonstrate compliance with the GHG performance standards.

## NOTEWORTHY PUBLIC BENEFITS

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Electricity is produced by operation of inter-connected generation resources and by knowing the fuel used by the generation sector, the resulting GHG emissions can be known. Operation of one power plant, like ESPRP, affects all other power plants in the interconnected system. The operation of ESPRP facility will have an impact upon system operation and GHG emissions in several ways:

- ESPRP would provide flexible, dispatchable power necessary to integrate the growing generation from intermittent renewable sources.
- ESPRP would displace some less efficient local generation in the dispatch order of gas-fired facilities that are required to provide local electricity reliability in the Los Angeles Basin Local Capacity Requirements Area.
- ESPRP would replace high GHG-emitting (e.g., coal-fired) imported electricity that must be phased out to meet the State's Emission Performance Standard.
- ESPRP will would replace a share of the Los Angeles basin's and Southern California's aging and once-through cooled power plants.
- The ESPRP would utilize the Siemens rapid response combined cycle technology to allow for fast startup and ramping capability.
- The ESPRP would serve to meet local, zonal and system-wide resource adequacy (RA) requirements imposed on load-serving entities (LSE). The project would likely lead to a net reduction in GHG emissions across the electricity system providing energy and capacity to California. Thus, staff believes that the project would result in a cumulative overall reduction in GHG emissions from the state's power plants, would not worsen current conditions, and would thus not result in impacts that are cumulatively significant. Moreover, it would be consistent with AB 32 goals.

The energy displaced by the ESPRP project would result in a reduction in GHG emissions from the electricity system. In other system roles, as described in **GREENHOUSE GAS Table 8**, ESPRP would minimize its GHG impacts by addressing nearly all of the expected future roles for gas-fired generation, in a high-renewables, low-GHG system.

**GREENHOUSE GAS Table 8**  
**ESPRP, Summary of Role in Providing Energy and Capacity Resources**

Services Provided by Generating Resources	Discussion, ESPRP
Integration of Renewable Energy	<ul style="list-style-type: none"> <li>• Would provide fast startup capability (within 12 minutes).</li> <li>• Would provide rapid ramping capability.</li> <li>• Would have ability to provide regulation and reserves, and energy when renewable resources are unavailable.</li> </ul>
Local Generation Displacement	<ul style="list-style-type: none"> <li>• Would provide voltage support.</li> <li>• <i>Would not</i> provide black start capability.</li> </ul>
Ancillary Services, Grid System, and Emergency Support	<ul style="list-style-type: none"> <li>• Would provide fast startup capability (within 12 minutes).</li> <li>• <i>Would not</i> have low minimum load levels.</li> <li>• Would provide rapid ramping capability.</li> <li>• Would have ability to provide regulation and reserves.</li> <li>• <i>Would not</i> provide black start capability.</li> </ul>
General Energy Support	<ul style="list-style-type: none"> <li>• Would provide general energy support.</li> <li>• Could facilitate some retirements and replacements</li> <li>• Would provide cost-competitive energy.</li> <li>• Would be able to help a load-serving entity (LSE) meet resource adequacy (RA) requirements.</li> </ul>

Source: Energy Commission staff; based on: Expected Roles for Gas-Fired Generation (CEC2009b, p. 7).

## CONCLUSIONS

ESPRP, as an addition to the California electricity system, would be an efficient, new, dispatchable natural gas-fired turbine power plant that would reduce GHG emissions while generating electricity for California consumers. AB 32 emphasizes that GHG emission reductions must be “big picture” reductions that do not lead to “leakage” of such reductions to other states or countries. The project’s GHG emissions per MWh would be lower than those of other power plants and peaking projects that the project would replace and, thus, would contribute to continued improvement of the California and overall Western Electricity Coordinating Council system greenhouse gas (GHG) emissions and GHG emission rate average.

The project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. Thus, staff believes that the project would result in a cumulative overall reduction in GHG emissions from the state’s power plants, would not worsen current conditions, and would thus not result in impacts that are cumulatively significant. ESPRP would also provide other potential GHG benefits by addressing nearly all of the expected future roles for gas-fired generation, in a high-renewables, low-GHG system.

Staff notes that mandatory reporting of GHG emissions per Air Resources Board greenhouse gas regulations would occur, and this would enable the ARB to gather the information needed to regulate ESPRP in trading markets if required by the regulations implementing the California Global Warming Solutions Act of 2006 (AB 32). The project may be subject to additional reporting requirements and GHG reduction or trading requirements as these regulations are more fully developed and implemented.

Staff does not believe that the minor GHG emission increases from construction activities would be significant for several reasons. First, the period of construction would be short-term and the emissions intermittent during that period, not ongoing during the life of the project. Additionally, control measures or best practices, that staff recommends such as limiting idling times and requiring, as appropriate, equipment that meet the latest emissions standards, would further minimize greenhouse gas emissions since staff believes that the use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment. For all these reasons, staff concludes that the minor short-term emission of greenhouse gases during construction would be sufficiently reduced and would, therefore, not be significant.

The project would meet the Greenhouse Gases Emission Performance Standard (Title 20, California Code of Regulations, section 2900 et seq.) that applies to utility purchases of power from base load power plants, should the facility operate at some point in the future as a base load facility. The utility that enters into a contract with ESPRP would seek a finding that the project meets the EPS based on the operation of the project at that time, under a proposed PPA, and any other conditions that dictate the operation of the ESPRP. The facility meets the EPS of 0.500 metric tonnes CO<sub>2</sub> per megawatt-hour, with a rating of 0.399 metric tonnes CO<sub>2</sub> per megawatt-hour.

## **PROPOSED CONDITIONS OF CERTIFICATION**

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No Conditions of Certification related to greenhouse gas emissions are proposed. The project owner would comply with mandatory ARB GHG emissions reporting regulations (California Code of Regulations, tit. 17, Subchapter 10, Article 2, sections 95100 et. seq.) and/or future GHG regulations formulated by the ARB, such as GHG emissions cap and trade markets.

## ACRONYMS

ARB	California Air Resources Board
BLM	Bureau of Land Management
CalEPA	California Environmental Protection Agency
CCR	California Code of Regulations
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon Dioxide
CPUC	California Public Utilities Commission
EIR	Environmental Impact Report (CEQA)
EIS	Environmental Impact Statement (NEPA)
EPS	Emission Performance Standard
GHG	Greenhouse Gas
GWh	Gigawatt-hour
HFCs	Hydrofluorocarbons
IEPR	Integrated Energy Policy Report
kV	KiloVolt
LADWP	Los Angeles Department of Water and Power
lbs	Pounds
LORS	Laws, Ordinances, Regulations and Standards
MT	Metric Tonnes
MTCO <sub>2</sub> E	Carbon dioxide equivalent metric tonnes
MW	Megawatts (1,000,000 Watts)
MWh	Megawatt-hour
N <sub>2</sub> O	Nitrous Oxide
NEPA	National Environmental Policy Act
NO	Nitric Oxide
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen or Nitrogen Oxides
OII	Order Initiating an Informational
OTC	Once-Through Cooling
PFCs	Perfluorocarbons
PG&E	Pacific Gas and Electric Company
PSD	Prevention of Significant Deterioration
QFER	Quarterly Fuel and Energy Report
RPS	Renewables Portfolio Standard
SA	Staff Assessment (this document)
SCE	Southern California Edison
SDG&E	San Diego Gas and Electric
SF <sub>6</sub>	Sulfur hexafluoride
SWRCB	State Water Resource Control Board
U.S.EPA	United States Environmental Protection Agency
WECC	Western Electricity Coordinating Council

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# BIOLOGICAL RESOURCES

Prepared by: Rick York

## INTRODUCTION

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The Energy Commission Decision on the original ESPRP determined that the once-through cooling system has the potential to impact aquatic organisms through impingement, entrainment, and thermal effects (CEC 2005). Based on this, five conditions of certification were adopted in the Commission's final decision which were considered sufficient to mitigate these marine impacts to acceptable levels.

The petition to amend the ESPRP decision proposes to make major project changes that will considerably alter potential effects on biological resources in Santa Monica Bay and the immediate vicinity making the original conditions of certification no longer necessary, but requiring new conditions for the amended project.

Marine impacts related to the new design are now associated with the beach delivery system for which impact identification and appropriate mitigation are localized in comparison to the original project. In addition, project effects on terrestrial biota warrant re-examination for the new parking/laydown area.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS) COMPLIANCE

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Since the project was certified, there are no new or changed biological resource LORS that relate to the proposed changes in the Petition to Amend.

## ANALYSIS

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The petition was reviewed by staff to identify potential environmental effects and consistency with applicable LORS. This analysis is based, in part, on information provided in the original Application for Certification (ESPRP 2000), the Energy Commission Final Staff Assessment (CEC 2002), the project owner's Petition to Amend (ESPRP 2005a), the project owner's data responses (ESPRP 2007b), and staff's site visit on September 25, 2007. Based on this review, staff presents the following analysis with proposed new conditions of certification to address and mitigate project effects on biological resources.

The replacement of the once-through cooling system with an air-cooled system will eliminate impingement and entrainment mortalities of marine organisms. Notwithstanding this significant impact reduction, proposed construction of a temporary ramp system for barge delivery of oversized plant equipment will create different impacts that require consideration and adequate mitigation. These problems are associated with temporary disturbance of beach habitat, inter-tidal and sub-tidal benthic environments, as well as the open marine waters in the vicinity. In addition, a new laydown/parking area is proposed to replace one that was identified in the original project, but is no longer available.

## **SETTING**

The regional setting for the new project has not changed from the original project because the new project will be located at the same site on the shoreline of Santa Monica Bay.

The local setting will remain the same as described in the Final Staff Assessment for the original project, namely, the existing El Segundo Generating Station (ESGS) property at 301 Vista Del Mar. This site is approximately 2.5 miles southwest of the Los Angeles International Airport and west of the San Diego Freeway (I-405), on the shore of Santa Monica Bay. The site is bordered by Vista Del Mar and the Chevron refinery to the east, 45<sup>th</sup> Street in the City of Manhattan Beach on the south, Santa Monica Bay on the west and the Chevron Marine Terminal on the north.

Important habitat for biological resources near the beach delivery system include designated critical habitat for the federal threatened western snowy plover (*Charadrius alexandrius nivosus*) on the south end of Dockweiler Beach State Park. This area, and potential beach spawning areas for the California grunion (*Leuresthes tenuis*) are respectively subject to temporary impacts related to disturbance from construction activities and spawning habitat displacement.

## **PROJECT MODIFICATIONS WITH POTENTIAL TO AFFECT BIOLOGICAL RESOURCES**

There are new project features that will have potential impacts on biological resources. These include modifications to the power plant site, utilizing a new parking/laydown area, and bringing heavy prefabricated structures and equipment ashore through the use of a beach delivery system. All of these activities have the potential to affect flora and fauna primarily during construction.

### **POWER PLANT SITE AND NEW PARKING/LAYDOWN AREA**

Results of recent biology surveys conducted on the power plant site and new parking/laydown area (the 777 190<sup>th</sup> Street locale) show vegetation consists primarily of non-native plants in landscaped areas and along fenced property boundaries. Common birds including house finch (*Carpodacus mexicanus*), American crow (*Corvus brachyrhynchus*), house sparrow (*Passer domesticus*), and rock pigeon (*Columba livia*) were observed (ESPRP 2007a). The occurrence of these species is not unusual in a heavily developed urban setting. No listed species or species of special concern were observed or expected to occur based on the nature of the available habitat in these areas. Consequently, project construction impacts on biological resources at the power plant site and proposed laydown/parking area are not expected to be significant.

### **BEACH DELIVERY SYSTEM**

The beach delivery system will consist of a built-up ramp comprised of geo-tech fiber, wood matting, and sandbags. The ramp will be positioned next to an existing rock groin and secured with cables attached to two D-6 bulldozers situated on the beach. One stationary barge will be connected to the ramp, while delivery barges will be moved via a tug boat to the stationary barge for heavy equipment off-loading. The system will be in place approximately eight months (ESPRP 2007b).

With respect to beach habitat and biota that could be affected by the beach delivery system, the potential for direct impacts is not likely to be great. Survey results show the intertidal and subtidal sediments are comprised mainly (96-99%) fine to medium sand. No gravel or coarse sand was found. Thus, the distribution of organisms over the sand dominated area within the impact zone is probably fairly uniform. The intertidal and subtidal infauna were found in benthic samples to be predominantly annelids (segmented worms) and arthropods (small crustaceans). These organisms provide forage for various shore bird species. The rocky intertidal zone was surveyed mainly along the rock groin and found to be populated with common organisms such as barnacles, mussels, limpets, chitons, anemones, and rock crabs.

Unlike the ramp portion of the delivery system, the stationary barge and transport barges will not rest directly on the beach sand, intertidal rocky habitat, or rock groin. Direct effects of the barges on organisms inhabiting these zones are not expected to occur.

A few special status species identified in the AFC and considered in the Final Staff Assessment require additional attention due to the deployment of the beach delivery system. Agency contacts by ESEC's consultants and the Energy Commission staff's independent discussions with California Department of Fish and Game biologists Bill Paznokas (CDFG 2007a) and Matt Chirdon (CDFG 2007b) and Ken Corey (USFWS 2007) of the US Fish and Wildlife Service support this conclusion. The following protected species would most likely be affected by the installation and use of the beach delivery system if suitable habitat occurred on or close to the ramp and barges: the state endangered Belding's Savannah sparrow (*Passerculus beldingi*), the federal endangered and California species of concern Pacific pocket mouse (*Perognathus longimembris pacificus*), the state and federal endangered California brown pelican (*Pelecanus californicus*), the state and federal endangered California least tern (*Sternula antillarum brownii*), and the federal threatened western snowy plover (*Charadrius alexandrius nivosus*).

Typical habitat preferred by the Pacific pocket mouse including coastal strand, coastal dunes, and coastal sage scrub does not exist in the area where the beach delivery system will be situated. The closest known population exists at the Dana Point Headlands approximately 50 miles to the southeast (USFWS 1994). Also, in terms of optimal habitat, the presence of iceplant (*Caprobrotus chilensis*) is an undesirable and common component of the existing beach vegetation complex. This contributes to the probable absence of the Pacific pocket mouse on the delivery site. As such, this species will not be affected by project construction and operation. Similarly, coastal salt marsh habitat, preferred by Belding's Savannah sparrows, will not be affected by the project, resulting in no impacts to this species from the beach delivery system installation and operation.

Brown pelicans and California least terns forage for fish and other food items in nearshore waters in Santa Monica Bay. The stationary barge offers a structure for both species to land and rest on during fly-bys. Activities taking place during beach deliveries could conflict with marine bird foraging or use of the barge, but such conflicts can be minimized through implementation of measures specified in the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). The BRMIMP is developed

by the project owner and is reviewed and approved by the CEC Compliance Project Manager in consultation with appropriate agencies. It provides implementation details for required mitigation and includes monitoring to determine the success of the mitigation measures undertaken. The USFWS can provide recommendations on bird discouraging measures for incorporation into the BRMIMP (USFWS 2007). In addition, marine mammal encroachment onto the barges can be handled utilizing designated biologist contact procedures established in the BRMIMP.

Responses to staff's biological resources data request indicate the beach delivery system will be installed in late-winter of 2009 with up to six separate deliveries made until the system is removed in early summer (ESPRP 2007a). This timing could conflict with snowy plover foraging at the delivery site, but would probably not be significant due to the relatively small area affected. Critical habitat approximately fifty yards up the beach from the Chevron rock groin will not be directly affected.

California grunion (*Leuresthes tenuis*) spawn in sand where waves break, usually during high tides from March through August. There is a recreational fishery with an established season. Direct impacts on California grunion spawning activities would involve eliminating spawning habitat during deployment of the beach delivery system. It is not known if this particular beach area is utilized by these fish. The temporary loss of this area will not likely affect grunion production.

ESEC has proposed doing surveys just prior to and after the beach delivery system is deployed to verify the status of snowy plover and grunion near the site. The survey methodology and timing will be incorporated into the BRMIMP. This will allow resource agencies to determine if any particular action should be taken to protect either of these species.

The US Army Corps of Engineers (USACE) is expected to issue a permit for the beach delivery system. ESEC indicates this permit will be a Nationwide 33 governing temporary structures necessary for construction activities. As such, either a formal or informal consultation with the USFWS pertaining to endangered and threatened species requirements will likely be necessary. Also, the USACE is expected to consult with the National Marine Fisheries Service regarding the need to implement measures to protect essential fish habitat as required under the Magnuson-Stevens Act. Aaron Allen from the USACE confirmed this course of action in a phone conversation (USACE 2007) with the Energy Commission staff. He also stated that a Section 401 certification from the Los Angeles Regional Water Quality Control Board would be necessary. Any terms and conditions required under permits issued as a result of these consultations will be incorporated into the BRMIMP for monitoring purposes.

Although the federal endangered El Segundo blue butterfly (*Euphilotes battoides allyni*) will not be directly impacted by the project, it can possibly benefit from vegetation restoration efforts planned by the ESPRP. The benefit would accrue if the native seacliff buckwheat (*Eriogonum parviflorum*) is included amongst the plants to be established. The butterfly is dependent on this plant and if made available, it is possible butterflies inhabiting the El Segundo Blue Butterfly Preserve approximately 1.75 miles northwest of the power plant would take advantage of this new food source and expand their distribution. Visual Resources Condition of Certification **VIS-1**, requires landscaping with a preference for vegetation that are native species and/or species requiring little or no

irrigation. The seacliff buckwheat meets these criteria and should be included in the landscaping plan. To help native plant species succeed where efforts are made to establish them, the non-native and aggressive iceplant should be removed to prevent it from out-competing native dune vegetation due to its dense character and vigorous growth.

## CONCLUSIONS AND RECOMMENDATIONS

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It is staff's position that project related effects and potential impacts on biological resources will not result in unmitigated significant adverse impacts if the proposed Conditions of Certification are adopted and implemented. If unanticipated circumstances arise, they can be adequately dealt with under the guidance and specifications of the required Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). Although the California Department of Fish and Game indicated a Section 2081 "take authorization" for state listed species would not likely be necessary for the proposed project (CDFG 2007c), terms and conditions in US Fish and Wildlife Service and/or National Marine Fisheries Service permits, should they be required, will be incorporated into the BRMIMP. As such, compliance with applicable laws, ordinances, regulations, and standards (LORS) concerning biological resources is expected to occur.

## PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

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The once-through cooling system proposed for the original project is not included in the petition to amend. As such, Conditions of Certification **BIO-1** through **BIO-5** are not necessary. Based on other project changes, new Conditions are added. Staff has proposed modifications to the Biological Resources Conditions of Certification as shown below. (**Note:** Deleted text is in ~~strikethrough~~, new text is **bold and underlined**)

~~**BIO-1:** The project owner shall place \$5,000,000 in trust for the Santa Monica Bay Restoration Commission (SMBRC) to assess the ecological condition of the Santa Monica Bay and to develop and implement actions to improve the ecological health of the Bay. At least \$250,000 shall be provided within 30 days after this Decision becomes final, and an additional sum of at least \$250,000 shall be provided every 90 days thereafter until \$1 million has been provided. At that time, the SMBRC in consultation with the project owner, shall propose a schedule for the payment of the remaining funds; within 30 days after submittal of the proposed schedule to the CPM, the CPM shall approve a schedule, which may be the SMBRC's schedule or a modification thereof. The project owner shall comply with the approved schedule. The funds shall be spent as directed by the SMBRC, after consultation with the CPM and the Los Angeles Regional Water Quality Control Board, for the purposes of assessing the ecological condition of the Santa Monica Bay and developing and implementing actions to improve the ecological health of the Bay. To the maximum extent feasible in keeping with those purposes, the studies conducted shall be designed to assist the LARWQCB in carrying out its responsibilities under section 316(b) of the Clean Water Act, for this project and other activities affecting Santa Monica Bay. If any funds remain unspent upon beginning of commercial operation, the project owner may petition the Energy Commission for return of those unspent funds to the project owner.~~

**Verification:** ~~The project owner shall submit to the CPM a copy of the receipt transferring funds as required by this Condition. The project owner shall provide to the CPM a copy of any studies carried out under this Condition.~~

**BIO-2:** ~~In consultation with the LARWQCB, the project owner shall conduct a study to determine the feasibility of constructing, deploying, and operating an aquatic filter barrier at intake #1 at ESGS. The feasibility study shall also determine expected benefits and potential impacts of the aquatic filter barrier if deployed and operated at intake #1. The feasibility study shall be submitted to the LARWQCB for possible use in implementing regulations under 316(b) of the Clean Water Act. If the LARWQCB finds that it is feasible to construct and operate an aquatic filter barrier and that the ESGS intake #1 site is suitable for a demonstration and orders the project owner to install an aquatic filter barrier on intake #1 in compliance with applicable 316(b) regulations, the project owner shall construct and operate the aquatic filter barrier.~~

**Verification:** ~~The project owner shall submit to CPM and the LARWQCB a complete analysis and all results of the feasibility study as part of the evaluation involved in implementing applicable 316(b) regulations.~~

**BIO-3:** ~~Upon the commencement of commercial operations of Units 5, 6, and 7, water flows for intakes #1 and #2 combined shall not exceed 126.78 billion gallons per year and shall also be subject to monthly flow volumes not to exceed 7.961 billion gallons in February, 8.313 billion gallons in March, and 8.524 billion gallons in April of any year.~~

**Verification:** ~~Project owner shall send to the CPM copies of the project's quarterly reports to the LARWQCB, including: (1) daily cooling water flows calculated from the measured capacity of each pump; (2) each pump's daily hours of operation; (3) each pump's annual average volume; and (4) average hourly effluent temperature data. The data shall be presented graphically to illustrate the daily pump volume totals over time.~~

**BIO-4:** ~~Project owner shall provide information demonstrating that a valid NPDES permit has been issued prior to operation of the project. The valid NPDES permit and its terms and conditions shall be incorporated into this Decision, except for flow cap provisions, unless those in the NPDES permit are stricter than the flow caps required under **BIO-3**.~~

**Verification:** ~~Project owner shall report to the CPM all communication efforts with the LARWQCB regarding NPDES permit renewal or compliance. Project owner shall provide to the CPM all data and analysis supporting any 316(b) study performed. Project owner shall consult with the LARWQCB, the Coastal Commission, Energy Commission staff, Santa Monica Bay Restoration Commission, and the Santa Monica Bay Keepers to develop the appropriate design for any 316(b) study.~~

**BIO-5:** ~~Prior to commencement of operation, the project owner shall achieve compliance with section 316(b) of the Clean Water Act and regulations thereunder as directed and required by the LARWQCB. If the LARWQCB requires that a study be conducted under section 316(b), then the project owner shall consult, with the facilitation of the CPM, with the National Marine Fisheries Service, the California Coastal Commission, the California Department of Fish and Game, and the Santa Monica Bay Restoration Commission in the~~

development and implementation of the 316(b) study design, subject to all applicable authority of the LARWQCB.

**Verification:** Project owner shall submit to the CPM copies of all correspondence and submittals to the LARWQCB related to the implementation of section 316(b) regulations. Project owner shall inform the CPM of all 316(b)-related decisions by the LARWQCB and steps taken by the project owner pursuant to LARWQCB direction.

## **DESIGNATED BIOLOGIST**

**BIO-6 The project owner shall submit the resume, including contact information, of the proposed Designated Biologist to the CPM for approval.**

**Verification: The project owner shall submit the specified information at least 60 days prior to the start of any site mobilization related to the beach front or the beach delivery system. These site and related facility activities shall not commence until an approved Designated Biologist is available to be on site.**

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

- **Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field;**
- **Three years of experience in field biology or current certification of a of a nationally recognized biological society, such as The Ecological society of America or The Wildlife Society; and**
- **At least one year of field experience with biological resources found in or near the project area.**

**If a Designated Biologist needs to be replaced, then the specified information of the proposed replacement must be submitted to the CPM at least ten working days prior to the termination or release of the preceding Designated Biologist.**

## **Designated Biologist Duties**

**BIO-7 The Designated Biologist shall perform the following during any beach front or the beach delivery system site mobilization, ground disturbance, grading, construction, operation, and closure activities:**

1. **Advise the project owner's Construction/Operation Manager, supervising construction and operations engineer on the implementation of the biological resources Conditions of Certification;**
2. **Be available to 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 or their habitat;**
3. **Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;**
4. **Notify the project owner and the CPM of any non-compliance with any biological resources Condition of Certification; and**

**5. Respond directly to inquiries of the CPM regarding biological resource issues.**

**Verification: The Designated Biologist shall maintain written records of the tasks described above, and summaries of these records shall be submitted in the Monthly Compliance Reports.**

**As necessary during project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report.**

### **Designated Biologist Authority**

**BIO-8 The project owner's Construction/Operation Manager shall act on the advice of the Designated Biologist to ensure conformance with the biological resources Conditions of Certification.**

**If required by the Designated Biologist, the project owner's Construction/Operation Manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist.**

**The Designated Biologist shall:**

- 1. Require a halt to all activities in any area when determined that there would be adverse impact to biological resources if the activities continued;**
- 2. Inform the project owner and the Construction/Operation Manager when to resume activities; and**
- 3. Notify the CPM if there is a halt of any activities due to conflicts with biological resources, and advise the CPM of any corrective actions that have been taken, or will be instituted, as a result of the halt.**

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

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

### **BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN**

**BIO-9 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, once approved, shall implement the measures identified in the plan. The BRMIMP shall apply to beach delivery only.**

**The BRMIMP shall include:**

1. **All new Biological Resource conditions included in the Energy Commission's Final Decision as amended;**
2. **All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;**
3. **A list and a map of locations of all sensitive biological resources to be impacted, avoided, or mitigated by project construction and operation;**
4. **A list of all terms and conditions set forth by USACE permits and necessary state LARWQCB certifications, should these become necessary throughout the life of the project;**
5. **Detailed descriptions of all measures that will be implemented to avoid and/or minimize impacts to sensitive species and reduce habitat disturbance;**
6. **All locations, on a map of suitable scale, of areas requiring temporary protection and avoidance during construction;**
7. **Duration for each type of monitoring and a description of monitoring methodologies and frequency;**
8. **Performance standards to be used to help decide if/when proposed mitigation is or is not successful;**
9. **All performance standards and remedial measures to be implemented if performance standards are not met;**
10. **A discussion of biological resource-related facility closure measures;**
11. **A process for proposing plan modifications to the CPM and appropriate agencies for review and approval;**
12. **A copy of any State or USFWS Biological Opinion or NMFS consultation, and incorporation of all terms and conditions into the final BRMIMP, should a biological opinion become necessary any time throughout the life of the project;**
13. **Protocols for dealing with wildlife that gain access the barges, beach delivery ramp, and other project features whereby their well being could be at risk; and**
14. **Vegetation restoration that provides for planting seacliff buckwheat (*Eriogonum parviflorum*), eradication of ice plant (*Caprobrotus chilensis*), and is coordinated with Visual Resources landscaping requirements.**

**Verification: At least 30 days prior to start of any site mobilization activities related to the beach front or the beach delivery system, the project owner shall provide the CPM with the final version of the BRMIMP for this project, and the**

CPM will determine the plans acceptability. 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.

## **WORKER ENVIRONMENTAL AWARENESS PROGRAM**

BIO-10 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 sensitive biological resources associated with the project. The training may be presented on electronic media in the form of a video recording.

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

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist. Each participant in the on-site Worker Environmental Awareness Program shall sign a statement declaring that the individual understands and shall abide by the guidelines set forth in the program materials. The person administering the program shall also sign each statement.

Verification: No less than 30 days prior to the start of any site mobilization activities related to the beach front or the beach delivery system, 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 keep record 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 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 months after their termination.

## **U. S. ARMY CORPS OF ENGINEERS PERMIT**

BIO-11 The project owner shall acquire any USACE permit required and incorporate its terms and conditions into the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP).

Verification: No less than 30 days prior to the start of any site mobilization activities related to the beach front or the beach delivery system, the project owner shall submit to the CPM a copy of the USACE permit required to construct any project related features. Permit terms and conditions will be incorporated into the BRMIMP.

## **USFWS BIOLOGICAL OPINION**

BIO-12 If formal or informal consultation between the USFWS and USACE occurs, the project owner shall incorporate into the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) any resulting biological resources recommendations.

Verification: No less than 30 days prior to the start of any site mobilization activities related to the beach front or the beach delivery system, the project owner must provide the CPM with a copy of the USFWS recommendations. All terms and conditions resulting from the consultation will be incorporated into the BRMIMP.

## **LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD CERTIFICATION**

BIO-13 The project owner will acquire and implement the terms and conditions of a Los Angeles Regional Water Quality Control Board Section 401 State Clean Water Act certification pertaining to the project.

Verification: No less than 30 days prior to the start of any site mobilization activities related to the beach front or the beach delivery system, the project owner will provide the CPM with a copy of the final Regional Water Quality Control Board certification. The terms and conditions of the certification will be incorporated into the project's Biological Resources Mitigation Implementation and Monitoring Plan.

## **FACILITY CLOSURE**

BIO-14 The project owner will incorporate into the planned permanent or unexpected permanent closure plan measures that address the local biological resources. The biological resource facility closure measures will also be incorporated into the project Biological Resources Mitigation Implementation and Monitoring Plan.

Verification: At least 12 months (or a mutually agreed upon time) prior to the commencement of closure activities, the project owner shall address all biological resource-related issues associated with facility closure in a Biological

**Resources Element. The Biological Resources Element will be incorporated into the Facility Closure Plan, and include a complete discussion of the local biological resources and proposed facility closure mitigation measures.**

## **REFERENCES**

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- CDFG (California Department of Fish and Game). 2007a. Telephone conversation between Bill Paznokas, CDFG biologist and Marc Sazaki, CEC biologist. September 11, 2007.
- CDFG (California Department of Fish and Game). 2007b. Telephone conversation between Matt Chirdon, CDFG biologist and Marc Sazaki, CEC biologist. September 27, 2007.
- CDFG (California Department of Fish and Game). 2007c. Telephone conversation between Matt Chirdon, CDFG biologist and Marc Sazaki, CEC biologist. November 16, 2007.
- CEC (California Energy Commission). 2002. Final Staff Assessment for the El Segundo Power Redevelopment Project. September 2002.
- CEC (California Energy Commission). 2005. Commission Decision for the El Segundo Power Redevelopment Project. Publication CEC-800-2005-001-CMF.
- ESPRP (El Segundo Power Redevelopment Project). 2000. Application for Certification. Submitted to the California Energy Commission on December 18, 2000.
- ESPRP (El Segundo Power Redevelopment Project). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project. Submitted to the California Energy Commission on June 19, 2007.
- ESPRP (El Segundo Power Redevelopment Project). 2007b. ESPRP Responses to CEC Data Requests Set 1. Biological Resources. September 10, 2007.
- USACE (United States Army Corps of Engineers). 2007. Telephone conversation between Aaron Allen, USACE Regulatory Division and Marc Sazaki, CEC biologist. October 11, 2007.
- USFWS (United States Fish and Wildlife Service). 1994. United States Fish and Wildlife Service. Final Rule: Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Pacific Pocket Mouse / RIN 1018-AC39. Federal Register 59 FR 49752 09/29/94; citing Brylski 1993.
- USFWS (United States Fish and Wildlife Service). 2007. Telephone conversation between Ken Cory, USFWS biologist and Marc Sazaki, CEC biologist. October 4, 2007.

# CULTURAL RESOURCES

Prepared by: Dorothy Torres

## INTRODUCTION

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Proposed changes to the El Segundo Power Redevelopment Project (ESPRP) may disturb native soil or have the potential to impact underwater cultural resources. Although much of the area is disturbed, grading, excavation, or equipment barges near the shore may impact unknown cultural resources.

## BACKGROUND

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The project owner has proposed to use Rapid Response - Combined Cycle technology and modern dry-cooling technology that would eliminate the use of ocean water once-through cooling by this project. Equipment changes, delivery method and route, and a new laydown area are proposed to facilitate the construction of the project.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS) COMPLIANCE

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There are no new or changed cultural resources LORS that would affect this project.

## SUMMARY OF ANALYSIS

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Some of the changes proposed for the ESPRP may disturb native soil or have the potential to impact underwater cultural resources such as boats, ships, ferryboats, submarines, and airliners (Response 2007). Although much of the area is disturbed, grading, excavation, or equipment barges near the shore may impact unknown cultural resources (Petition 2007, p. 3-45).

The equipment necessary for the proposed project may be delivered via barges to be temporarily located on the beach. Some grading and excavation would be necessary to facilitate the use of this type of equipment delivery. Consequently, there is a potential for impacts to previously undiscovered resources (Petition 2007, p. 3-46). Beach delivery would involve construction of a ramp on the beach in front of the existing El Segundo power plant site. A non-powered barge would be secured at the nearshore zone immediately seaward of the ramp system. Equipment would be transferred from the delivery barges to the construction barge (Petition 2007, p. 2-13).

Each beach delivery would involve a construction barge and a delivery barge. The State Lands Commission Shipwreck Database has identified 156 underwater objects off the coast of Los Angeles, and shipwrecks and other man made underwater objects may be considered cultural resources. ESEC examined a rectangular area one-mile north and south of the project site and one mile out to sea. No underwater resources were identified within the search area (Responses 2007). So, no known underwater cultural resources would be affected by the project.

In addition to the changes proposed to facilitate beach delivery, there are several project changes that have the potential to impact previously undiscovered resources. A

new seawall location would position the seawall closer to the facility property line on the west (Petition 2007, p. 2-4). The plant entrance road location would be straightened and widened. Native soils may be disturbed during these project features and ESEC has recommended monitoring (Petition 2007, p. 3-47). There is potential for these project improvements to intrude into native soil. Staff recommends monitoring at the locations where this ground disturbance will occur.

A new truck route is proposed to avoid a low bridge. The new route would use a portion of the previously permitted route and would extend west from El Segundo, north on Main Street, then west on Grand Avenue then returning to the original route at Vista Del Mar (Petition 2007, p. 2-17). It does not appear that this truck route change would impact significant cultural resources.

The proposed new laydown area would be located on a lot that is covered almost entirely with asphalt, used as a truck storage yard, and would not require ground disturbance. The project proposes to use the laydown area for parking, staging, and material storage. There is a small office structure on the property that was constructed in approximately 1955; however, there would be no demolition or alteration of the office structure.

A literature search was conducted at the California Historical Information System (CHRIS) and included consideration of all previously recorded historic and prehistoric archaeological resources within 0.5 mile of the proposed laydown area. The search also included a review of the City of Los Angeles Historic-Cultural Monuments list. Historic maps of the study area were reviewed. Two previously recorded cultural resources were identified. Fire Station 79, at 18030 Vermont Avenue, Gardena, California, was built in 1941. It is located approximately 0.5 miles north/northwest from the project area. Additionally, a prehistoric site was previously recorded in 1939, within 0.5 mile of the laydown area location, but no one has reaffirmed the presence of the prehistoric archaeological site (Response 2007).

A field survey of the proposed laydown area was conducted on June 2, 2007, by consultants to ESEC who meet Secretary of the Interior's Standards for Professional Qualifications in the field of archaeology. No cultural resources were identified (Response 2007).

On October 4, 2007, staff sent letters to Native American individuals and groups identified by the Native American Heritage Commission as potentially having heritage concerns in the project vicinity. Robert Dorame, representing Gabrielino/Tongva cultural resources concerns, contacted staff via telephone on October 18, 2007. Mr. Dorame expressed concerns regarding the proposed project amendment. Staff added Mr. Dorame to the web e-mail server so that he would receive updated information regarding the project via e-mail, and provided him with the Energy Commission web site information. On October 24, 2007, staff sent Mr. Dorame an e-mail and explained that any comments received prior to November 15, 2007, could be included in the cultural resources analysis for the amendment. Staff has not received any additional comments from Mr. Dorame.

The petition was reviewed by staff for potential environmental effects, and consistency with applicable LORS. Based on this review, staff determined that there would be no

impacts to known cultural resources and implementing the Cultural Resources Conditions of Certification **CUL-1** through **CUL-8** would mitigate impacts to any newly discovered, significant cultural resources.

## **CONCLUSIONS AND RECOMMENDATIONS**

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The project would not result in unmitigated significant adverse impacts to either known cultural resources or cultural resources that have not yet been discovered. With the implementation of the Conditions of Certification, **CUL-1** through **CUL-8**, there would be no impacts to newly discovered archaeological resources and the project would comply with all applicable LORS.

## **PREVIOUSLY ADOPTED CONDITIONS OF CERTIFICATION**

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The proposed project changes will not impact known cultural resources. Therefore, changes, additions, or modifications to the Cultural Resources Conditions of Certification are not necessary. Implementation of the previously adopted Cultural Resources Conditions of Certification **CUL-1** through **CUL-8** would serve to mitigate any impacts to newly discovered significant cultural resources.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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No changes are proposed to existing conditions of certification.

## **REFERENCES**

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Petition 2007- Petition to Amend Final Commission Decision. Dated: June 18, 2007.  
Posted June 29, 2007

Responses 2007-Responses to CEC Data Requests Set One. Dated: September 10, 2007. Posted September 13, 2007



# HAZARDOUS MATERIALS MANAGEMENT

Prepared by: Alvin Greenberg, Ph.D. & Rick Tyler

## INTRODUCTION

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The proposed amendment (Shaw 2007) has less than significant impacts on hazardous material management. No additional Conditions of Certification are proposed

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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There is one new Federal LORS affecting this project in the area of hazardous materials management. On April 9, 2007, the U.S. Department of Homeland Security (DHS) 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 (as per Public Law 109-205). The final implementation of this rule was completed with the publication of Appendix A on November 2, 2007. This rule applies to aqueous ammonia solutions of 20 percent or greater stored on-site in volumes 20,000 gallons and greater. This proposed facility plans to store this amount of 29 percent aqueous ammonia. This Rule will be enforced by the Office of Homeland Security, and ESEC has been informed of this new requirement.

**HAZARDOUS MATERIALS MANAGEMENT Table 1  
Laws, Ordinances, Regulations, and Standards**

<i>Applicable Law</i>	<i>Description</i>
<b>Federal</b>	
6 CFR Part 27	Contains the Chemical Facility Anti-Terrorism Standard (CFATS), a regulation of the U.S. Department of Homeland Security that requires all facilities that store certain hazardous materials in volumes and concentrations at or above the levels indicated in Appendix A of the regulation to conduct specified vulnerability assessments and implement specified security plans.

## ANALYSIS

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Staff has reviewed the petition for potential environmental effects and consistency with applicable LORS. Based on this review, staff determined that the project, including the proposed amendment, would be able to comply with all applicable LORS. Regarding the possible beach access procedure, the vehicle that will transport the power plant infrastructure from the barge to the project site will use fuels, lubricants, and hydraulic fluids that may leak. Leakage into Santa Monica Bay or on the beach should be prevented and any spill should be remediated as soon as possible. ESEC has proposed to implement an Emergency Response and Contingency Plan to ensure that any spill of hazardous material will be remediated in a timely fashion. In the event of a spill, the plan

will call for cleanup response by a certified, local, hazardous materials contractor. Staff feels that this is adequate to address any spill that may occur during the beach access procedure.

Regarding site security, the site is currently adequately protected by security guarded gate access and a perimeter fence, among other measures. This project uses and stores a hazardous material (29% aqueous ammonia) identified by the U.S. EPA as requiring the development and implementation of special site security measures to prevent unauthorized access and identified in Appendix A of CFATS (6 CFR Part 27) as a chemical that will require, at the minimum, the initiation of a security screening (TOPSCREEN) process. This new Rule will be enforced by the Department of Homeland Security. ESEC has been informed, and they will be working with the Department on implementation.

## CONCLUSIONS AND RECOMMENDATIONS

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Staff has reviewed the petition for new potential issues related to hazardous materials management. Based on this review, staff has determined that the approved Conditions of Certification remain adequate to minimize the risk related to the use and storage of hazardous materials at the project site.

## PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

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~~**HAZ 4** The project owner shall undertake a feasibility study for the substitution of the 35% hydrazine with a less hazardous chemical. Should the study conclude that substitution is infeasible and the project owner elects to continue the use of the 35% hydrazine, then the project owner shall develop and prepare a safety management plan focussing on the storage and handling of the hydrazine and the associated protective equipment requirements, handling techniques, personnel training, spill response procedures, detectors and alarms, as a minimum.~~

~~**Verification:** At least 45 days prior to startup of Units 5, 6, and 7, the project owner shall furnish a final copy of either the feasibility study or the hydrazine storage and handling management plan, as appropriate, to the CPM, CESFD and CMBFD. All initial drafts shall be reviewed and commented upon by the CPM and CESFD. All final copies shall be approved by the CPM.~~

## REFERENCES

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Shaw Environmental, Inc., June 18, 2007, Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project.

# LAND USE

Prepared by: Mark Hamblin

## INTRODUCTION

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The project owner filed a Petition To Amend the Final Energy Commission Decision for the El Segundo Power Redevelopment Project (ESPRP) in June 2007. The petition involves major changes to power plant equipment, and includes a request to amend Condition of Certification **LAND-10** for the licensed project to allow a beach delivery of new oversized equipment to the El Segundo Generating Station (ESGS) property.

The implementation of the beach delivery option would restrict public access and use of an approximate 300-foot wide by 300-foot long beach area west of the ESGS and would cause intermittent closure of the Marvin Braude Bikeway adjacent to the power plant. The bikeway is a Los Angeles County maintained Class 1 bicycle trail. The closure of the bikeway would conflict with **LAND-10** of the ESPRP Energy Commission Decision issued February 2005. The petition also includes the use of a new offsite construction laydown and parking area in the city of Los Angeles to replace the use of the Federal Express laydown/parking area in El Segundo that is identified in the license.

The project owner has proposed three new conditions of certification in their petition. These conditions provide for grading on the beach area west of the ESGS owned by the project owner to allow the construction of a beach delivery ramp to permit the movement of new oversized power plant equipment from off-shore barges to the power plant. Staff has proposed new Conditions of Certification **LAND-10**, **LAND-11**, **LAND-12**, **LAND-13**, and **LAND-14** as a part of this petition.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS) COMPLIANCE

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The proposed amendment to the licensed project does not involve federal managed lands, or applicable federal land use planning related laws ordinances, regulations and standards (LORS).

**LAND USE Table 1** provides a general description of identified state and local LORS pertaining to land use planning relevant to the proposed project. The proposed project would be consistent with the land use planning LORS identified in Table 1. Staff did not find any new state or local LORS applicable to the proposed project that was not reviewed for the issuance of the license by the Energy Commission.

**LAND USE Table 1**  
**Laws, Ordinances, Regulations, and Standards**

Applicable LORS	Description
City of El Segundo Local Coastal Program, July 1980 includes Coastal Zone Specific Plan (certified by California Coastal Commission on February 4, 1982)	Identifies land uses and standards by which development will be evaluated within the Coastal Zone. The plan identifies uses and provides standards adopted by the city of El Segundo for the "Power Plant" and "Shoreline Area" land use designations that are in conformance and satisfy the policies and requirements for coastal land use contained in the California Coastal Act 1976 and certified by the California Coastal Commission.
City of El Segundo Zoning Regulations - M2 (Heavy Industrial)	This zone is intended to provide areas suitable for the development of heavy manufacturing, assembling, or processing activities having unusual or potentially deleterious operational characteristics, that would be detrimental if allowed to operate in other zones within the city. The zone district includes as a permitted use: heavy manufacturing, construction yards, factories, generating stations, and the extraction of raw materials and refining.

**ANALYSIS**

Condition of Certification **LAND-10**, in the ESPRP Energy Commission Decision, in summary, states that project pre-construction and construction activity shall not prevent public use or access to the Los Angeles County maintained Class 1 bicycle trail that borders the west side of the ESGS.

The project owner is considering a beach delivery option for new oversized equipment (e.g., steam turbine generators, heat recovery steam generators, air-cooled condensers). This option would close for public use an approximate two-acre area west of the ESGS property for an approximate six-month period (construction period). The two-acre area extends from the northwest corner of the ESGS property to the surf zone of Santa Monica Bay (**LAND USE Figure 1** – Aerial Photo of Proposed Beach Delivery Path and Existing Bicycle Path).

The beach delivery option would cause intermittent closure of the bicycle trail during times when equipment is being transferred from offshore barges to the project site. The duration of closure of the trail would range from one to two hours when off-loading of equipment is occurring. At all other times, the bicycle trail is to remain open to the public during the beach delivery phase (Hilton 2007a).

**BICYCLE PATH**

The county of Los Angeles, doing business as the Los Angeles County Department of Public Works (LACDPW), maintains the segment of the bicycle trail adjacent to the

ESGS as part of an executed agreement between Southern California Edison (SCE) and the County of Los Angeles dated June 20, 1978 (**LAND USE Figure 1**, and **LAND USE Figure 2** – Marvin Braude Bikeway). SCE was the prior owner of the power plant. The bikeway crosses ESGS property.

On January 31, 2008, staff received an email from Abu Yusuf, bikeway coordinator, Programs Development Division, LACDPW. He provided staff with his department's "Bicycle Trail Special Provisions" for closure of a bike trail. He stated that a permit would be required from the LACDPW Construction Division, and the submittal of a detour plan for the portion of the bike trail to be closed. The assigned LACDPW construction inspector would be responsible for taking pictures before construction, to verify damages to the path from the project. Mr. Yusuf recommends temporary closures of the bike path at night time preferably during winter (Yusuf 2008).

Staff and the project owner met with representatives from LACDPW on February 13, 2008, to discuss the project owner's beach delivery option. Noted concerns expressed by them pertained to trail user notification and awareness of construction activity, and repair and restoration of the bike trail upon completion of project construction.

Staff revised the project owner's draft condition. With the effective implementation of staff's proposed Condition of Certification **LAND-10**, the temporary closure of the bicycle trail would be consistent with the LACDPW's bicycle trail special provisions and includes restoration of the bikeway. Condition of Certification **LAND-11** provides for the restoration or repair of the bicycle trail pavement to its pre-construction condition.

## **BEACH**

During the beach delivery phase, beach users would not be able to use an approximate 300-foot by 300-foot (2 acres) beach area west of the ESGS between Dockweiler State Beach and Manhattan Beach (**LAND USE Figure 3** – Beach Area West of the ESGS). This beach area, owned by the project owner, is to be traversed by an approximate 250-foot long beach ramp made of geo-tech fiber, wood matting and sandbags with an access ramp extending over the bicycle trail into the ESGS. The access ramp would include closure gates across the bike path to prevent public access to the beach ramp during deliveries. Fencing for safety and security purposes would be installed around the beach delivery area (**LAND USE Figure 4** – Conceptual Layout of Beach Delivery Area). The project's proposed ramp crossing the beach to move oversized equipment from barges docked in Santa Monica Bay to the project site may affect beach operations conducted by the LACDBH (Land Use Figure 5 – Beach Ramp Rendering).

Staff has recommended Condition of Certification **LAND-12** which provides for the restoration of the beach area after project construction is completed.

The project owner has informed the California State Lands Commission (State Lands Commission) about the proposed project and specifically its beach delivery option. The State Lands Commission informed the project owner that they would be required to obtain a temporary lease from them for use of tide and submerged land within the

state's jurisdiction<sup>17</sup> adjacent to the ESGS beach property in the event a beach delivery is selected. The temporary lease would be acquired through the formal process set forth by the State Lands Commission which includes compliance with the California Environmental Quality Act. The State Lands Commission requires the issuance of a license for the project by the California Energy Commission prior to the State Lands Commission's execution of a lease with the project owner (Hilton 2007b). Staff's proposed Condition of Certification **LAND-13** requires the submittal of a copy of the executed lease with the State Lands Commission prior to the start of pre-construction activity on the beach.

Public use of both Dockweiler State Beach and Manhattan Beach would remain available. The majority of public beach activity occurs to the north and south of the ESGS. During high tide, the narrow stretch of beach south of the beach delivery area is inundated; preventing beach users from walking along the shoreline (**LAND USE Figure 6** -View of Beach Area Next to ESGS at High and Low Tide).

Los Angeles County Department of Beaches and Harbors (LACDBH) manages, operates, maintains, develops and promotes County-owned or operated beaches including Dockweiler State Beach and Manhattan Beach. The LACDBH provides beach maintenance (refuse removal, restroom cleaning, sand maintenance, grounds maintenance and facility repairs); facilities maintenance inspections; planning and implementation of capital and infrastructure improvement programs; concession, parking and special event use permit administration; and children's water awareness, training, education and recreation programs.

Wayne Schumaker, Chief of Facilities and Property Management Division for the LACDBH states that the department uses the beach west of the ESGS to move heavy equipment between Manhattan Beach and Dockweiler State Beach during beach related emergencies (e.g.; oil spills, sewage spillage fouling the shoreline, beach erosion, high tides, mammal rescue) and maintenance. If the beach is blocked, the alternative action for the LACDBH would be to load and truck transport (haul) heavy equipment to the location using public streets; thereby increasing the department's emergency response time and transportation cost (Woodell 2008). Staff's proposed Condition of Certification **LAND-14** provides for heavy equipment/emergency service vehicle passage across the beach delivery area.

Staff and the project owner met with Gregory Woodell, a representative from the LACDBH, on February 13, 2008. He informed staff that a permit ("Right of Entry Permit") would be required if a county owned or operated beach area were to be used, or crossed by project activities. The project owner would be using beach area which they own.

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<sup>17</sup> The State Lands Commission manages and protects all statutory lands which the state received from the federal government upon its entry into the Union on September 9, 1850. These lands include the beds of all naturally navigable waterways such as major rivers, streams and lakes, tide and submerged lands in the Pacific Ocean which extend from the mean high tide line seaward to the three-mile limit, swamp and overflow lands, state school lands, and granted lands (CSLC 2007). The Commission authorizes the use of public lands based upon environmental, health and safety, and public benefit considerations.

The Los Angeles County Fire Department Lifeguard Division is responsible for providing ocean lifesaving protection on Dockweiler State Beach and Manhattan Beach. The Lifeguard Division provides ocean lifesaving operations and protection, and paramedic services. The Lifeguard Division performs over 10,000 ocean rescues a year along 72 miles of Southern California coastline (LACFDLD 2005). The Lifeguard Division uses the beach and the bicycle trail to respond to emergencies. Staff and the project owner met with a representative from the Lifeguard Division on February 13, 2008. A concern expressed was that the vertical height of the beach ramp at the water's edge may obscure a view of the ocean from the nearby lifeguard station. Individuals may enter the project's beach delivery area swimming between the beach ramp and the existing jetty out of view of the lifeguard. As shown in **LAND USE Figure 4** the project's two-acre beach delivery area would be fenced for safety and security purposes. Staff believes this fencing will ensure swimmers are restricted from entering the project's beach delivery area.

In a letter dated October 16, 2007, received from the California Coastal Commission, the Executive Director states that the project as proposed would end the environmentally destructive use of seawater from once-through cooling by using dry cooling technology which the Coastal Commission has strongly supported during past power plant reviews. The move away from once-through cooling removes what has been the single most contentious and environmentally damaging aspect of past coastal zone power plant proposals. The elimination of the once-through cooling also reduces the Coastal Commission's concerns about the type and scale of impacts associated with the project, and the ability of it to conform to Coastal Act provisions. Although the project has the potential to cause other types of adverse effects to coastal resources, the Executive Director noted in his letter that the Coastal Commission trust that Energy Commission staff will continue to thoroughly review coastal zone power plant projects as it has done in past Application For Certification proceedings incorporating Coastal Act conformity into the review (CCC2007). As a courtesy, on May 29, 2008 staff left a phone message and provided an email detailing the proposed beach delivery option to his counterpart at the California Coastal Commission.

## **CONSTRUCTION LAYDOWN AREA**

The project proposes a new offsite construction laydown area. The original laydown area identified as the Federal Express site is no longer available for use. A commercial building has been built on the site. The new laydown area is approximately 13 miles from the project site in the city of Los Angeles, west of the junction of U.S. Interstate 405 and U.S. Interstate 110.

The new laydown area consists of 10 acres (8 acres usable). A large portion of the property is asphalt surfaced and currently used for the parking of vehicles. The property has three buildings (22,000 sq. ft., 1,300 sq. ft., and 2,250 sq. ft.) originally built in the 1950s that are currently used as machine shops and to conduct printing. Vehicle access to the laydown area would be from West 190<sup>th</sup> Street (**LAND USE Figure 7** – Aerial View of New Laydown Area). Land uses surrounding the laydown site consist of heavy and light industrial, and highway service related commercial.

The 10 acre property is in the city's "M2" (Light Industrial) Zone. Automobile parking space and loading space is permitted within this zone. The M2 Zone (section 12.19) of

the Los Angeles Municipal Code provides for the open storage of materials and equipment, including used materials and equipment unless conducted in accordance with the limitations specified in subsection A.4 (b) of section 12.19. The phrase “used materials and equipment” includes vehicles, boats, or airplanes which are inoperable, wrecked, damaged or unlicensed (i.e.; not currently licensed by the Department of Motor Vehicles) (LAMC 1974).

## **CONCLUSIONS AND RECOMMENDATIONS**

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The land use analysis focused on two main issues; (1) would the project cause significant land use planning impact(s) under the California Environmental Quality Act (CEQA) and Guidelines, and (2) would the project comply with applicable state and local LORS pertaining to land use?

- The project’s beach delivery option requires the public closure of an approximate 300’ x 300’ (2 acre) beach area west of the ESGS owned by the project owner during project construction.
- The project’s beach delivery option requires the intermittent closure of the Marvin Braude Bikeway during project construction.
- Dockweiler State Beach and Manhattan Beach are public beaches north and south of the ESGS owned beach area.
- The California State Lands Commission has informed the project owner that a temporary lease is required from them to use tide and submerged lands under the state’s jurisdiction.
- The new construction laydown area in the city of Los Angeles is within the “M2” (Light Industrial) Zone which allows automobile parking, loading, and the open storage of used materials and equipment.

The construction of the proposed project with the effective implementation of the mitigation measures identified by the project owner and staff’s recommended conditions of certification (below), would not cause a direct, indirect or cumulative adverse land use planning impact under CEQA, and would ensure conformance with the applicable LORS pertaining to land use.

## **PROPOSED AMENDED CONDITIONS OF CERTIFICATION**

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Staff recommends the following changes and additions to the licensed project’s Land Use Conditions of Certification (Note: deleted text is in ~~strikeout~~, and new text is **bold underlined**.)

~~**LAND-10:** Project pre-construction and construction activity shall not prevent public use of the County maintained Class 1 bicycle path. The project owner shall maintain public access along the bicycle path that borders the El Segundo Generating Station.~~

~~The project owner shall repair any damage to the bicycle path that is caused by preconstruction and construction activities conducted for the project.~~

**Verification:** The project owner shall complete any repair to the bicycle path pursuant to the schedule contained in Visual Resources Condition of Certification **VIS-3**.

The CPM, the designated representative of the affected local jurisdiction(s) and the designated representative of the Coastal Commission may conduct random site visits to verify compliance. Also, the CPM will investigate filed complaints to ensure compliance.

## **BIKEWAY CLOSURE OR WIDTH REDUCTION**

**LAND-10** The project owner shall not prohibit public access and use of the Los Angeles County maintained Class 1 bicycle trail known as the “Marvin Braude Bikeway” (bikeway) during beach delivery activities except as stipulated below for the project:

1. **Prior to the start of pre-construction activity involving the bikeway, the project owner shall contact the Los Angeles County Department of Public Works and provide for its review a schedule for bike trail closure and trail use interruption, the detour route, the location of delineators or barricades to channelize individuals past the work site, and the placement of public signage (e.g., construction warning signs).**
2. **Prior to the first closure of the bikeway to perform necessary project pre-construction or construction activity, the project owner shall:**
  - a. **Provide the final schedule and timing of bike trail closures to the Department of Public Works Construction Division and Bikeway Coordinator, and CPM,**
  - b. **Provide a detour plan to the Department of Public Works Construction Division, Bikeway Coordinator and CPM showing a safe bicycle route around the project site for bicyclists.**
  - c. **Provide the Department of Public Works Construction Division and Bikeway Coordinator 30-calendar days to review and provide written comments to the project owner on a. and b. above.**
  - d. **Provide to the CPM a copy of the transmittal letter submitted to the Department of Public Works Construction Division and Bikeway Coordinator requesting their review of the items identified in a. and b. above.**
  - e. **Provide to the CPM a copy of the Department of Public Works Construction Division and Bikeway Coordinator written comments on the items identified in a. and b. above for approval.**
  - f. **Notify the Bikeway Coordinator within 24-hours after any reopening of the bikeway.**
3. **If the bikeway’s existing width must be reduced in size to perform necessary project construction activity, the project owner shall provide the following:**

Eight (8) feet of bicycle trail width shall be maintained around the project site to the greatest extent possible. The project owner shall post construction signs warning “CONSTRUCTION AHEAD” and “BIKEWAY NARROWS” in advance of the project site on all approaches along with delineators and barricades for channelization.

If a minimum of eight feet of paved bicycle trail cannot be provided, construction signs warning “CONSTRUCTION AHEAD” and “WALK BIKE” shall be posted in advance of the project site on all approaches. Where bicyclists are instructed to walk their bikes, flagmen shall be present at all approaches. Delineators or barricades shall also be placed to channelize pedestrians past the work site.

Vertical clearance to obstructions across the clear width of the bicycle trail shall be a minimum of 8 feet.

4. Required public signage shall be posted at least 14-calendar days prior to the start of pre-construction activity involving the bikeway. The Department of Public Works Construction Division and Bikeway Coordinator, and the CPM shall be notified that signage has been installed within 24-hours after posting.
5. To the extent feasible, the project owner shall make the bicycle trail open to the public on weekends and holidays. The bicycle trail shall be completely free of obstructions including barricades, swept clean, and have a minimum of eight-feet of vertical clearance with a two-foot wide shoulder. If a two-foot wide shoulder cannot be maintained, the project owner shall provide warning signage.
6. Within 48-hours after receiving a bicycle related trail complaint specific to the project’s bikeway pre-construction and construction activities, the project owner shall provide the CPM with a complaint resolution form report as specified in the Compliance General Conditions and a written explanation of the resolution to the complaint.

Verification: At least 30 days prior to start of pre-construction activity involving the bikeway, the project owner is to contact the Los Angeles County Department of Public Works Construction Division and Bikeway Coordinator.

The project owner is to provide to the CPM a copy of the transmittal letter submitted to the Department of Public Works Construction Division and the Bikeway Coordinator requesting their review.

The project owner is to provide to the CPM a copy of the written comments provided by the Department of Public Works Construction Division and the Bikeway Coordinator on the scheduled for bike trail closure and trail use interruption, the detour route, the installation of public signage and notification.

The project owner is to notify the Construction Division, Bikeway Coordinator, and the CPM within 24-hours after posting signage along the bicycle trail.

The project owner is to notify the Bikeway Coordinator within 24-hours after any reopening from a scheduled closure of the bicycle trail.

Within 48-hours after receiving a bicycle related trail complaint, the project owner is to provide the CPM with a complaint resolution form report and resolution explanation.

## **BIKEWAY RESTORATION**

LAND-11 The project owner shall complete restoration or repair of bicycle trail pavement (including striping) to the bikeway's preconstruction condition consistent with the schedule established for the completion of the seawall pursuant to Condition of Certification VIS-3 found in the visual resources section of the Commission Decision dated February 2, 2005.

The project owner shall contact the Los Angeles County Department of Public Works Construction Division and the CPM for a site inspection after the project owner has restored/repared the bicycle trail to its pre-construction condition.

If upon completion of the site inspection by the Los Angeles County Department of Public Works Construction Division and the CPM, the CPM notifies the project owner that additional restoration/repair is needed, within 30 days of receiving the notification the project owner shall complete the specified work.

Verification: The project owner is to notify the Los Angeles County Department of Public Works Construction Division and the CPM upon completion of the restoration/repair of the bicycle trail that it is ready for inspection.

## **BEACH RESTORATION**

LAND-12 The project owner shall remove all evidence of the project's beach delivery area structures and equipment (e.g., beach ramp, safety/security fencing, dozers, etc.), and restore the beach surface area to its original condition or better condition, including the replacement of any sand, vegetation, or paving that was removed to permit the project's beach delivery phase where project development does not preclude it.

The project owner shall record in video format the beach delivery laydown area prior to pre-construction activity and after the restoration completed. The project owner shall submit copies of both the pre- and post-video recordings to the CPM.

The project owner shall complete surface restoration of the beach area within 60 calendar days after the start of commercial operation. The project owner shall notify the CPM within seven days after completion

of surface restoration that the beach area is ready for inspection. If the CPM notifies the project owner that additional surface restoration is needed after the site inspection, within 30 days of receiving that notification the project owner shall complete the specified work.

Verification: At least 15 days prior to the start of pre-construction on the beach, the project owner is to video the beach delivery laydown area and provide a copy of it to the CPM.

The project owner is to notify the CPM within seven days after completion of the beach restoration that it is ready for inspection and provide the CPM with a video/DVD showing the restored beach area.

## **CALIFORNIA STATE LANDS COMMISSION LEASE**

LAND-13 Prior to the start of the project's pre-construction activity on the beach, the project owner shall provide the CPM a copy of their executed lease or equivalent land use document with the California State Lands Commission permitting barge anchorage, and the storage and transfer of oversized power plant equipment (e.g., steam turbine generators, heat recovery steam generators, air-cooled condensers) to the project site.

Verification: At least 15 days prior to the start of pre-construction activity on the beach, the project owner is to provide the CPM a copy of their executed lease or equivalent land use document with the California State Lands Commission.

## **EMERGENCY SERVICE VEHICLE AND EQUIPMENT PASSAGE**

LAND-14 The project owner shall allow the Los Angeles County Department of Beaches and Harbors, Facilities and Property Management Division, and the Los Angeles County Fire Department, Lifeguard Division, heavy equipment and emergency services vehicle passage through the project's beach delivery area, and the Marvin Braude Bikeway to respond to beach related emergencies (e.g.; oil spills, sewage spillage fouling the shoreline, beach erosion, high tides, mammal rescue), and to conduct lifesaving operations and paramedic services.

Prior to the start of pre-construction activity on the beach, if the project owner cannot provide heavy equipment/emergency services vehicle passage, the project owner may submit to the CPM for approval an alternative option that provides for the movement of heavy equipment and emergency services vehicles that has been reviewed by the Chief of Facilities and Property Management Division for the Los Angeles County Department of Beaches and Harbors and the Chief Lifeguard of the Los Angeles County Fire Department.

If the CPM determines that the heavy equipment/emergency services vehicle passage or the alternative option requires a revision, the project owner shall revise the heavy equipment/emergency services vehicle passage or alternative option and submit it to the CPM for approval.

**The heavy equipment/emergency services vehicle passage or alternative option shall remain in effect until the beach ramp and fencing prohibiting passage of heavy equipment and emergency service vehicles through the project's beach delivery area are cleared from the beach.**

**Verification: At least 30 calendar days prior to the start of the project's pre-construction activity on the beach, the project owner is to contact the Chief of Facilities and Property Management Division for the Los Angeles County Department of Beaches and Harbors, and the Chief Lifeguard of the Los Angeles County Fire Department to formalize the heavy equipment/emergency services vehicles passage or alternative option.**

**At least 10 days prior to the start of pre-construction activity on the beach, the project owner is to provide to the CPM a map showing the agreed upon heavy equipment/emergency services vehicle passage or alternative option.**

## REFERENCES

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- CCC 2007 – California Coastal Commission, letter from Peter M. Douglas, Executive Director to B.B. Blevins, Executive Director California Energy Commission, subject; Coastal Commission review of projects, dated October 16, 2007, docketed October 16, 2007.
- COES 1980 - City of El Segundo Local Coastal Program, July 1980
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- LACFDLD 2005 - Los Angeles County Fire Department Lifeguard Division, website <http://fire.lacounty.gov/Lifeguards/Lifeguards.asp>, 2005
- LAMC 1974 - Los Angeles Municipal Code, Section 12.19, “M2” Light Industrial Zone, Amended by Ordinance No. 146,030, effective July 11, 1974
- SCE 1978 – Southern California Edison Company, Agreement Between Southern California Edison Company and County of Los Angeles, subject; Bicycle Path Repair and Maintenance Agreement, docketed as Los Angeles County document no. 345498, June 20, 1978
- Woodell 2008 – Gregory Woodell, Los Angeles County Department of Beaches and Harbors, email to Mark Hamblin, CEC staff, subject; beach passage for heavy equipment during an beach emergency response, January 14, 2008
- Yusuf 2008 – Abu Yusuf, bikeway coordinator, Los Angeles County Department of Public Works, email to Mark Hamblin, CEC staff, subject; bike trail closure and bicycle trail special provisions, January 31, 2008

**LAND USE - FIGURE 1**

El Segundo Power Redevelopment Project - Aerial Photo of Proposed Beach Delivery Area and Existing Bicycle Path



CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, JUNE 2010

SOURCE: El Segundo Power Redevelopment Project Amendment Petition - Figure 3.6-1

**LAND USE - FIGURE 2**  
El Segundo Power Redevelopment Project - Marvin Braude Bikeway

North View of the Bicycle Trail



South View of the Bicycle Trail



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITY SITING DIVISION, JUNE 2010  
SOURCE: Staff Photos

**LAND USE - FIGURE 3**

El Segundo Power Redevelopment Project - Beach Area West of El Segundo Generating Station

North View of Beach



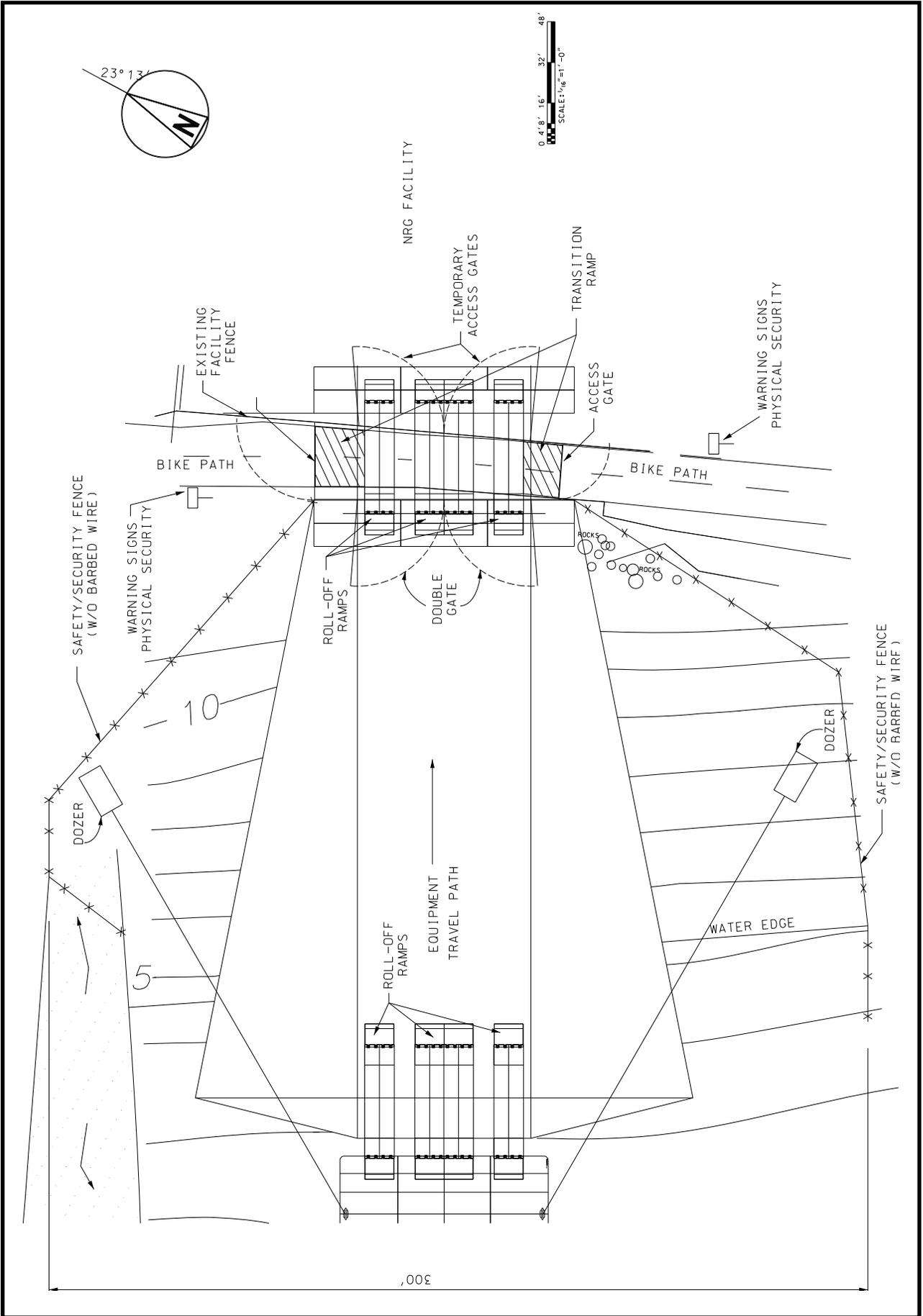
South View of Beach



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITY SITING DIVISION, JUNE 2010

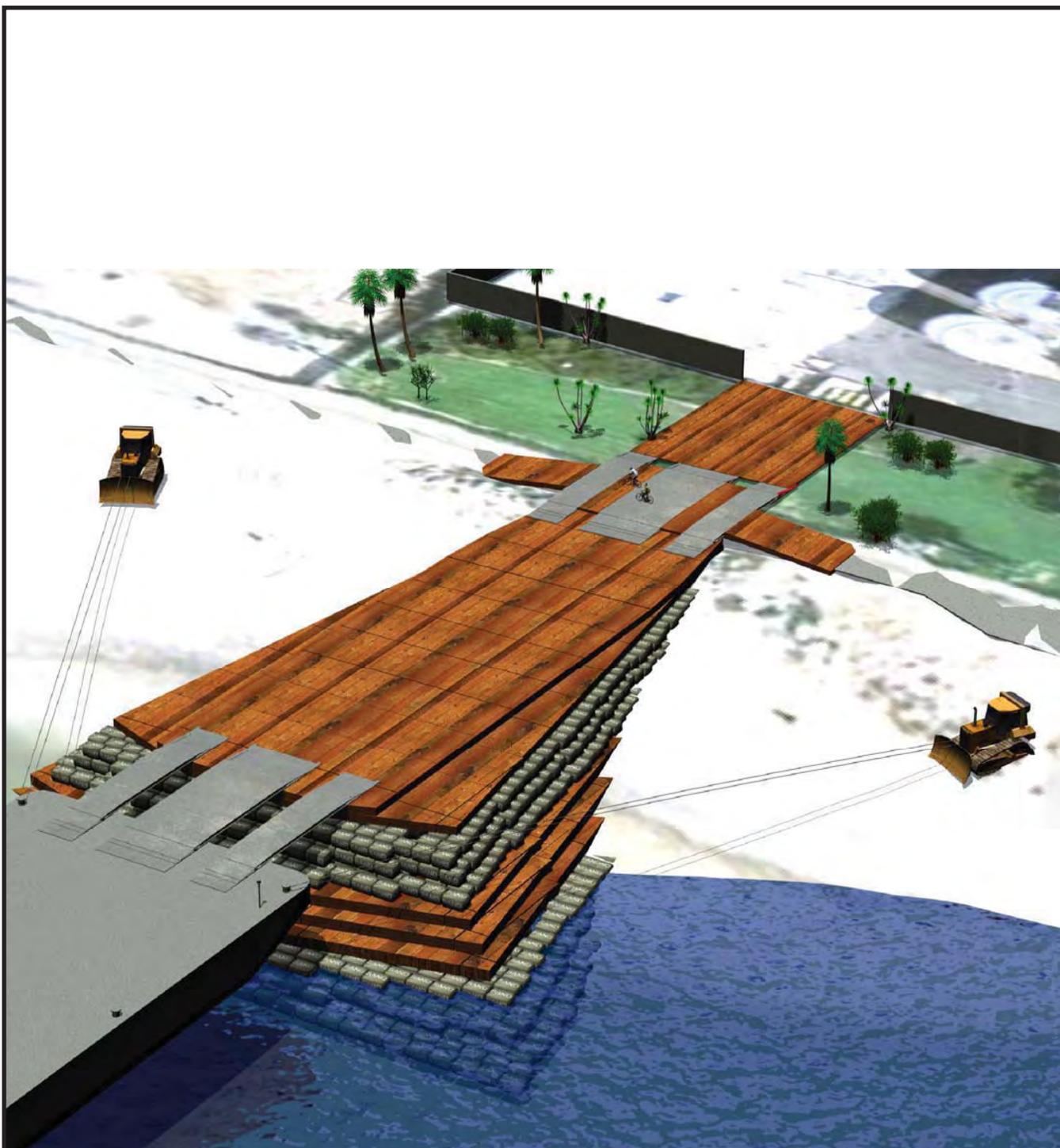
SOURCE: Staff Photos

**LAND USE - FIGURE 4**  
 El Segundo Power Redevelopment Project - Conceptual Layout of Beach Delivery Area



**LAND USE - FIGURE 5**

El Segundo Power Redevelopment Project - Beach Ramp Rendering



CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, JUNE 2010

SOURCE: El Segundo Power Redevelopment Project Amendment Petition - Figure 2.2-2

**LAND USE - FIGURE 6**

El Segundo Power Redevelopment Project - View of Beach Area Next to El Segundo Generating Station  
At Low and High Tide

Low Tide



High Tide



CALIFORNIA ENERGY COMMISSION, ENERGY FACILITY SITING DIVISION, JUNE 2010

SOURCE: Staff photos

**LAND USE - FIGURE 7**  
El Segundo Power Redevelopment Project - Aerial View of New Laydown Area



# NOISE AND VIBRATION

Prepared by: Shahab Khoshmashrab

## INTRODUCTION

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The amended El Segundo Power Redevelopment Project would employ air-cooled fin fan coolers instead of the existing once-through ocean water cooling system, and would utilize different turbine generators and heat recovery steam generators (HRSGs) from those envisioned in the Commission Decision. The fin fan coolers represent a new source of noise, and the turbine generators and HRSGs would produce different noise emissions from those described in the Decision. Further, transporting large pre-assembled components (HRSGs, turbines, etc.) across the beach would produce different noise impacts from the procedures described in the Decision.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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No applicable noise and vibration LORS have changed since issue of the Commission Decision.

## ANALYSIS

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The changes proposed that could influence noise impacts of the amended project are:

- Changing from a General Electric Frame 7FA two-on-one combined cycle power train to a pair of Siemens rapid-start one-on-one combined cycle trains;
- Changing from once-through ocean water cooling of the steam condenser to a pair of fin fan air coolers (air-cooled backpressure heat exchangers) to cool spent steam from the two backpressure steam turbines;
- Locating water storage tanks to the south of existing power plant Units 3 and 4;
- Relocating the north end of the seawall closer to the property line to accommodate the larger footprint of the Siemens power trains;
- Bringing large preassembled components, such as HRSGs, onsite via barge at a beach landing zone; and
- Modifying the plant entrance road to accept larger pieces of equipment.

## POWER TRAIN

Replacing the General Electric combined cycle power train with the Siemens machines would have little effect on noise emissions. The turbine generators would all be housed in acoustic enclosures in either case. While the northernmost power train would be located 25 feet nearer the west property line, this is no nearer any of the sensitive noise receptors in Manhattan Beach, and would thus cause no additional noise impacts.

## **COOLING SYSTEM**

The principal change in noise emissions would be due to the addition of two fin fan air coolers to cool exhaust steam from the two backpressure steam turbines, replacing the existing once-through ocean water cooling system that would have served the General Electric machines. Due to the design of these turbines, the cooling duty required is much less than for a traditional combined cycle, allowing the use of much smaller heat exchangers with fewer, smaller, quieter fans to produce noise. Due to their location north of the existing Units 3 and 4, and their distance from any sensitive receptors (approximately 2,200 feet, or 0.4 mile), noise from the cooling system would cause no additional noise impacts at any sensitive receptors.

## **WATER TANKS**

With the change to the Siemens equipment, three new water storage tanks would be required, for service water and fire water storage for the existing Units 3 and 4, for raw water storage for the new units, and for demineralized water storage for the new units. Construction of these tanks would be subject to the same noise restrictions applicable to all other plant construction, and thus would not constitute a significant adverse noise impact at any sensitive receptors. Their presence at the southern end of the property would interpose a new noise barrier between the power plant (the new units as well as the existing Units 3 and 4) and the nearest sensitive receptors, thus aiding in reducing power plant noise impacts on the receptors.

## **SEAWALL RELOCATION**

The northern end of the seawall would be relocated approximately 25 feet to the west to accommodate the larger footprint of the Siemens power trains. This change could only affect joggers and bicyclists on the bike path; it is too far from sensitive receptors to cause any increase in detectable noise levels. Users of the path might be exposed to slightly higher noise levels, but an increase would be too small to notice. Since all noise LORS restricting noise emissions at the property line would be adhered to, and since users of the path are only in the vicinity of the power plant for a short duration as they pass by, this relocation would be unlikely to cause any significant adverse noise impacts.

## **BEACH DELIVERY**

By preassembling large components, such as the HRSGs, turbine generators, partial pipe rack assemblies, fin fan coolers and others, the project owner would reduce the noise from onsite construction. Fewer components would be transported to the site, reducing the amount of heavy truck traffic, and fewer components would be fitted and assembled onsite. Noise from the six planned beach landings of major components would occur only during daytime hours, and would produce noise levels at sensitive receptors in the range of 30 dBA, inaudible against the ambient noise levels. No significant adverse noise impacts would be likely.

## **PLANT ENTRANCE ROAD**

Easing the slope and widening the turns of the entrance road would allow still more large preassembled components to be trucked to the site, reducing the number of truck trips and the amount of onsite construction noise. Noise due to modification of this road

would be restricted to daytime hours, and would be no louder at sensitive receptors than any other construction noise. No significant adverse noise impacts would be likely.

## **THE ROLE OF CONDITIONS OF CERTIFICATION**

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Condition of Certification **NOISE-6** in the original Energy Commission Decision limits increases in ambient noise levels due to power plant noise at the nearest sensitive receptors (dwellings in Manhattan Beach, immediately south of the project boundary) to less than 2 dBA. ESEC has modeled noise emissions from the originally proposed plant and from the modified plant using industry standard techniques, and has confidence that the project can be designed and constructed so that noise from the facility will cause an increase in ambient noise levels at the nearest sensitive receptors of only 1.5 dBA.

Condition of Certification **NOISE-6** further requires that, following construction and startup of the project, ESEC monitor actual noise levels at the sensitive receptors to verify that any increase in noise levels is limited to less than 2 dBA. Should project noise be too great, ESEC would be required to make any necessary changes in order to achieve compliance. This process has proven workable on previous Energy Commission-sited projects (Sutter Energy Center, 97-AFC-2, and Cosumnes Power Plant, 01-AFC-19). Should project construction or operation cause annoyance, Condition of Certification **NOISE-2**, a mandatory noise complaint resolution process, would trigger any necessary changes.

Condition of Certification **NOISE-8** in the Commission Decision limits the loudness of construction noise impacts on sensitive receptors, and the times of day during which noisy construction work may occur. ESEC's construction plans and noise modeling show that construction of the amended project, including beach delivery of major components, would comply with these limits.

## **CONCLUSIONS AND RECOMMENDATIONS**

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Staff has reviewed the petition for potential environmental impacts and for consistency with applicable LORS. Based on this review, staff has determined that the amended project would comply with all applicable noise and vibration LORS, would not produce significant adverse noise or vibration impacts on sensitive receptors, and would produce no noise and vibration impacts greater than those on which the original Commission Decision was based.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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Neither staff nor the project owner has proposed any modifications to the **Noise and Vibration** Conditions of Certification.

## **REFERENCES**

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CEC (California Energy Commission). 2005. Commission Decision for the El Segundo Power Redevelopment Project. Publication CEC-800-2005-001-CMF.

ESPRP (El Segundo Power Redevelopment Project). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project. Submitted to the California Energy Commission on June 19, 2007.

# **PUBLIC HEALTH**

Prepared by: Alvin Greenberg, Ph.D. & Dr. Obed Odoemelam

## **INTRODUCTION**

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The proposed amendment (Shaw 2007) has no significant impacts on public health

## **LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE**

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There are no new LORS and no LORS that have been modified since project certification.

## **ANALYSIS**

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Staff has reviewed the petition for potential environmental effects and consistency with applicable LORS. Based on this review, staff determined that the project, including the proposed amendment, should still be able to comply with all applicable LORS.

## **CONCLUSIONS AND RECOMMENDATIONS**

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Staff has reviewed the petition for new potential issues related to public health and a new health risk assessment prepared by ESEC for the South Coast Air Quality Management District (NRG 2007). Based on this review, staff has determined that the project's emissions of toxic air contaminants would pose a risk to the public of 0.04 in one million, a chronic hazard index of 0.0024, and an acute hazard index of 0.015, all values being much lower than the level of significance (cancer risk of 10 in one million; hazard index of 1.0). Therefore, staff concludes that no significant risk or hazard would be posed to the public by emissions from the combustion turbines. No conditions of certification are proposed.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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None

## **REFERENCES**

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NRG 2007. Data response Set 2, Appendix G: "Excerpts from Application for a Determination of Compliance and permit to Construct for the El Segundo Power Redevelopment Project", submitted to the South Coast Air Quality Management District June 21, 2007.

Shaw Environmental, Inc., June 18, 2007, Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project..



# **SOCIOECONOMIC RESOURCES**

Prepared by: Amanda Stennick

## **INTRODUCTION**

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The proposed amendment would reduce the construction workers from 422 to 337, or by about 20 percent. There would be no change in the number of workers necessary to operate and maintain the facility.

## **LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)**

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There are no changes to LORS as a result of the El Segundo modification. Please refer to the 2001 Final Decision for the list of Socioeconomic LORS.

## **ANALYSIS**

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In its 2001 Socioeconomic analysis, staff concluded that ESPRP would not cause a significant adverse direct or cumulative impact on schools, housing, law enforcement, emergency services, hospitals, employment, or public services and utilities. Staff concluded that the project would have a temporary benefit to the city of El Segundo and adjacent areas in terms of an increase in local jobs and commercial activity during the construction of the facility. Staff concluded that the project would have a positive socioeconomic impact on the El Segundo area and would be consistent with all applicable socioeconomic LORS.

The 2001 analysis showed that project construction would require up to 422 construction workers; the proposed amendment shows that project construction would require up to about 372 construction workers. Employment Development Department (EDD) Labor Market Information, Occupational Employment Projections show that the Construction Occupations for Los Angeles County in 2004 totaled 160,350 workers; the number of construction workers for 2014 is projected to be 173,240 workers. Therefore, staff concludes there is an adequate supply of workers in the trades required to construct the plant and the project would not result in any problems with labor availability for other construction projects. Because of the robust county-wide labor supply reported by EDD, no in-migration of construction workers and their families would occur or be required for project construction.

Staff has reviewed the proposed amendment for potential environmental effects and determined that no new or modified conditions of certification would be necessary. Based on its review of the proposed amendment and the conclusions in the 2001 Socioeconomic analysis, staff concludes that the proposed amendment would not have significant adverse impacts on schools, housing, law enforcement, emergency services, hospitals, or parks and recreation.

## **CONCLUSIONS AND RECOMMENDATIONS**

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Staff determined that the proposed amendment is consistent with Socioeconomic LORS and no new or modified conditions of certification would be necessary.

Based on staff's 2001 Socioeconomic analysis and staff's review of the proposed amendment, staff concludes that the proposed amendment would not cause significant direct or cumulative adverse socioeconomic impacts on schools, housing, law enforcement, emergency services, hospitals, or parks and recreation. Staff also concludes that the proposed amendment would not induce substantial growth or concentration of population, induce substantial increases in demand for public services, or displace a large number of people.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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Staff has proposed no new modifications to the Socioeconomic Resources Conditions of Certification.

## **REFERENCES**

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- CEC (California Energy Commission). 2005. Commission Decision for the El Segundo Power Redevelopment Project. Publication CEC-800-2005-001-CMF.
- ESPRP (El Segundo Power Redevelopment Project). 2000. Application for Certification. Submitted to the California Energy Commission on December 18, 2000.
- ESPRP (El Segundo Power Redevelopment Project). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project. Submitted to the California Energy Commission on June 19, 2007.

# SOIL AND WATER RESOURCES

Prepared by: Paul Marshall

## INTRODUCTION

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Construction of the proposed ESPRP would result in additional soil disturbing activities by the construction of the new turbine configuration and air-cooled condensers, the beach delivery of equipment, and changes to the in-plant roadway and laydown areas. Operation of the proposed ESPRP would increase the volume of recycled water used for industrial and landscape irrigation purposes as well as change the quality and quantity of the plant's wastewater discharges. These aspects of the proposed ESPRP are examined as they relate to the California Environmental Quality Act (CEQA) and current laws, ordinances, regulations, and standards (LORS).

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS COMPLIANCE

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Staff has reviewed the LORS identified in the Energy Commission Final Staff Assessment (FSA) for the El Segundo Power Redevelopment Project (00-AFC-14) and has listed those LORS in **SOIL & WATER Table 1** that are both new to this analysis and those that require re-examination based on the proposed ESPRP modifications.

**SOIL & WATER Table 1**  
**Laws, Ordinances, Regulations, and Standards**

Federal LORS	
Clean Water Act (33 U.S.C. Section 1251 et seq.)	The Clean Water Act requires states to set standards to protect water quality, includes regulation of stormwater discharges during construction and operation of power plant facilities.
Resource Conservation and Recovery Act (40 CFR Part 260 et seq.)	The Resource Conservation and Recovery Act of 1976 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 LORS	
Water Code Section 100	Requires the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.
Water Code Section 13550	Requires the use of recycled water for industrial purposes subject to recycled water availability and upon a number of criteria including provisions that the quality and quantity of recycled water be suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use would not impact downstream users or biological resources.
Water Code Section 13551	Requires the water resources of the state be put to beneficial use to the fullest extent to prevent waste, unreasonable use, or unreasonable method of use.
Local LORS	

El Segundo Ordinance 1329	Chapter 6.28 Ordinance 1329 requires that new development and redevelopment projects demonstrate proof of compliance regarding stormwater discharge requirements per Municipal NPDES Permit No. CAS00004001.
<b>State Policies and Guidance</b>	
California Constitution, Article X, Section 2	This section requires the water resources of the State be put to beneficial use to the fullest extent possible and states the waste, unreasonable use, or unreasonable method of use of water is prohibited.
The Porter-Cologne Water Quality Control Act of 1967, WC Section 13000 et seq.	Requires the State Water Resources Control Board (SWRCB) and the nine RWQCBs to adopt water quality criteria to protect state waters. Those regulations require the RWQCBs to issue waste discharge requirements specifying conditions for protection of water quality standards.
California Code of Regulations, Title 2	Title 2, Div-3, Ch-1, Art-4.6 regulates ballast water for vessels arriving at California ports or places after departing from ports or places within the Pacific Coast Region.
California Code of Regulations, Title 17	Title 17, Division 1, Chapter 5, addresses the requirements for backflow prevention and cross connections of potable and non-potable water lines.
California Code of Regulations, Title 22	Title 22, Division 4, Chapter 15, requires the California Department of Health Services (DHS) to review and approve the wastewater treatment systems and end-user connections to ensure public health and safety.
Integrated Energy Policy Report (Public Resources Code, Div. 15, Section 25300 et seq)	In the 2003 IEPR, consistent with State Water Resources Control Board Policy 75-58 and the Warren-Alquist Act, the Energy Commission adopted a policy stating they would approve the use of fresh water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.”
SWRCB Resolution 75-58	Resolution 75-58 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.
SWRCB Resolution 77-1	Encourages and promotes recycled water use for non-potable purposes.
Enclosed Bays and Estuaries (SWRCB Resolution 74-43)	The “Water Quality Control Policy for the Enclosed Bays and Estuaries of California” contains a number of prohibitions on waste discharges including chemical, biological and petroleum related wastes.

## **ANALYSIS**

Staff reviewed ESEC’s June 19, 2007, amendment petition to identify potential environmental impacts to soil and water resources and for consistency with applicable LORS. This analysis is based on information provided in the original Application for Certification (ESPRP 2000), the Energy Commission 2002 FSA (CEC 2002), ESEC’s Petition to Amend (ESPRP 2007a), and ESEC’s data responses (ESPRP 2007b). Based on this review, staff presents the following analysis with proposed new and modified conditions of certification to address and mitigate ESPRP impacts to soil and water resources. Those impacts related to the new plant design, the beach delivery system, the larger plant footprint, entrance and roadway modifications, and recycled water use and discharge are evaluated in this analysis.

## SETTING

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The regional setting for the proposed project has not changed from the original ESPRP project and the proposed project would be located at the same site on the northern portion of the existing ESGS facility. As with the original ESPRP, Units 1 and 2 of the El Segundo Generating Station (ESGS) are proposed for demolition and replacement. Units 3 and 4 would continue to operate using its existing once-through cooling and discharge facilities (ESPRP 2000a).

## PROJECT MODIFICATIONS

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The original ESPRP was permitted as a nominally rated 630-megawatt (MW) combined-cycle power plant that would continue to use once-through cooling. ESEC has proposed several modifications to the original project that revolve around the new generation technology not available during the original ESPRP application. The new design would consist of two gas turbine generators (GTG), heat recovery steam generator (HRSG), and one steam turbine generator (STG) using an air cooled heat exchanger for thermal heat rejection.

The air cooled design would allow water and steam cycle wastewaters to be recycled back to the single-pressure reverse osmosis water storage tank where the waters would be diluted for reuse as evaporative cooler makeup or reprocessed by a mobile demineralizer. With the zero liquid discharge (ZLD) system, water and steam cycle wastewaters would be recycled and reused to the maximum extent practicable. The proposed air cooled condensers and ZLD system would eliminate once-through cooling and the discharge of heated seawater and steam cycle wastewaters to the Bay (ESPRP 2007a Section 2.0).

Each GTG and STG is equipped with auxiliary equipment to support its operation. The primary change in design of the auxiliary equipment is the change to dry cooling that eliminates the need for cooling water. Use of this new technology requires modifications to the site layout. The footprint of the two power blocks is slightly larger than the 33 acres of the previously approved project. As a result, the larger footprint would require relocating the west sea wall and a set-back to the perimeter sea wall at the southern end of the plant (ESPRP 2007a Section 2.1.2).

To support the new units, new water storage tanks would be installed. A fire and service water storage tank would be used to store potable water supplied by the city of El Segundo (City) for fire suppression and plant sanitary uses. A raw water storage tank would be installed to store single-pass reverse osmosis (RO) quality recycled water supplied by West Basin Municipal Water District (WBMWD). A third tank would be installed to store demineralized water generated from the single pass RO water that would ultimately be used in the plant steam cycle (ESPRP 2007a Section 2.1.2).

Other proposed changes to the ESPRP include:

- A different method of delivery of the oversize equipment to the plant including ocean delivery by barge and a new plant entrance and in-plant roadway.
- Addition of a new offsite laydown area and removal of a previously considered laydown area.

Each of the above changes is analyzed in detail as they pertain to potential impacts to soil and water resources during the construction and operation phases of the ESPRP.

## CONSTRUCTION AND OPERATION WATER REQUIREMENTS

### Construction Water Requirements

The originally permitted ESPRP anticipated the use of potable water from the City to serve the needs of construction workers and for construction activities. Average use of construction water was anticipated to be approximately 5,000 gallons per day (gpd). During hydrostatic testing of pipelines and storage tanks, potable water consumption was estimated to be 20,000 gpd. ESEC proposes the continued use of potable water for all ESPRP construction activities. **SOIL & WATER Table 2** identifies El Segundo's proposed daily and annual potable water consumption for ESPRP construction (ESPRP 2007a Section 3.13.2.1 and ESPRP 2007b Data Responses 1 & 2).

**SOIL & WATER Table 2**

<b>Daily and Annual Potable Water Consumption for ESPRP Construction Activities</b>			
	Gallons per Day	Gallons per Year	Acre-Feet per Year
Dust Suppression	4,144 <sup>1</sup>	1,248,000	3.83
Equipment Wash	250 <sup>2</sup>	78,000	0.24
Hydrostatic Testing	20,000 <sup>3</sup>	504,000 <sup>4</sup>	1.55
<b>Total Construction Water</b>	<b>24,394</b>	<b>1,358,000</b>	<b>5.62</b>

(ESPRP 2007b, Soil & Water Tables 1 & 2)

- 1 – Based on one 2,000 gallon water truck filling up 2 times per day.
- 2 – Based on proposed demolition equipment that might be wet washed once per week (6 dys/wk), 150 gals/wash.
- 3 – Hydrostatic testing pipelines and equipment assume four new offsite pipelines and major equipment such as service and deionized water tanks, boilers and in-plant process water piping.
- 4 – Assumes that all hydrostatic testing occurs in same year.

### **Construction Dewatering**

Groundwater dewatering activities were anticipated during the demolition and construction phases of the originally approved ESPRP. Dewatering would occur during foundation excavation and power block construction and was estimated by ESEC to be between 40 and 200 acre-feet (AF) for a maximum duration of 90 days.

Construction and installation of the new equipment is anticipated to require less below grade demolition and construction due to the elimination of once-through cooling. The once-through cooling tunnels will be abandoned and the extensive reconstruction of the tunnels will not be necessary. Dewatering will still be required for some below grade demolition and foundation excavations, but the duration and extent of dewatering required for the new equipment configuration is anticipated to be significantly less than the 90 day estimate for the once-through cooling configuration (ESPRP 2006 Section 7.1.6, ESPRP 2007a Section 3.13.2.1 & 3.15.15.2).

As shown in **SOIL & WATER Table 2**, the proposed potable water consumption for ESPRP construction activities is 5.6 AF. Groundwater from dewatering activities should be considered as an alternative to potable water for dust suppression and soil compaction during those times when deep foundation excavations require groundwater dewatering. Additionally, tertiary treated recycled water is already available at the ESGS site. This recycled water is used primarily for landscape irrigation and to supplement seal water used to lubricate and cool the once-through water circulation equipment (CEC 2002).

Staff finds the use of potable water for construction activities when degraded groundwater and/or tertiary treated recycled water are available is in conflict with state water recycling policies as promulgated in the state constitution and California Water Code (CWC) Section 100. Article X, Section 2 of the California Constitution and CWC Section 100 require the water resources of the state be put to beneficial use to the fullest extent they are capable, and the waste or unreasonable use or unreasonable method of use be prevented. Therefore, the use of potable water for construction activities that are suitable for non-potable water use is a waste and unreasonable use of potable water. Additionally, tertiary treated recycled water from WBMWD is approximately half the cost of potable water from the City and will provide an economic benefit to ESEC (WBMWD 2005).

Staff proposes new Condition of Certification **WATER RES-4**, to disallow the use of potable water for all construction activities where non-potable water can be used. There are a number of non-potable water sources suitable for construction activities available to ESEC, including groundwater from dewatering activities and tertiary treated recycled water that is currently available on-site. This use of non-potable water will conserve potable water and comply with state LORS.

### **Operation Water Requirements**

As with the previously permitted ESPRP, potable water from the City and Title 22 tertiary treated recycled water from WBMWD would be supplied to the ESPRP for plant operation. ESEC proposes to use City water for all potable purposes and fire suppression. Tertiary treated single-pass RO quality water would be used to supply the HRSG makeup treatment system; while a blend of single pass RO and tertiary treated irrigation water would be used in the GTG inlet evaporative coolers (ESPRP 2007a Section 3.15.2).

A comparison by type of the annual average and annual maximum water consumption for operation of the previously permitted ESPRP and the proposed ESPRP are shown below in **SOIL & WATER Table 3**.

### SOIL & WATER Table 3

<b>Potable and Recycled Water Consumption for Industrial Activities (Acre-Feet per Year)</b>				
Water Source	Annual Average		Annual Maximum	
	Previously Permitted <sup>1</sup>	Proposed <sup>5</sup>	Previously Permitted <sup>2</sup>	Proposed <sup>6</sup>
Potable Water from the City of El Segundo	97	0.72	104	0.84
Recycled Water From West Basin Municipal Water District	112 <sup>3,4</sup>	33.2	120 <sup>3,4</sup>	647.3
Seawater	215,000	0	231,000	0

(ESPRP 2007a, Tables 2.1-1 & 3.15-2)

- 1 - Annual average is estimated as the daily average x 365 days x 93 percent.
- 2 - Annual maximum is estimated as the daily average x 365 days x 100 percent.
- 3 - Annual average recycled water demand is estimated as the peak daily use x 42 days + the average daily use x 23 days the quantity x 93 percent.
- 4 - Annual maximum recycled water demand is estimated as the peak daily use x 42 days + the average daily use x 323 days the quantity x 100 percent.
- 5 - Annual average is estimated as the daily average usage (Table 3.15-2) x 313 days
- 6 - Annual maximum is estimated as the daily average usage (Table 3.15-2) x 365 days.

### Potable Water Requirements

The proposed project will continue to use potable water for drinking, sanitary purposes, and fire suppression. However, due to the increased use of recycled water the proposed potable water consumption for the ESPRP decreases from an annual maximum of 104 acre-feet per year (AFY) to less than 1-AFY (ESPRP 2007a Section 3.15.2).

ESEC also proposes to use potable water as an emergency backup water supply. The use of potable water as an emergency backup is a change to the Energy Commission's 2005 Decision. The 2005 Decision approved the use of once through cooling; therefore, a backup water supply was not required because of the availability of seawater from the Santa Monica Bay. ESEC estimates that the longest reasonable period that the ESPRP would require potable water as a backup to recycled water would be two days. During peak operation, the new combined-cycle units would have a maximum water demand of 602-gpm or up to 577,920-gpd (based on 16-hours/day of planned operation). Based on a recycled water outage of two days, ESPRP would require an additional 3.5-AF of potable water (ESPRP 2007a Section 3.15.2 & Table 3.15-2, ESPRP 2007b Data Response 4).

ESEC has received a confirmation of potable water service from the City by letter dated September 26, 2007 (ESPRP 2007a Data Response 5). In the letter, the City commits to the delivery of potable water, consistent with its previous Will Serve letter dated May 16, 2001, for an estimated 130,748-gpd (average of 91-gpm) for 30 to 35 years. The delivery rate of 91-gpm is not sufficient to meet the 602-gpm delivery rate for ESPRP operation if recycled water is not available.

By switching from an inexhaustible water supply from Santa Monica Bay, a backup water supply is required for operational reliability of the ESPRP. The proposed use of potable water as an emergency backup water supply is a reasonable and necessary use of potable water in the event of a recycled water interruption. ESEC will need to negotiate a potable water supply agreement that will provide a delivery rate of 602-gpm if potable water is to be used as a backup source.

Because the proposed use of potable water as a backup water supply, is a change to the original Decision, staff proposes new Condition of Certification **WATER RES-4** to allow the use of potable water as an emergency backup supply with consumption capped at 4-AFY. To ensure the long-term reliability of the potable water supply for both domestic and industrial uses, an executed and final long-term (30-35 years) water supply agreement, with a maximum delivery rate of 602-gpm, will also be added to Condition of Certification **WATER RES-4**.

### **Recycled Water Requirements**

ESEC proposes to use both irrigation and first pass RO quality (industrial) recycled water supplied by the WBMWD. The WBMWD Water Recycling Treatment Facility provides tertiary treatment to secondary-treated recycled water from the City of Los Angeles Hyperion Wastewater Treatment Plant. WBMWD's water recycling facility has the capacity to produce up to 35 million gallons per day (mgd) of disinfected tertiary treated recycled water (ESPRP 2007a Section 3.15.2, WBMWD 2005 Section 8.3).

For operation of the ESPRP, ESEC proposes to use 34,560-gpd (daily average) of industrial/irrigation recycled water with a peak demand of up to 577,920-gpd. With the capacity to produce 35-mgd, WBMWD has the capability to meet ESPRP's long-term demand for recycled water. By letter dated September 27, 2007, WBMWD has provided assurance to ESEC that it is their intent to provide a Will Serve letter for the ESPRP project pending completion of an evaluation and finalization of a water purchase agreement between WBMWD and ESEC (ESPRP 2007b Data Response 3 & Appendix K).

The proposed modification of the ESPRP design to Rapid Response – Combined-Cycle technology and the proposed use of recycled water would provide significant environmental benefits for water and biology resources. Through the use of air-to-air heat exchangers for thermal heat rejection, seawater will no longer be used for heat rejection through the process of once-through cooling. The proposed use of dry cooling and recycled water for all industrial purposes eliminates the need for up to 231,000-AFY of seawater for once-through cooling and approximately 103-AFY of potable water for in-plant industrial use. This proposed change of cooling source and technology is in full compliance with state LORS for the elimination of once-through cooling and the use of recycled water for industrial and landscape irrigation purposes.

Because of the proposed change to dry cooling along with the increased demand for recycled water, staff proposes new Condition of Certification **WATER RES-3**, which will eliminate the use of seawater for once-through cooling and require an executed and final long-term (30 - 35 years) recycled water purchase agreement between WBMWD and ESEC, that provides for a maximum delivery rate of 602-gpm.

Staff has added Condition of Certification **WATER RES-5** for the collection of ESPRP operation water consumption data, which has been legislatively mandated. Condition of Certification **WATER RES-5** requires the installation of metering devices on all water supply pipelines that deliver potable, industrial, and landscape irrigation water for ESPRP operation. Staff also believes Condition of Certification **WATER QUALITY-6** is no longer necessary and should be deleted given the proposed Condition of Certification **WATER RES-3** and addition of **WATER RES-5**.

## **STORMWATER AND NON-STORMWATER DISCHARGES**

Stormwater at the existing ESGS sites combines with the plant's floor drains and is directed to a system of catch basins via a closed pipe system. The flow is routed to an oil/water separator before combining with the once-through cooling water and treated sanitary wastes for discharge to the Bay. Units 1 and 2 discharge to Outfall No. 001 and Units 3 and 4 discharge to Outfall No. 002. At the southwest corner of the ESGS site, a municipal stormwater system intercepts runoff from Vista Del Mar Boulevard and conveys the runoff beneath the ESGS site for discharge to El Segundo Beach. The existing tank farm is currently bermed and stormwater is pumped to nearby municipal stormwater inlets (CEC 2002, ESPRP 2007a Section 3.14-2.1).

### **Construction Discharges**

During the construction phase of the ESPRP, stormwater will be retained in a newly constructed forebay and tested before discharge through Outfall 002. The existing runoff from the tank farm that currently discharges to the municipal stormwater system will be eliminated. Construction of the new stormwater drainage system may encounter potentially contaminated soils. Appropriate measures to protect stormwater runoff and to address the discharge of waste associated with the installation of the stormwater drainage system are addressed and mitigated by the existing Condition of Certifications **WASTE-5 & WASTE-6** (ESPRP 2007a Section 3.13.2.2 & 3.14.2.1, ESPRP 2006).

Condition of Certification **WATER QUALITY-7** requires ESEC to prepare and implement a Storm Water Pollution Prevention Plan (Construction SWPPP) for stormwater discharges associated with construction activity prior to site mobilization or soil disturbing activities. As a requirement of the Los Angeles Regional Water Quality Control Board (LARWQCB) Municipal Stormwater Permit (NPDES No. CAS004001), ESEC must comply with all applicable requirements of the City's Standard Urban Stormwater Mitigation Plan (SUSMP). The SUSMP was developed to address stormwater pollution from new development and redevelopment projects by the private sector.

Staff agrees with ESEC that soil and water resources will be adequately protected through the preparation and implementation of a Construction SWPPP per the requirements of LARWQCB Permit No. CAS004001. Staff has added Condition of Certification **WATER QUALITY-7** to be consistent with the 2006 Soil and Water Standard Conditions wherein the LARWQCB and the city of El Segundo will have review and approval authority for the Construction SWPPP.

In the final decision, ESEC had also agreed to Condition of Certification **WATER QUALITY-8** that requires the power plant owner to develop an Erosion and Sediment

Control Plan (ESCP). Again, to be consistent with the 2006 Soil and Water Standard Conditions that apply to all power plants, staff has modified Condition of Certification **WATER QUALITY-8** to include the requirements of an updated Drainage, Erosion, and Sediment Control Plan (DESCP). With the preparation and implementation of the Construction SWPPP and DESCP, ESEC will keep soil loss and water pollution to a negligible amount resulting in no significant impact to soil or water resources.

### **Operation Discharges**

During ESPRP operation, ESEC proposes to direct stormwater from yard drains outside of the power block to a relocated oil/water separator as previously permitted through its Industrial NPDES Permit No. CA000147, CI4667. Discharge from the oil/water separator will then be routed to the forebay of Outfall 002 and discharged to the Bay. ESGS's individual discharge permit characterizes the stormwater discharge from the existing site as negligible. ESEC has calculated a preliminary stormwater design flow based on a 25-year rain event to be 3,100-gpd. Outfall 002 has a design capacity in excess of 398-mgd. Thus, the additional flow from the new ESPRP footprint will not affect the site's ability to discharge through Outfall 002 (ESPRP 2007a Sections 3.14.2.1 & 3.14.2.3).

Stormwater and surface drainage conveyances within the power block would be engineered to allow for segregation of stormwater discharges from non-stormwater discharges. Non-stormwater discharges will be routed to a pre-treatment system to remove oils, greases, and solids from the waste stream then returned to the raw water tank for reuse in the power generating process. The plant drainage system will provide the capability to capture and contain non-stormwater discharges for offsite disposal or recycling. Per the requirement of the existing individual discharge permit, stormwater and non-stormwater runoff will be sampled prior to discharge (ESPRP 2007a Section 3.13.2.2, 3.14.2.1 & 3.14.2.3).

ESEC's proposed modifications to the ESPRP would have less environmental impacts than the previously permitted project. The proposed modifications would improve water quality of the Bay due to the ZLD system and the redesigned ESPRP drainage system resulting in the elimination of industrial wastewater discharge to the Bay from Outfall 001. Additionally, ESPRP's permitted runoff to Outfall 002 would be sampled prior to discharge per ESGS's individual NPDES Permit No. CA000147.

Although the ESGS is permitted under the LARWCB Industrial NPDES Permit No. CA000147, Condition of Certification **WATER QUALITY-9** requires ESEC to prepare and implement an Industrial SWPPP for operation of the ESPRP. The Industrial SWPPP would also have to comply with all applicable requirements of the City's SUSMP per Municipal Permit No. CAS004001. Staff proposes to modify Condition of Certification **WATER QUALITY-9** to be consistent with the 2006 Soil and Water Standard Conditions and will no longer be reviewed and approved by the Compliance Project Manager (CPM). The proposed ESPRP will prevent increased stormwater runoff through the development of structural Best Management Practices (BMPs) in compliance with Condition of Certification **WATER QUALITY-9**. Staff believes that through the submittal and implementation of the site-specific requirements in Condition

of Certification **WATER QUALITY-9**, including compliance with all municipal codes and discharge permits, impacts to surface water and soil resources from stormwater runoff during ESPRP operation will be less than significant.

Because of the requirements of the City's municipal permit and the implementation of structural BMPs in accordance with the SUSMP, staff proposes to remove Condition of Certification **WATER QUALITY-4 and WATER QUALITY-5**, which require ESEC to develop an ESCP for ESPRP operation and comply with comprehensive reporting requirements.

## **BEACH DELIVERY SYSTEM**

ESEC proposes to transport oversize plant equipment to the ESPRP by barge and transport it to the plant site from El Segundo Beach. El Segundo Beach is a narrow 3-acre sandy beach seaward of the ESGS facilities that is owned by the State Lands Commission (SLC). Up to six barges would be used for the beach landing; each barge transported to the landing site by tug. The construction barge would be pulled onto the beach and moored to the beach by two Caterpillar D-6 bulldozers during high tide (ESPRP 2007a Section 3.14.2.2).

The beach delivery ramp would consist of geo-tech fiber, wood matting, and sandbags. The ramp would be positioned next to an existing rock groin and secured with cables attached to the D-6 bulldozers. One stationary barge (construction barge) would be connected to the ramp, while delivery barges would be moved via a tug boat to the stationary barge for heavy equipment off-loading. The system would be in place for approximately eight months.

ESEC recognizes that operation of the beach delivery system poses a number of environmental threats to soil and water resources. ESEC anticipates those impacts to be caused from:

- erosion and sediment pollutants;
- imported soils of dissimilar quality than the beach sand;
- heavy equipment spills, leaks, and drips;
- fueling or repairing equipment on the beach;
- treated or contaminated matting or wood planking; and
- improper staging of equipment or materials in the beach area.

Section 404 of the Clean Water Act regulates the discharge of dredged material and placement of fill material within waters of the U.S. and requires the U.S. Army Corps of Engineers (USACE) to permit such activities. The USACE can issue either a general permit for projects anticipated to have minimal individual and cumulative impacts or a project-specific permit for projects not authorized under the general permit.

As presented in the **BIOLOGICAL RESOURCES** section of this analysis, USACE is expected to issue a permit for the beach delivery system. Staff expects the USACE to

issue a Nationwide 33 Permit governing temporary structures necessary for construction activities. A Section 401 water quality certification from the LARWQCB would also be required.

In order to ensure that no pollutant discharge occurs, ESEC proposes measures to avoid, prevent, and/or minimize discharge of pollutants to Santa Monica Bay associated with the beach delivery operation. Proposed mitigation measures would include the implementation of BMPs to address pollutants and pollutant sources including erosion and sediment pollutants. To accomplish this, ESEC has proposed Conditions of Certification **WATER QUALITY-7 through -12** to mitigate potential environment impacts to soil and water resources associated with the beach delivery (ESPRP 2007a Section 3.14.5).

ESEC's proposed Conditions of Certification **WATER QUALITY-7 through -12** are summarized below:

- **WATER QUALITY-7** requires a CWA Section 404, Rivers and Harbors Act, Section 10 Permit prior to the placement of fill materials and/or structures within waters of the United States.
- **WATER QUALITY-8** requires a CWA Section 401 Water Quality Certification from the LARWQCB verifying the beach delivery is in compliance with state water quality standards.
- **WATER QUALITY-9** requires the submittal of a Notice of Intent (NOI) to comply with the General Permit for Storm Water Discharges Associated with Construction Activity prior to ground disturbing activities related to the beach delivery.
- **WATER QUALITY-10** requires ESEC to modify its existing Construction Stormwater Pollution Prevention Plan to include the beach delivery activities.
- **WATER QUALITY-11** requires ESEC to include beach delivery activities in an erosion and sediment control plan.
- **WATER QUALITY-12** requires ESEC to prepare a mitigation plan for the repair and enhancement of El Segundo Beach.

Staff has reviewed the requirements of ESEC's proposed Conditions of Certification **WATER QUALITY-7 through -12** and finds those requirements can be met through the implementation of existing Water Quality Conditions of Certification and from the proposed Conditions of Certification **BIO-12 & 13** in the **BIOLOGICAL RESOURCES** section. Condition of Certification **BIO-12** requires a CWA Section 404/Section 10 Permit prior to the placement of fill materials and/or structures within waters of the United States; while Condition of Certification **BIO-13** requires a CWA Section 401 Water Quality Certification from the LARWQCB.

Additionally, through the implementation of Conditions of Certification **WATER QUALITY-7, -8, and -9**, the mitigation measures proposed above to protect soil and water resources would be met. Therefore, ESEC's proposed Conditions of Certification **WATER QUALITY-9 through -12** are incorporated in the existing Conditions of Certification **WATER QUALITY-7 and -9**, which would provide an economy of process through the review and approval of the Construction and Industrial NPDES Permits by

the LARWQCB and the City and through staff's review of the DESC (ESPRP 2007a Section 3.14.5).

### **Ballast Water Discharge**

To secure and stabilize the barges at the El Segundo Beach site, the barges would need to be ballasted and grounded. To ensure that ballast water is not contaminated, ESEC proposes to include Condition of Certification **WATER QUALITY-13**. **WATER QUALITY-13** requires the development of a Ballast Water Management Plan in accordance with CCR Title 2, Division 3, Chapter 1, Article 4.6, for the regulation of ballast water.

As part of Condition of Certification **WATER QUALITY-13**, the project owner would ensure that the ballast water holding tanks are certified clean and uncontaminated prior to taking on local ballast water. Staff agrees that inclusion of a Ballast Water Management Plan that is in compliance with CCR Title 2, Division 3, Chapter 1, Article 4.6 and has been reviewed by the California State Lands Commission will be protective of Santa Monica Bay waters. Staff has modified and renumbered the proposed Condition of Certification **WATER QUALITY-13** as **WATER QUALITY-10** in the Conditions of Certification section of this analysis (ESPRP 2007a Section 3.14.4).

### **ESPRP ENTRANCE AND ROADWAY MODIFICATIONS**

The current ESPRP entrance and in-plant roadway is a two-lane road that extends approximately 450-feet from Vista del Mar Boulevard down to the existing ESGS facility. The combination of the narrow plant entrance, sharp turns, and steep grade creates driving hazards for heavy equipment deliveries. To improve the access, the existing entrance road would be widened to 24-feet, the sharp curves eliminated, and the grade slopes decreased where possible. Modifications to the entrance and in-plant roadway will improve El Segundo's ability to receive deliveries of heavy and oversize equipment during both the construction and operation phases of the ESPRP (ESPRP 2007a Sections 2.2.2 and 3.4.2.4).

Typical of roadway construction, pollutants such as construction debris, concrete residue, asphalt slurry, oils, grease, and fuels spills are potential soil and water contaminants. Staff agrees with ESEC, that through the Construction NPDES process, the entrance and in-plant roadway modifications would not have a significant impact on soil resources or water quality. Through this process, ESEC is required to revise the ESPRP Construction SWPPP to include all new soil disturbing activities that result from the larger plant, laydown, and delivery footprints (ESPRP 2007a Section 3.14.2.4).

The Construction SWPPP and DESC required in Conditions of Certification **WATER QUALITY-7 and -8** will ensure the entrance and in-plant roadway construction activities comply with soil and water resources pollution prevention plans. With implementation of these plans, no significant impacts to soil and water resources are expected.

### **OFFSITE LAYDOWN AND PARKING AREAS**

Following the licensing of ESPRP in 2005, the Fed Ex site previously considered for offsite laydown was redeveloped. ESEC now proposes a replacement site. The

proposed site is approximately 12.1-acres and includes a 5,500 square-foot industrial building. The site is relatively flat, paved, lighted, and fenced and is suitable for equipment staging and employee parking. No site preparation other than minor grading is proposed by ESEC (ESPRP 2007a Section 2.3).

During site use, potential soil and water pollutant sources are expected to be limited to trash and leaks of automotive fluids from vehicle parking. Staff agrees with ESEC that the existing conditions of certifications requiring the submittal and implementation of a construction SWPPP and erosion control plan will keep potential impacts to soil and water resources to an insignificant level. Compliance with staff's modified Conditions of Certification **WATER QUALITY-7 and -8** will be protective of soil and water resources through the implementation of those pollution prevention plans (ESPRP 2007a Section 2.3).

## **CONCLUSIONS AND RECOMMENDATIONS**

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The proposed changes by ESPRP would greatly reduce the impacts anticipated from the previously permitted project due to the elimination of once-through cooling and wastewater discharges to Santa Monica Bay. Although the site will maintain its industrial NPDES permit for operation of Units 3 and 4, the elimination of once-through cooling and industrial wastewater streams from Outfall 001 will reduce the thermal and industrial discharges to the Santa Monica Bay by over 206 million gallons per day. The use of the new equipment technology with dry cooling will also greatly reduce or eliminate the amount of ocean, potable, and recycled water consumption that would be required for evaporative cooling approved in the 2005 Decision. These project changes are fully compliant with state LORS for the use of recycled water, use of alternative cooling technology, and the elimination of once-through cooling.

As presented in **SOIL AND WATER Table1**, both new and existing LORS were evaluated in the analysis. The proposed changes in the ESPRP amendment would comply with the following LORS if the new and amended conditions of certification are implemented.

- Clean Water Act (33 USC Section 1251) for protection of water quality through the regulation of discharges through the submittal and implementation of Construction and Industrial SWPPPs.
- The Resource Conservation Recovery Act of 1976 by the proper handling and discharge of wastewater.
- The California Constitution, Article X, Section 2 by using recycled water for plant construction, industrial, and landscape irrigation purposes.
- California Water Code Sections 100, 13550, and 13551 by using recycled water in lieu of potable water.
- The 2003 Integrated Energy Policy Report by using dry cooling in conjunction with recycled water for thermal cooling and plant processes.
- Title 2 of the California Code of Regulations for the regulation of ballast water;
- Title 17 of the California Code of Regulations, through the approval by Los Angeles County for backflow prevention and cross connections of potable and recycled water lines.

- Title 22 of the California Code of Regulations, through the proper use and discharge of recycled water.
- The City of El Segundo Ordinance 1329 for the preparation and implementation of a Standard Urban Stormwater Mitigation Plan.

It is staff's position that project related effects and potential impacts on soil and water resources would not result in unmitigated significant adverse impacts if the proposed and modified conditions of certification are adopted and implemented. If unanticipated circumstances arise, staff is confident they can be adequately dealt with under the guidance and specifications of the required federal and state permits. As such, compliance with applicable LORS for the protection of soil and water resources is expected to occur.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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Staff has proposed the addition of Conditions of Certification **WATER RES-3 and-4** and **WATER QUALITY-7, -8, and -9**, and the addition of **WATER RES-5** and **WATER QUALITY-10**. Staff has proposed deletion of **WATER RES-1 and-2** and, **WATER QUALITY-4, -5, and -6**. Because of the extensive changes to the conditions of certification, all the original conditions are shown in strikeout and all new and modified conditions are shown in **bold and underlined text**.

~~**WATER RES-1:** The project owner shall use reclaimed water for all in-plant process water needs, except those specifically excluded uses, unless it can be demonstrated that its use is not compatible with any particular application. Specifically excepted from using reclaimed water are fire control water, sanitary water, and potable water, and once through cooling water. The project owner shall submit a Reclaimed Water Use Plan (RWUP) that includes a detailed revised project design, operational plan, water balance, and heat balance for the use of reclaimed water for review and approval by the CPM prior to the start of any site mobilization activities for the project or any linear element. This RWUP shall be consistent with all applicable LORS, including Title 22 California Code of Regulations.~~

~~All in-plant water needs that the project owner claims cannot be met using reclaimed water, other those excepted, shall be identified and a discussion of the infeasibility of reclaimed water use for these needs shall be included in the RWUP for review and approval by the CPM. Site mobilization activities shall not begin without a CPM approved RWUP.~~

~~**Verification:** The project owner shall submit the RWUP to the CPM for review and approval sixty day prior to the start of any site mobilization activities associated with the project or any linear elements. The RWUP must be approved by the CPM before the start of site mobilization.~~

**WATER RES-3: The project owner shall provide the CPM a copy of the executed and final recycled water purchase agreement (agreement) with West Basin Municipal Water District (WBMWD) for the long-term supply (30 – 35 years) of tertiary treated recycled water to the ESPRP. The agreement**

**shall specify a minimum delivery rate of 602-gpm. The agreement shall specify all terms and costs for the delivery and use of recycled water by ESPRP. The ESPRP shall not connect to WBMWD's new 10-inch recycled water pipeline without the final agreement in place and submitted to the CPM. The project owner shall comply with the requirements of Title 22 and Title 17 of the California Code of Regulations.**

**Verification: No later than 60 days prior to the delivery of single pass reverse osmosis recycled water from the new 10-inch pipeline, the project owner shall submit two copies of the final and executed recycled water purchase agreement for the supply and on-site use of recycled water at the ESPRP. The project owner shall submit to the CPM a copy of the cross connection inspection and approval report from the Los Angeles County Health Department prior to the delivery of recycled water from the new 10-inch recycled water pipeline.**

~~**WATER RES-2:** Only potable water and irrigation quality reclaimed water from the City of El Segundo or reclaimed water from the West Basin Municipal Water District shall be used by the project for uses other than once-through cooling. The process water supply shall be reclaimed water. A backup water supply has not been included in the project design or operational plan, and the project shall not operate during periods when reclaimed or potable water is not available in sufficient quantities from the primary supply sources. The project owner shall report the periods of non-operation due to unavailability of water from any source in the Annual Compliance Report.~~

~~The project owner shall install on-site metering and recording devices and record on a monthly basis all water used by the ESPRP, except water used for once-through cooling, including the amount of reclaimed, and non-reclaimed water used by the project, with the source and amount of all reclaimed and non-reclaimed water identified. The annual summary shall include the monthly range, monthly average, and total amounts of reclaimed and non-reclaimed water identified by amount and source used by the project in both gallons per minute and acre-feet. Following the first year of operation, the annual summary shall also include the yearly range and yearly average of reclaimed and non-reclaimed water identified by amount and source used by the project. This information shall be supplied to the CPM in the Annual Compliance Report for review and approval for the life of the project.~~

~~**Verification:** No less than 60 days prior to the start of operation of ESPR, the project owner shall submit to the CPM evidence that metering devices have been installed and are operational on the pipelines serving and within the project. These metering devices shall be capable of differentiating between uses of these supplies by ESPR in order to report water demand. The project owner shall provide a report on the servicing, testing and calibration of the metering devices and operation in the annual compliance report. The project owner shall submit the required water use summary to the CPM for review as part of the Annual Compliance Report for the life of the project.~~

**WATER RES-4: The project owner shall use potable water supplied by the City of El Segundo (City) for potable and sanitary purposes only during construction of the ESPRP. Potable water shall not be used for any**

construction activity that is suitable for non-potable water use. In the event of a recycled water delivery interruption, potable water may be used as an emergency back-up supply for plant operation.

Prior to completion of the 14-inch potable water pipeline, the project owner shall provide the CPM with a copy of an executed and final Potable Water Supply Agreement (agreement) for the long-term supply (30 – 35 years) of potable water. The agreement shall specify a minimum delivery rate of 602-gpm in order to meet ESPRP's operation requirements in the event of a recycled water interruption. The project owner shall not use more than 4-AFY of potable water as an emergency backup source for ESPRP operation.

Verification: No later than 30 days prior to completion of the 14-inch potable water pipeline, the project owner shall submit to the CPM two copies of the executed and final Potable Water Supply Agreement (agreement). The project owner shall submit to the CPM any water quality monitoring reports required by the City in the annual compliance report. The project owner shall notify the CPM of any violations of the agreement terms and conditions, the actions taken or planned to bring the project back into compliance with the agreement, and the date compliance was reestablished.

WATER RES-5: The project owner shall use potable water supplied by the City of El Segundo (City) and recycled water supplied by the West Basin Municipal Water District (WBMWD) during ESPRP operation. Prior to the use of water from any source for ESPRP operation, the project owner shall install and maintain metering devices as part of the potable and recycled water supply and distribution systems. The metering devices shall be in operation for the life of the project. The project owner shall prepare an annual Water Use Summary that includes the monthly range and monthly average of daily potable and recycled water usage in gallons per day on a monthly basis and in acre-feet on an annual basis. For subsequent years, the annual Water Use Summary shall also include the yearly range and yearly average water use, by source, for the project. The annual Water Use Summary shall be submitted to the CPM as part of the annual compliance report.

Verification: At least 60 days prior to ESPRP commercial operation, the project owner shall submit to the CPM evidence that metering devices have been installed and are operational on the potable and recycled water supply and distribution systems. The project owner shall submit a Water Use Summary report to the CPM in the annual compliance report. The report shall disaggregate potable water supplied by the City and recycled water supplied by WBMWD for ESPRP industrial and landscape irrigation use. The project owner shall provide a report on the servicing, testing and calibration of the metering devices in the annual compliance report.

WATER QUALITY-1: Prior to site mobilization, demolition, and/or construction related ground disturbance activities, including linear facilities, the project owner shall develop a Storm Water Pollution Prevention Plan (SWPPP) for the project as

~~required under the NPDES General Stormwater Construction Activity Permit. A copy of the SWPPP and the Notice of Intent (NOI) submitted to the LARWQCB as required under the NPDES General Stormwater Construction Activity Permit regulations shall be provided to the CPM for review and approval. The SWPPP shall include the actual drainage and facility design for all on- and off-site ESPR project facilities for construction, and shall address all issues detailed in the Staff Recommended Mitigation section of this FSA. The SWPPP shall demonstrate compliance with all applicable SUSUMP requirements. The project owner shall submit the construction SWPPP to the City of El Segundo for review and comment, and provide the CPM with a copy of a transmittal letter that requests the City provide copies of their comments to both ESPRP and to the CPM.~~

**Verification:** ~~Sixty days prior to the start of any site mobilization activities and/or ground disturbing activities associated with demolition or construction of the project (including demolition of tanks or Units 1 and 2) or any linear element, the project owner shall submit copies of the construction SWPPP, the NOI, and the transmittal letter to the CPM for review and approval. The SWPPP must be approved, and the transmittal letter and NOI copies received by the CPM prior to the start of site mobilization activities.~~

**WATER QUALITY-7: The project owner shall comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Storm Water Associated with Construction Activity (Water Quality 99-08-DWQ). The project owner shall develop and implement a Storm Water Pollution Prevention Plan (Construction SWPPP) for the construction of the ESPRP site, laydown areas, including El Segundo Beach, and all linear facilities. The Construction SWPPP shall be reviewed and approved by the City of El Segundo (City) and be in compliance with the City's Standard Urban Stormwater Mitigation Plan (SUSMP) per the requirements of the Los Angeles Regional Water Quality Control Board (LARWQCB) NPDES Permit No. CAS0004001 and the City's Ordinance No. 1348 and Chapter 7 of Title 5 of the municipal code.**

**Verification: Prior to site mobilization, demolition, and/or construction related ground disturbing activities, including those activities associated with the beach delivery and linear facilities, The project owner shall submit to the CPM a copy of the Construction SWPPP that includes the requirements of the City's SUSMP and retain a copy on-site. The project owner shall submit copies to the CPM of all correspondence between the project owner and the City, the LARWQCB, and the SWRCB regarding the City's SUSMP and the Construction SWPPP within 10 days of its receipt or submittal. This information shall include copies the Notice of Intent and Notice of Termination for the project.**

~~**WATER QUALITY-2:** Prior to site mobilization, demolition, and/or construction related ground disturbance activities, including linear facilities, the project owner shall develop an Erosion and Sedimentation Control Plan (ESCP) for the construction phase of the project. A copy of the ESCP for construction shall be provided to the CPM for review and approval. The ESCP shall address the actual drainage and facility design for all on- and off-site ESPR project facilities for construction, and shall address all issues detailed in the Staff~~

~~Recommended Mitigation section of this FSA. The ESCP shall demonstrate compliance with all applicable SUSUMP requirements. The project owner shall submit the construction ESCP to the City of El Segundo for review and comment, and provide the CPM with a copy of a transmittal letter that requests the City provide copies of their comments to both ESPR and to the CPM.~~

~~**Verification:** Sixty days prior to the start of any site mobilization activities and/or ground disturbing activities associated with demolition or construction of the project or any linear element, the project owner shall submit the ESCP and a copy of the transmittal letter to the CPM for review and approval. The ESCP must be approved, and the transmittal letter received by the CPM prior to the start of site mobilization activities.~~

**WATER QUALITY-8: Prior to soil disturbing activities, the project owner shall obtain CPM approval for a site-specific Drainage, Erosion, and Sediment Control Plan (DESCP) that addresses all project elements including those activities related to delivery of equipment onto El Segundo Beach. The DESCPC shall be revised to address specific soil disturbing and soil stabilizing activities associated with pre-construction, construction, and post-construction of the ESPRP.**

**The DESCPC shall be consistent with the grading and drainage plan as required by condition of certification CIVIL-1 and may incorporate by reference any Storm Water Pollution Prevention Plan (SWPPP) developed in conjunction with state or municipal NPDES permits. The DESCPC shall contain elements A through I below:**

- A. Vicinity Map – A map(s) at a minimum scale 1"=100' shall be provided indicating the location of all project elements with depictions of all significant geographic features including swales, storm drains, and sensitive areas.**
- B. Site Delineation – All areas subject to soil disturbance for the ESPRP project (project site, lay down area, all linear facilities, landscaping areas, and any other project elements) shall be delineated showing boundary lines of all construction area and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.**
- C. Watercourses and Critical Areas – The DESCPC shall show the location of all nearby watercourses including swales, storm drains, and drainage ditches. Indicate the proximity of those features to the ESPRP project construction, lay down, and landscape areas and all transmission and pipeline construction corridors.**
- D. Drainage Map – The DESCPC shall provide a topographic site map(s) at a minimum scale 1"=100' showing all existing, interim and proposed drainage systems and drainage area boundaries. On the map, spot elevations and contours shall be extended off-site for a minimum distance of 100 feet.**

- E. Drainage Narrative – The DESCPC shall include a narrative of the drainage measures to be taken to protect the site and downstream facilities and include the summary pages from the hydrologic analysis prepared by a professional engineer/erosion control specialist. The narrative shall state the watershed size(s) in acres used in the calculation of drainage control measures and text included that justifies their selection. The hydrologic analysis should be used to support the selection of BMPs and structural controls to divert off-site and on-site drainage around or through the ESPRP project construction and laydown areas.
- F. Clearing and Grading Plans – The DESCPC 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 will also be shown. Illustrate existing and proposed topography tying in proposed contours with existing topography.
- G. Clearing and Grading Narrative – The DESCPC shall include a table with the quantities of material excavated or filled for the site and all project elements of the ESPRP project (project site, lay down areas, transmission corridors, and pipeline corridors) to include those materials removed from the site due to demolition, whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported. The table shall distinguish whether such excavations or fill is temporary or permanent and the amount of material to be imported or exported.
- H. Best Management Practices – The DESCPC shall identify on a Water Pollution Control Drawing(s) (WPCD) the location of the site specific BMPs to be employed during each phase of construction (initial grading/demolition, excavation and construction, and final grading/stabilization). Treatment control BMPs used during construction should enable testing of stormwater runoff prior to discharge to the stormwater system. BMPs shall include measures designed to prevent wind and water erosion in areas with existing soil contamination.
- I. Best Management Practices Narrative – The DESCPC shall show the location (as identified on the WPCD), timing, and maintenance schedule of all erosion and sediment control BMPs to be used prior to grading/demolition, during project excavation and construction, and final grading/stabilization (accomplished by the submittal of DESCPC revisions). Text with supporting calculation shall be included for each project specific BMP. Separate BMP implementation schedules shall be provided for each project element.

**Verification:** No later than 90 days prior to start of grading or excavation associated with any element of the ESPRP, the project owner shall submit a copy

of the DESCOP to the City of El Segundo (City) for review and comment. No later than 60 days prior to start of grading or excavation associated with any element of the ESPRP, the project owner shall submit the DESCOP and the City's comments to the CPM for review and approval. The CPM shall consider comments received from the City on the DESCOP before issuing approval.

The DESCOP shall be revised and a revision submitted to the CPM for project excavation/construction and final grading/stabilization prior to the soil disturbing activities associated with these stages of construction. The DESCOP shall be consistent with the grading and drainage plan as required by condition of certification CIVIL-1 and relevant portions of the DESCOP shall clearly show approval by the Chief Building Official. The DESCOP shall be consistent with the Stormwater Pollution Prevention Plan (SWPPP) developed in accordance with the General Construction Permit (Water Quality Order 99-08-DWQ) and the project's Standard Urban Stormwater Mitigation Plan developed in accordance with the LARWQCB NPDES Permit No. CAS0004001 and the City's Ordinance No. 1348 and Chapter 7 of Title 5 of the municipal code.

In the monthly compliance report, the project owner shall provide a narrative describing the effectiveness of the drainage, erosion and sediment control measures; the results of monitoring and maintenance activities, including any BMP inspection reports; and the dates of any dewatering activities.

~~**WATER QUALITY-3:** Prior to power plant operation the owner shall develop a SWPPP as required under the NPDES stormwater discharge permit for operation of the project. The SWPPP shall include the actual drainage and facility design for all on- and off-site ESPR project and linear facilities showing the details of the stormwater and sediment run-off and run-on to the ESPR project facilities during operation. The SWPPP shall address all issues detailed in the Staff Recommended Mitigation section of this FSA. This plan shall document that the existing and proposed project stormwater facilities have adequate capacity as required by the City of El Segundo. The SWPPP shall be consistent with all other permit and design documents, and shall demonstrate compliance with all applicable SUSUMP requirements. The project owner shall include in this plan the installation of secondary containment for the entire site, excluding off-site and linear facilities. The containment design shall have design documentation and specifications for the berms or other walled structures. The project owner shall submit the operational SWPPP to the City of El Segundo for review and comment, and provide the CPM with a copy of a transmittal letter that requests the City provide copies of their comments to both ESPR and to the CPM. The operational SWPPP shall be approved, and the transmittal letter received by the CPM prior to the start of operation.~~

~~**Verification:** Sixty days prior to the start of operation the project owner shall submit copies of the SWPPP and the transmittal letter to the CPM for review and approval. The SWPPP must be approved, and the transmittal letter received by the CPM prior to power plant operation.~~

**WATER QUALITY-9: The project owner shall comply with the requirements of the Individual and/or General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity. The project owner shall develop and implement a Storm Water Pollution Prevention Plan (Industrial SWPPP) for the operation of the ESPRP. The Industrial SWPPP shall be reviewed and approved by the City of El Segundo (City) and be in compliance with the City of El Segundo's (City) Standard Urban Stormwater Mitigation Plan (SUSMP) per the requirements of the Los Angeles Regional Water Quality Control Board (LARWQCB) NPDES Permit No. CAS0004001 and the City's Ordinance No. 1348 and Chapter 7 of Title 5 of the municipal code.**

**Verification: The project owner shall submit to the CPM a copy of the Industrial SWPPP that includes the requirements of the City's SUSMP prior to commercial operation and retain a copy on-site. The project owner shall submit to the CPM copies of all correspondence between the project owner and the City, the LARWQCB, and the SWRCB regarding the City's SUSMP and the Individual and/or General NPDES Permit for the Discharge of Storm Water Associated with Industrial Activity within 10 days of its receipt or submittal. The Industrial SWPPP shall include a copy of the Notice of Intent for the project.**

~~**WATER QUALITY- 4:** Prior to power plant operation the owner shall develop an Erosion and Sedimentation Control Plan (ESCP) for the operational phase of the project. The ESCP shall include the actual drainage and facility design for all on- and off-site ESPR project and linear facilities showing all of the details of stormwater and sediment run-off and run-on to the ESPR project facilities during operation. The ESCP shall address all issues detailed in the Staff Recommended Mitigation section of this FSA. The SWPPP shall be consistent with all other permit and design documents, and shall demonstrate compliance with all applicable SUSUMP requirements. The project owner shall include in this plan the installation of secondary containment for the entire site, excluding off-site and linear facilities. The containment design shall have design documentation and specifications for the berms or other walled structures. The project owner shall submit the operational ESCP to the City of El Segundo for review and comment, and provide the CPM with a copy of a transmittal letter that requests the City provide copies of their comments to both ESPR and to the CPM. The operational ESCP shall be approved, and the transmittal letter received by the CPM prior to the start of operation.~~

~~**Verification:** Sixty days prior to the start of operation the project owner shall submit a copies of the ESCP and the transmittal letter to the CPM for review and approval. The ESCP must be approved, and the transmittal letter received by the CPM prior to power plant operation.~~

~~**WATER QUALITY- 5:** The project owner shall maintain in effect the National Pollutant Discharge Elimination System (NPDES) Permit from the LARWQCB for the life of the ESPR project. The project owner shall comply with all provisions of the NPDES Permit, and shall notify the CPM of any proposed or actual changes made to this permit and provide copies of materials related to permit amendment, modification, and renewal, and of any changes to the project~~

~~design or operational plan necessary to comply with the NPDES permit changes. All NPDES compliance monitoring reports submitted to the LARWQCB, permit violations, and enforcement actions shall be reported and discussed in the annual Compliance Report to the CPM. All NPDES enforcement actions against the project shall be reported to the CPM by letter within 30 days of the project being notified by LARWQCB. The project shall not operate without the NPDES permit in place.~~

~~**Verification:** Within 30 days following receipt of a new, amended, or modified NPDES Permit from the LARWQCB, the project owner shall submit a copy of the new permit to the CPM. The Annual Compliance report shall include a copy of NPDES compliance monitoring reports submitted to the LARWQCB, notices of violations, and discussion of enforcement actions taken against the project owner. The CPM shall be notified by letter of NPDES permit enforcement actions within 30 days of the project being notified by the LARWQCB. The project owner shall notify the CPM in writing of any changes made to this permit, and of any changes to the project design or operational plan necessary to comply with NPDES permit revisions.~~

~~**WATER QUALITY-6:** The project owner shall use reclaimed water for all in-plant process water needs. Specifically excepted from using reclaimed water are fire control supply water, sanitary water, and potable water. The project owner shall submit a Reclaimed Water Use Plan (RWUP) that includes a detailed revised project design, operational plan, and water balance for the use of reclaimed water for review and approval by the CPM prior to the start of any site mobilization activities for the project or any linear element. This RWUP shall be consistent with all applicable LORS, including Title 22 California Code of Regulations. Site mobilization activities shall not begin without a CPM approved RWUP.~~

~~**Verification:** The project owner shall submit the RWUP to the CPM for review and approval sixty days prior to the start of any site mobilization activities associated with the project or any linear elements. The RWUP must be approved by the CPM before the start of site mobilization.~~

~~**WATER QUALITY-10:** The project owner shall ensure that each barge operator develops and implements a Ballast Water Management Plan in accordance with CCR Title 2, Division 3, Chapter 1, Article 4.6, The project owner shall ensure that the ballast water holding tanks are certified clean and uncontaminated by the California State Lands Commission prior to taking on local ballast water.~~

~~**Verification:** No later than 90 days prior to grounding of any barge associated with the delivery of ESPRP equipment over El Segundo Beach, the project owner shall provide the State Lands Commission with a copy of the Ballast Water Management Plan that is in compliance with Title 2, Division 3, Chapter 1, Article 4.6 for review and comment. At least 60 days prior to grounding of any barge associated with the delivery of ESPRP equipment over El Segundo Beach, the project owner shall provide the CPM for review and approval, a copy of the Ballast Water Management Plan that has been reviewed by the State Lands Commission.~~

## REFERENCES

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- CEC (California Energy Commission). 2002. Final Staff Assessment for the El Segundo Power Redevelopment Project. September 2002.
- CEC (California Energy Commission). 2005. Commission Decision for the El Segundo Power Redevelopment Project. Publication CEC-800-2005-001-CMF.
- ESPRP (El Segundo Power Redevelopment Project). 2000. Application for Certification. Submitted to the California Energy Commission on December 18, 2000.
- ESPRP (El Segundo Power Redevelopment Project). 2000. Application for Certification. Submitted to the California Energy Commission on December 18, 2000.
- ESPRP (El Segundo Power Redevelopment Project). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project. Submitted to the California Energy Commission on June 19, 2007.
- ESPRP (El Segundo Power Redevelopment Project). 2007b. ESPRP Responses to CEC Data Requests Set 1. Soil and Water Resources. September 10, 2007



# TRAFFIC AND TRANSPORTATION

Prepared by: James Adams

## INTRODUCTION

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With respect to traffic and transportation, the petition has four substantive changes to the original approved project description: 1) use of Rapid Response Combined Cycle technology; 2) alternative method of delivery for oversize equipment; 3) new offsite laydown and parking area; and 4) modification of the plant entrance road.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

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In general, the applicable federal, state and local LORS have not changed since the project was analyzed in the original proceeding in 2002. However, the city of El Segundo revised the Circulation Element of the General Plan in 2004. Policy C1-1.14 requires a full evaluation of potential traffic impacts associated with new developments prior to project approval, including implementation of mitigation measures prior to, or in conjunction with, project development (City of El Segundo 2004, pg. 4-46).

## ANALYSIS

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Staff has reviewed the petition for potential environmental effects and consistency with applicable LORS. Based on this review, staff determined that the proposed amendment would not be a significant change from the original project in terms of traffic and transportation impacts. Therefore, staff is not recommending any modifications to existing Traffic and Transportation Conditions of Certification.

As noted earlier, there are four changes from the original project. The first change involves the use of Rapid Response – Combined-Cycle technology which would require a lower peak construction workforce (337 versus 422 workers) and a slight increase in peak truck traffic (32 versus 29 trips per day) [El Segundo 2007a, pg. 3-92]. The reduction in the construction workforce is due to the ability to transport larger prefabricated modules to the project site (El Segundo 2007a, pg. 2-2). The second change involves the possible use of beach delivery of oversize equipment as an alternative to delivery by truck through the plant entrance off Vista Del Mar. This would involve constructing a temporary ramp structure which would cross an existing pedestrian and bicycle path along the beach. The ramp would have an access lane to allow the bike path to be used when deliveries are not scheduled (see the **Land Use** section of this analysis for more information). It is estimated that there would be six barge deliveries over a six month period (El Segundo 2007a, pg. 3-93). However, the decision to use the beach delivery of equipment option has not been made to date (El Segundo 2007b).

The third change is a new laydown and parking area located at 777 W. 190<sup>th</sup> Street near the Interstate 110/405 interchange, which is about thirteen miles southeast of the project site. Construction workers would be shuttled to and from the site by bus via 190<sup>th</sup> Street, Hawthorne Boulevard, Imperial Highway, and Vista Del Mar. A new proposed truck route would use El Segundo Boulevard, Main Street, Grand Avenue and Vista Del Mar (El Segundo 2007a, pg. 3-94). The last substantive change is a proposed alteration

of the project entrance road off Vista Del Mar. A curve in the road would be realigned to allow large trucks easier access to and from the site (El Segundo 2007a, pg. 3-95).

Staff has reviewed the project changes and has identified the following impacts on the local traffic and transportation system. The decrease in peak construction workers related to the use of the new equipment technology would have a beneficial impact since there will be fewer shuttle bus trips on the local roads. The slight increase in peak construction truck traffic (three additional truck trips per day) is not a significant change when compared with the original project. The possible use of beach delivery of oversize and other equipment would replace 64 truck deliveries during project construction (16 per month for four months) [El Segundo 2007c]. The new laydown and parking area off 190<sup>th</sup> Street is not a significant change since the original project involved parking and laydown areas away from the site. The arrival and departure of construction workers would, pursuant to Condition of Certification **TRANS-5**, still occur during off-peak periods. The proposed alteration of the project entrance would improve truck ingress/egress to the site for both construction and operation. This is an additional benefit for the project. Staff notes that traffic flow on most local streets (i.e. Vista Del Mar) is similar to conditions noted in the original analysis performed in 2002, and is within the city of El Segundo's acceptable levels of service (C or better) [City of El Segundo 2004, pg. 4-2].

Staff understands that city of El Segundo planning staff is supportive of the project in terms of traffic issues because the expectation is that the project amendment is in compliance with the Circulation Element Goals, Policies, and Objectives (i.e. Policy C1-1.14). Final determination by the city will be made after staff's analysis is released and the subsequent hearing process takes place (City of El Segundo 2008).

In addition to the city of El Segundo, staff has discussed the petition with the city of Manhattan Beach, the Los Angeles County Department of Beaches and Harbors, and the Los Angeles Department of Public Works staff. The city of Manhattan Beach staff sent a letter to Energy Commission staff regarding the El Segundo petition that commented on two visual resources conditions from the Energy Commission 2005 decision (see **Visual Resources**). They did not have any comments on traffic and transportation issues.

## **CONCLUSIONS**

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Staff concludes that the four changes in the project related to traffic and transportation would result in either less than significant adverse, or beneficial, impacts when compared with the original project. The project would comply with all applicable LORS.

## REFERENCES

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City of El Segundo 2004. El Segundo General Plan – 4. Circulation Element, revised in 2004.

City of El Segundo 2007a. Personal communication between Daniel Garcia, Engineering Department, and James Adams, California Energy Commission, on November 14, 2007.

City of El Segundo 2007b. E-mail from Daniel Garcia, Associate Planner, to James Adams on November 16, 2007.

City of El Segundo 2008. E-mail from Kimberly Christensen, Planning Manager, to James Adams on January 23, 2008.

City of Manhattan Beach 2007a. Letter from Cary Chicots, Planning and Building Safety Department, to Steve Munro, California Energy Commission, dated September 27, 2007.

City of Manhattan Beach 2007b. Personal communication between Gary Chicots, and James Adams, on November 16, 2007.

El Segundo 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project, June 2007.

El Segundo 2007b. Statement at a pre-construction meeting on September 25, 2007.

El Segundo 2007c. E-mail from George Piantka, Project Manager for El Segundo Power Redevelopment Project, to James Adams on December 21, 2007.

Los Angeles County Department of Public Works 2007. E-mail from Abu Yusuf, Bikeway Coordinator, to James Adams, on November 19, 2007.



# TRANSMISSION LINE SAFETY AND NUISANCE

Prepared by: Obed Odoemelam

## INTRODUCTION

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The amended petition would not significantly change the project description relating to the ESPRP transmission system interconnection and its effect on Transmission Line Safety and Nuisance (TLSN).

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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No change from original analysis.

## ANALYSIS

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The proposed modifications do not change the original TLSN analysis and will:

- Not add any new offsite transmission lines or increase the capacity of those lines,
- Not adversely impact aviation safety.
- Not change any conclusions regarding radio and television interference
- Not significantly change any aspects of the project relating to audible noise, fire hazard, and electrical shock hazard.

## CONCLUSIONS AND RECOMMENDATIONS

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There is no impact on the original TLSN project analysis or conditions of certification. The findings and conclusions incorporated in the original Commission Decision remain valid.

## PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

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No new or modified conditions of certification apply to TLSN.

## REFERENCES

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ESPR (El Segundo Power Redevelopment). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project (00-AFC-14C). Received on June 19, 2007.



# VISUAL RESOURCES

Prepared by: David Flores

## INTRODUCTION

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Staff reviewed the amendment proposal for the El Segundo Power Redevelopment Project (ESPRP) which includes: going to rapid response-combined cycle technology with horizontal instead of vertical Heat Recovery Steam Generators (HRSGs); a change to the method of delivery for oversize equipment; the addition of an offsite laydown and parking area for equipment staging and construction employee parking; and the modification of the plant entrance road.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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There are no changes to the Visual Resources LORS as specified in the Commission Decision for the ESPRP. With the modifications to the project description as discussed in the introduction section of this analysis, the project will remain in compliance with Visual Resources LORS.

## ANALYSIS

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The Petition to Amend submitted by El Segundo LLC includes the following components:

- Replacement of the vertical HRSGs with lower profile horizontal Benson HRSGs;
- A centralized chiller plant housed in a metal enclosure mounted on a concrete slab foundation. The structure will measure 75 feet by 47 feet and 76 feet high at the highest point;
- Oversize equipment, including the HRSGs, two GTGs, two steam turbines, air-cooled condensers and other equipment may be delivered to the facility by barges via a ramp system across the beach; and
- The addition of an offsite laydown and parking area for equipment staging and construction employee parking, and modification of the plant entrance road.

The overall layout of the new rapid response-combined cycle design will replace the previously permitted vertical HRSGs with horizontal HRSGs. The new technology design will shift the HRSGs slightly to the west from their previous location. In addition, three new storage tanks will be installed. One of the tanks will contain water for fire suppression and plant sanitary uses. The other two tanks will be used for raw water and demineralized water storage. The tanks would be located within the central portion of the project site, and just south of the HRSGs.

Staff has reviewed the proposed amendment and determined that the key changes that would affect the visual appearance of the project are the new chiller unit building, the storage tanks and the horizontal HRSGs.

For this review, staff chose Key Observation Points (KOPs) 1, 2, 3, 7, and 8 for analysis from the original Application for Certification (AFC). The KOP's selected represent the existing visual setting and visual change that would occur with the installation of the chiller system, the redesigned HRSGs stacks and the overall project redesign. Staff did not consider KOP 4, 5 and 6 in the analysis for the following reasons:

- KOP 4 was taken from the Manhattan Beach State Park Pier, which is approximately 2 ½ miles south of the ESPRP project. Based on staff's review, the redesign of the ESPRP project will hardly be visible from this distance, therefore it was not considered as part of the analysis;
- KOP 5 is similar to KOP 8 in its representation of motorist views along the Vista Del Mar roadway; and
- KOP 6 is similar to KOP 2 in its representation of views along Manhattan Beach.

See **VISUAL RESOURCES Figure 1**, which identifies the KOP locations.

### **KOP 1: DOCKWEILER STATE BEACH**

This KOP represents views to the south from the beach, bike path, and parking lots, which are located approximately 0.25 to 0.5 mile north of the project site. The visual quality at this KOP as seen in **VISUAL RESOURCES Figure 2** is generally high due to the open panoramic views of the Bay. Slopes east of the beach in the foreground of the Chevron marine loading facility are heavily landscaped.

The addition of the proposed chiller building, tanks and exhaust stacks would be consistent with the forms and lines established by the existing power plant structures and nearby oil storage tanks. The chiller building and tank would appear spatially prominent but subordinate to the existing industrial setting. The project owner proposes to paint the chiller system structures to match the existing plant structures.

The chiller building, storage tanks and exhaust stacks would be added to a view that includes a variety of large-scale industrial structures (i.e., existing power plant with exhaust stacks, cooling tower and transmission lines supported by lattice towers, and several large oil storage tanks on the east side of Vista Del Mar). The addition of the chiller building and three storage tanks (raw water, fire/service water and demineralized water storage tanks) to the ESPRP would be noticeable, but due to the similar nature of the structural forms of the chiller system to that of the existing El Segundo Power Plant and other industrial features in the view, the overall visual change would not be substantial.

As indicated earlier, the visual quality of the view from KOP 1 is generally high. From the viewpoint of viewers along the bike path, with the backdrop of Units 1 and 2 and the landscaped area in the immediate foreground, visual quality is reduced to a moderate level.

As depicted in **VISUAL RESOURCES Figure 2**, the high degree of existing contrast between Units 1 and 2 and their setting would continue under the proposed amendment due to a comparable level of vertical line and form contrast between the proposed new units and the strong horizontal lines and open sky of the existing setting. The resulting

change in levels of contrast between the existing and proposed conditions would, however, be low.

Viewer concern would still be considered high due to the recreational activities of visitors and their expectations of high scenic quality. Visibility and exposure to the project site are high. Views to the plant are unimpeded, and the number of viewers very high, therefore overall visual sensitivity is still considered high.

Staff concludes the introduction of the ESPRP project structures would not substantially degrade the existing viewshed at KOP 1. The sensitivity to impact of this KOP is high. However, since the level of overall visual change between the existing and proposed conditions would be low, anticipated impacts would be less than significant.

## **KOP 2: MANHATTAN BEACH**

This KOP represents views to the north from Manhattan Beach State Park, the bike path, parking lots, and the adjacent residences, which are located approximately 1/2-mile from the project site.

Visual quality from the area of this KOP, as seen in **VISUAL RESOURCES Figure 3**, is high due to panoramic Bay views in three directions. The ESPRP Units 1 and 2 power block is hidden behind Units 3 and 4, revealing only the visually subordinate exhaust stacks, which are closely aligned with the existing stacks.

The El Segundo Generating Station (ESGS) facilities as a whole, are sufficiently distant to appear visually subordinate to the tank farm located in the foreground. These industrial features, though tending to lower visual quality, occupy a relatively small portion of the view, and draw less attention than views of the Bay and distant mountains, which exert strong visual attraction westward.

Viewer concern would remain high due to recreational viewer activity. Visibility of the proposed ESPRP site from this KOP is low due to the intervening Units 3 and 4, which largely screen the project. Overall exposure is moderate, despite the very high numbers of viewers.

Staff concludes the introduction of the ESPRP project structures would not substantially degrade the existing viewshed at KOP 2. When considering the moderate overall visual sensitivity of the viewing group at KOP 2, and the moderate overall visual change, the introduction of the proposed project's publicly visible structures would generate a less than significant visual effect at this KOP.

## **KOP 3: VIEWS FROM MANHATTAN BEACH**

This KOP is representative of views of the ESPRP by northbound motorists on Vista del Mar at distances of about one mile or less. It is also representative of views from some residences lining Vista del Mar. Within the city of Manhattan Beach, views of the power plant are visually subordinate to co-dominant, framed by low-rise residential development on each side.

From KOP 3, as seen in **VISUAL RESOURCES Figure 4**, the surrounding area consists generally of medium density residential structures with little or no landscaping

and limited scenic views, but also including some views of the Bay and Santa Monica Mountains in the vicinity of 45<sup>th</sup> Street. Visual quality from this viewing area is generally moderate.

Viewer concern is considered moderate to high, due to the combination of recreationists, tourists, and residents with higher viewer concern, and commuters and others with lower levels of viewer concern.

Visibility and exposure to the plant is moderate to high. Near-distance views to the existing plant, strongly sky-lined against a background of Bay and mountains at the horizon, are generally unimpeded. Overall visual sensitivity is considered moderate to high.

Staff concludes the introduction of the ESPRP project structures would not substantially degrade the existing viewshed at KOP 3. The sensitivity to impact of this KOP is moderate to high. However, since the level of overall visual change between the existing and proposed conditions would be low, anticipated impacts would be less than significant.

## **KOP 7: DOCKWEILER STATE BEACH**

This KOP represents views directly east towards the project site and as seen from the bike path and beach directly adjacent to the power plant. This viewpoint is representative of beach visitors in the immediate foreground of the ESGS, and particularly, the many pedestrians, bicyclists, and joggers who use this portion of beach in transit from Dockweiler Beach to the north and Manhattan Beach to the south.

From KOP 7 as seen in **VISUAL RESOURCES Figure 5**, the contrast of the ESGS with the surrounding, highly scenic landscape is strong. The two power blocks introduce strongly contrasting blocky, vertical forms against an otherwise horizontal landscape of coastal bluffs to the east, and level beaches and Bay in other directions. Texture contrast is also strong, characterized by the introduction of the steam turbine fin fan coolers (22 feet high) and air inlet filters which stand approximately 76 feet in height, against a backdrop of vegetation, sky, beach and sea. The strong degree of contrast from the main power plant structures would continue under the proposed ESPRP project or decrease slightly, depending upon the exact viewpoint, due to the lower height of the HRSGs compared to the Units 1 and 2 power block, and the spatial separation of Units 5 and 7. The overall change in contrast to the ESGS as a result of the ESPRP project would be negligible.

As reflected in **VISUAL RESOURCES Figure 5**, views toward the ESGS are completely dominated by the existing and proposed power plants, resulting in a visually chaotic, highly industrial character of low visual quality.

Considering the overall high visual sensitivity of bike path and beach viewers, staff concludes the introduction of the ESGS project structures would not substantially degrade the existing viewshed at KOP 7 due to the low overall visual change between the existing and proposed conditions. Therefore, anticipated visual impacts from KOP 7 would be less than significant.

## **KOP 8: VISTA DEL MAR**

This KOP represents southbound views from motorists on Vista del Mar heading towards the project site. As depicted in **VISUAL RESOURCES Figure 6**, contrast in form, line, color, and texture would be similar to those of the existing facility. With the horizontal lines formed by the marine horizon, mountain ridges enclosing the Bay to the north and south, and beaches which can be seen extending to background distances from elevated viewpoints such Vista Del Mar, the anticipated levels of contrast of the ESPRP project would remain very high. The level of change between the existing and proposed projects would therefore be low.

From KOP 8, the proposed Units 5 and 7, in comparison to the existing ESGS, would result in an overall decrease in visual scale from very high as discussed in the original visual analysis to a moderate level with the project's reconfiguration. The proposed plant facilities would decrease the project surface area exposed to view, due partly to the smaller scale of the HRSG structures and the reduced spatial separation of Units 5 and 7. The HRSGs even though slightly reduced in overall height and diameter, would occupy the views of motorists for a slightly longer duration of time due to their horizontal configuration and closer proximity to the roadway in comparison to the existing Units 1 and 2. They would therefore appear more dominant from a greater distance than the existing power plant. Primarily motorists would experience this increased visual scale for relatively brief durations of time (approximately 2 to 3 seconds at 45 miles per hour). The change in visual scale would be moderate.

The overall visual change to KOP 8 viewshed is considered moderate as a result of high visual contrast, moderate dominance, and low view disruption.

Staff concludes the introduction of the ESPRP project structures would not substantially degrade the existing viewshed at KOP 8. When considering the moderate overall visual sensitivity of the various viewing groups at KOP 8, and overall visual change of moderate, the introduction of the proposed project's publicly visible structures would generate a less than significant visual effect at this KOP.

## **WATER VAPOR PLUMES**

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Staff reviewed the visual plume potential for the HRSGs and determined that they will be lower than the original proposal and visual plumes occurring from the HRSG exhausts will be very rare, if they will occur at all considering the range of normal ambient conditions experienced at the site. The exhaust temperatures for the new gas turbines (around 360 degrees F) are higher than that previously proposed, and are about 160 to 180 degrees Fahrenheit higher than typical 7F combined cycle projects.

The exhaust moisture content given in the data response are approximately in the same range, or a bit lower, than that of the previous proposal. In summary, the original design proposal had a very low HRSG visual plume potential, which will be decreased with this new proposal. The use of air-cooled condensers will not cause visual plumes (W. Walters, 2007).

## **OVERSIZE EQUIPMENT DELIVERY**

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Oversize plant equipment such as the two HRSG's, two GTG's, two steam turbines, two air cooled condensers, and other equipment may be delivered to the El Segundo site from barges via a ramp system across Dockweiler State Beach.

Mobilization, construction of the beach ramp and up to six deliveries will take place over approximately six months, and will be removed immediately following the last delivery and the beach will be restored to pre-construction conditions.

The ramp structure will be constructed from a barge secured to the shoreline, across the beach from the project site. The barge structure is approximately 250 feet in length by 75 feet wide. The offloading ramp is approximately 20 feet above the beach at the water's edge at low tide, and approximately 8 feet at high tide mark, making the surface about 2 feet higher than the existing bike path. See the **LAND USE** section of this analysis for a discussion on access for the recreation viewers during the use of the beach ramp deliveries.

Surrounding uses will be exposed to project construction activities across the western project area, including views from recreational beach users. Visual quality, visibility and viewer concern are high due to the panoramic views of the Bay and the recreational activities of the visitors and their expectations of high scenic quality. The proposed ramp structure would result in a horizontal feature that would visually dominate portions of the beach area as seen from the recreational viewer; therefore the ramp structure would provide a strong visual dominance.

Even though recreational viewers would be exposed for six months to an unobstructed view of construction activities taking place on the beach, the exposure would be temporary. Construction activities would therefore not result in a long-term visual degradation. Moreover, restoration of the beach to pre-construction condition would occur immediately after the last delivery of equipment. Overall, the project's construction activities given their relatively short duration, and the complete restoration of the beach afterwards would generate a less than significant visual effect.

Construction of the beach ramp may occur during the evening hours with surrounding uses exposed to light and glare. The applicant's lighting design will ensure that lighting fixtures are shielded and directed downward and minimum brightness necessary for operational safety. Therefore, temporary lighting and glare impacts associated with construction activities would be less than significant.

## **OFF-SITE LAYDOWN ADDITION**

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Addition of a new offsite laydown area is proposed at 777 W. 190<sup>th</sup> Street. The laydown area will be used to store equipment and construction materials. The stored materials will not be visible due to screening with opaque perimeter fencing. In addition, the property is currently used for light industrial and storage/parking uses; therefore, project features would appear similar to the existing conditions. Use of this laydown area would not result in long-term visual degradation. Overall, the project's laydown site activities are considered to generate a less than significant visual effect.

## CONCLUSIONS AND RECOMMENDATIONS

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As discussed in this analysis, staff has determined that the installation of the air chiller system, storage tanks, and the redesigned HRSGs and exhaust stacks as seen from KOP's identified in this analysis would not result in a significant adverse visual impact. The existing and proposed trees and shrub plantings around the project site will reduce the chiller system structure's direct visual impact and contribution to cumulative visual impact to a less than significant level.

The proposed ESPRP is expected to result in less than significant HRSG stack water vapor plumes for both frequency and size.

With the installation of the air chiller system, and redesigned HRSGs and exhaust stacks, the requirement for architectural screening would no longer be required under **VIS-1** and **VIS-4** in the conditions of certification approved in the February 2, 2005 Commission Decision. Conditions of Certification **VIS-2**, **VIS-3**, and **VIS-5** through **VIS-9** will remain the same as approved in the 2005 Commission Decision, and **VIS-1** and **VIS-4** are proposed to be amended as shown below.

Although the proposed large equipment delivery system across the project owner's beach access will be a dominant feature in the view for beach users, due to its temporary nature, the visual impact will be less than significant.

## PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

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Staff recommends the amended and proposed modifications to Visual Resources Condition of Certification **VIS-1** and deletion of **VIS-4** as shown below to the licensed project's Visual Resources Conditions of Certification. (Note: deleted text is shown with ~~strikeout~~ and new text with **bold underline**).

**VIS-1 Facility Visual Enhancement Plan.** Before starting construction, the project owner shall complete a comprehensive visual enhancement plan that includes ~~architectural screening~~, landscaping, painting, lighting, and other measures that result in an overall enhancement of views of the facility from areas accessible to the public. The plan shall be made available for review and comment by the Executive Director of the Coastal Commission and for review and approval by the Energy Commission. The plan shall include:

~~Architectural screening: All industrial equipment below elevation 125' (i.e., below the elevation of the outlet dampers on the facility's exhaust stacks) and visible from the beach, coastal waters, Vista Del Mar Avenue, and other areas accessible by the public shall be screened using panels, wire mesh, louvers or other forms of architectural screening. The screening shall be opaque or semi-transparent and have a non-glare finish, and the color shall be harmonious with the facility's setting on a public beach. If the project owner proposes, and the Energy Commission concurs, that it is infeasible to shield portions of the facility using architectural screening, the project owner may instead propose other measures such as landscaping, berms, or fencing to provide the necessary screening. Any such proposal must be based on the definition of feasibility in Coastal Act section 30108 and is subject to review and comment by the~~

~~Executive Director of the Coastal Commission, and review and approval by the Energy Commission.~~

Landscaping: Where used to screen the facility, vegetation shall be selected and maintained to provide year-round screening (e.g., evergreen species). Preference shall be given to native species and/or species requiring little or no irrigation (e.g., seacliff buckwheat), or at a minimum, non-invasive species. **To help native plant species succeed where efforts are made to establish them, non-native and aggressive ice plant should be removed to prevent it from out competing native dune vegetation due to its dense character and vigorous growth.** Soils shall be tested, amended as needed or replaced to ensure plant survival.

Other structural screening: Where berms, fencing, or other structural elements are selected as the primary method to screen the facility, the structures shall harmonize with the facility's setting on a public beach. If berms are used, they shall be vegetated and maintained with evergreen, native, and/or species requiring little or no irrigation. If fencing is used, it shall include a non-glare finish and be painted in a neutral color.

The Facility Visual Enhancement Plan shall include photographs showing existing conditions and simulated post-construction conditions from Key Observation Points (KOPs) around the facility (these may be the same KOPs that were used to develop the Staff Assessment). The plan shall also include anticipated costs for completing and maintaining the various visual enhancement measures and a detailed schedule for completing construction of these components.

**Seawall Design Plan:** Before starting construction, the project owner shall complete a plan of the seawall design for review and comment by the Executive Director of the Coastal Commission, the City of Manhattan Beach, and the City of El Segundo, and review and approval by the CPM. This plan shall include:

Final design: The seawall along the west side of the facility shall be textured and finished in a neutral color harmonious with its location adjacent to a public bike path and beach. If painted, graffiti-resistant paint shall be used.

Landscaping: Where used to enhance the seawall design, vegetation chosen shall be selected or maintained to provide year-round screening (e.g., evergreen species). Preference shall be given to native species and/or species requiring little or no irrigation.

This seawall design plan shall include photographs showing the existing conditions and simulated post-construction conditions from observation points along the bike path adjacent to the seawall, from the beach, and from other points where the seawall is highly visible. The plan shall also include anticipated costs for completing and maintaining the seawall and a schedule for construction.

**Verification:** At least 120 days prior to ground disturbance, the project owner shall submit the required Facility Visual Enhancement Plan and Seawall Design Plan to the Executive Director of the Coastal Commission and the Cities of Manhattan Beach and

El Segundo for comment, and to the CPM for review and approval. If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, the project owner shall prepare and submit to the Coastal Commission staff, the Cities, and CPM a revised submittal.

~~**VIS-4 Architectural screening of power plant.** The project owner shall install architectural screening to cover the outer framework of the HRSG structures of the new proposed Units 5 through 7 and reduce visibility of mechanical equipment below 125 feet and above 10 feet elevation of the superstructures, except where infeasible due to excessive loading on support structures or where operation or safety requirements do not allow covering of a surface area. Such screening shall conform to the requirements of the Energy Commission's decision.~~

~~To the extent determined to be feasible by the Energy Commission in its decision, the project owner shall install similar architectural screening on existing Units 3 and 4 to conceal exposed piping and mechanical equipment.~~

~~Prior to the start of construction, the project owner shall submit an architectural screening plan to the California Coastal Commission (as a part of the facility Visual Enhancement Plan described in Condition **VIS-1**), and the City of El Segundo for review and comment, and to the CPM for review and approval. The screening plan shall include:~~

- ~~1) Detailed plans and specifications sufficient to enable the CPM and Chief Building Official (CBO) to determine adequacy and performance of the proposed screening. Determination of adequacy includes confirmation of consistency with the terms of the Energy Commission's decision. Determination of adequacy also requires sufficient evidence that the screening can be installed to be stable, uniform, able to withstand anticipated wind loads, and attractively mounted, without sagging, tearing, unsightly discoloration, or adverse visual effects from the mounting system itself; and with sufficient durability to allow good performance between maintenance cycles. Required performance data shall include design information of sufficient detail and specificity to establish confidence in the design's ability to perform as desired, or to clearly establish limitations on the feasibility of particular measures.~~
- ~~2) The applicant shall provide sufficient information to fully document and explain any areas where screening is infeasible or not possible. The information shall further include supporting engineering drawings analysis and calculations or specific safety or operational constraints or regulations.~~
- ~~3) 11" x 17" color simulations at life-size scale of the treatment proposed for use on project structures.~~
- ~~4) A detailed schedule for completion of the treatment.~~
- ~~5) A procedure to ensure proper treatment maintenance for the life of the project.~~

**Verification:** ~~Not later than 120 days prior to start of construction, the project owner shall submit the final architectural screening plan and details to the Coastal~~

~~Commission, the Cities of El Segundo and Manhattan Beach for review and comment, and the CPM for review and approval.~~

~~If the CPM notifies the project owner of any needed revisions before the CPM will approve the plan, the project owner shall submit a revised plan to the CPM.~~

~~Not less than thirty 30 days prior to the start of commercial operation, the project owner shall notify the CPM that the architectural screening is ready for inspection.~~

~~The project owner shall provide a status report regarding screening maintenance in the Annual Compliance Report.~~

## **REFERENCES**

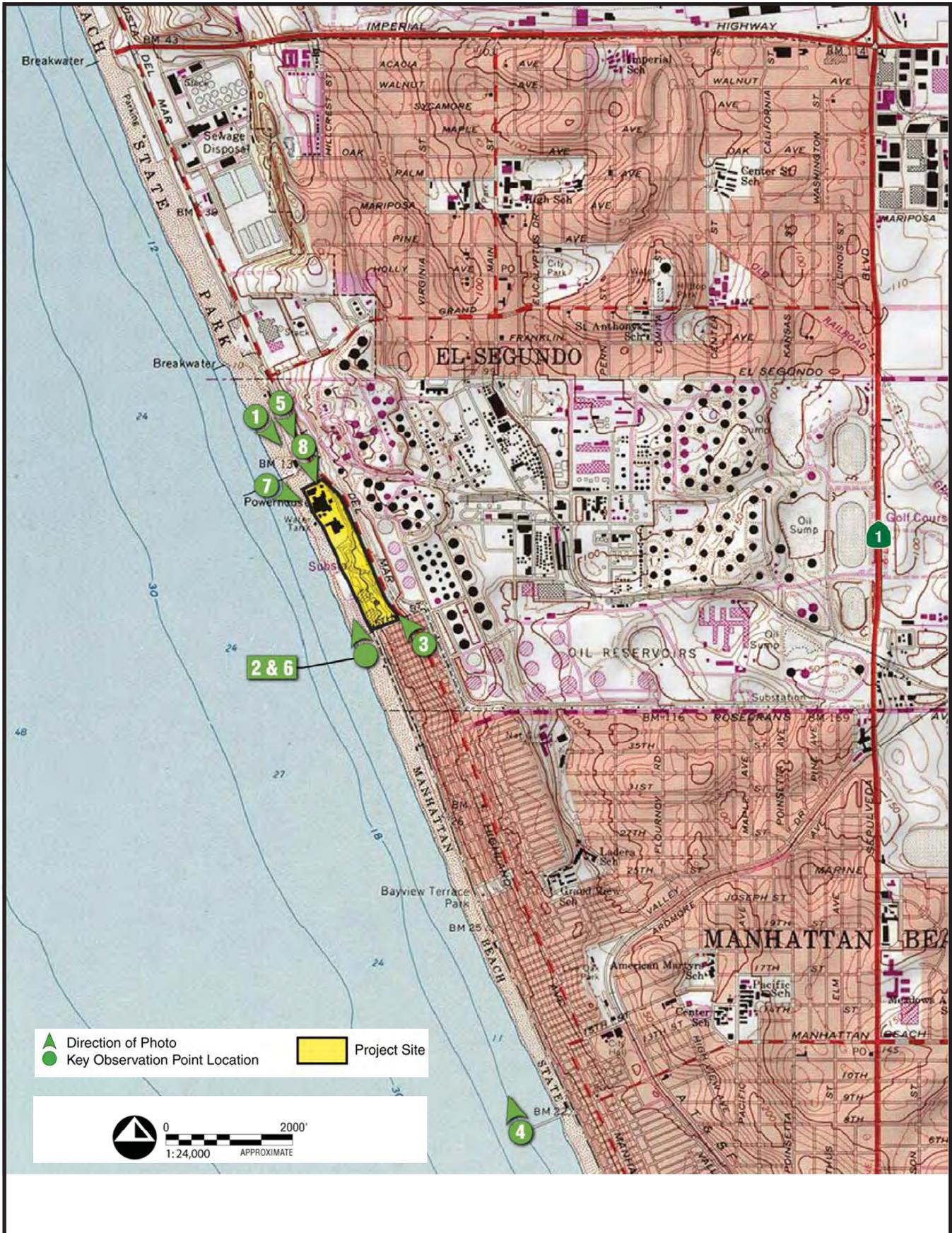
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El Segundo II-El Segundo II, LCC, Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project, June 2007.

El Segundo Amendment Plume Finding, E-mail sent by William Walters on March 25, 2008.

El Segundo Power Redevelopment Project, Commission Decision, February 2, 2005.

**VISUAL RESOURCES - FIGURE 1**  
 El Segundo Power Redevelopment Project - KOP Location Map



CALIFORNIA ENERGY COMMISSION - ENERGY FACILITIES SITING DIVISION, JUNE 2010  
 SOURCE: El Segundo Power Redevelopment Project Amendment Petition - Figure 3.12-1

**VISUAL RESOURCES - FIGURE 2**  
El Segundo Power Redevelopment Project - Final View KOP 1



ESPR - Approved Application for Certification



ESPR - Petition to Amend

**VISUAL RESOURCES - FIGURE 3**  
El Segundo Power Redevelopment Project - Final View KOP 2

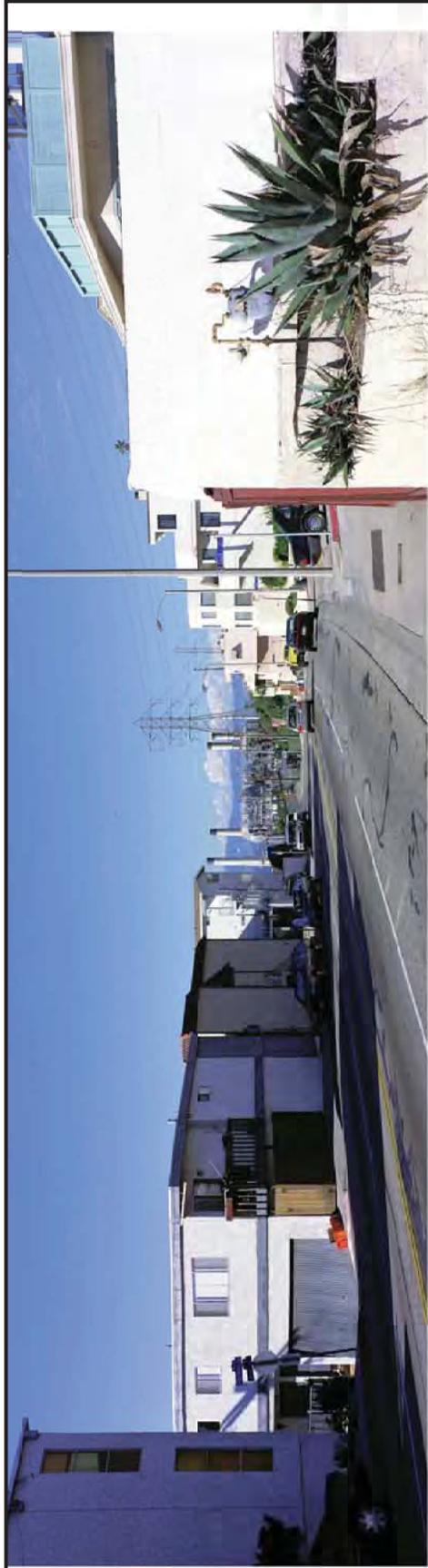


ESPR - Approved Application for Certification



ESPR - Petition to Amend

**VISUAL RESOURCES - FIGURE 4**  
El Segundo Power Redevelopment Project - Final View KOP 3



ESPR - Approved Application for Certification



ESPR - Petition to Amend

**VISUAL RESOURCES - FIGURE 5**  
El Segundo Power Redevelopment Project - Final View KOP 7



ESPR - Approved Application for Certification



ESPR - Petition to Amend

**VISUAL RESOURCES - FIGURE 6**  
El Segundo Power Redevelopment Project - Final View KOP 8



ESPR - Approved Application for Certification



ESPR - Petition to Amend

# WASTE MANAGEMENT

Prepared by: Ellie Townsend-Hough

## INTRODUCTION

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This staff analysis is an assessment of issues associated with the petition to as related to managing waste generated from the construction and operation of the project. The proposed modifications would not produce new or additional solid wastes evaluated by the previously permitted project. Therefore, staff believes that the proposed amendment would have no significant adverse impact on Waste Management.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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There are no changes to LORS as a result of the El Segundo modification. Please refer to the 2001 Final Decision for the list of Waste Management LORS.

## ANALYSIS

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Staff has reviewed the petition for potential environmental effects and consistency with applicable LORS. Based on this review, staff determined that the proposed amendment is consistent with Waste Management LORS and no new or modified conditions of certification would be needed. The amended project would generate wastewater, non-hazardous waste such as trash and debris, and hazardous waste consisting of fuels, oils, greases and asphalt slurry and concrete. Wastewater would be contained in tanks and discharged to municipal sewage treatment plants or transported to hazardous waste treatment or disposal facilities. Wastewater is analyzed in the **SOIL & WATER RESOURCES** Section.

Hazardous and non-hazardous waste from construction and demolition would be disposed of at either Class I, II, or III landfills (depending on the waste type). The ESPRP Application of certification identifies three non-hazardous waste disposal facilities in the area. The landfills are located in Corona, California (permitted disposal 4,000 tons per day until 2050), Simi Valley (4,000 tons per day from 2020 to 2050), and Orange county (8,500 tons per day through 2024). There are three Class I landfills permitted to accept hazardous waste. There is an excess of 22 million cubic yards of remaining hazardous waste remaining in these landfills.

The project, as amended, would generate about the same volume of wastewater, non-hazardous waste, and hazardous waste as the original project. Non new or additional wastes will be generated by the amended project. Based on the analysis of the original project and the review of the amended project, we do not foresee any significant waste-related impacts.

## CONCLUSIONS AND RECOMMENDATIONS

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Staff determined that the proposed amendment is consistent with Waste Management LORS, and no new or modified conditions of certification would be necessary with the existing conditions of certification, staff concludes that the proposed amendment would not cause significant direct or cumulative impact on waste management.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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Staff has proposed no new modifications to the Waste Management Conditions of Certification.

## **REFERENCES**

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ESPRP (El Segundo Power Redevelopment Project). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project. Submitted to the California Energy Commission on June 19, 2007.

# **WORKER SAFETY AND FIRE PROTECTION**

Prepared by: Alvin Greenberg, Ph.D. & Rick Tyler

## **INTRODUCTION**

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The proposed amendment (Shaw 2007) has potentially significant impacts on worker safety and fire protection. Three new conditions are proposed to mitigate impacts not previously identified in the original project but which have come to light as a result of experience at other power plants.

## **LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE**

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There are no new LORS and no LORS that have been modified since project certification.

## **ANALYSIS**

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Staff has reviewed the petition for potential environmental effects and consistency with applicable LORS. Based on this review, staff determined that the project, including the proposed amendment, would be able to comply with all applicable LORS if the newly proposed conditions are implemented. Staff believes that more advanced worker safety methods that have evolved since the date of original licensing of this project warrant implementation of additional necessary mitigation. These involve ensuring that a safe workplace exists during the construction phase and providing a rapid response in the case of a heart attack on the site.

The hazards associated with the construction industry are well documented. These hazards increase in complexity in multi-employer worksites 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. 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 major hazards, and to prevent serious accidents through implementation of enhanced 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 Cal-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-4**, which would require the applicant/project owner to designate and provide for a power plant site Construction Safety Supervisor.

Furthermore, 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:

1. Lack of posted confined space warning placards/signs;
2. Confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
3. 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;
4. Dangerous placement of hydraulic elevated platforms under each other;
5. Inappropriate placement of fire extinguishers near hotwork;
6. Dangerous placement of numerous power cords in standing water on the site thus increasing the risk of electrocution;
7. Construction of an unsafe aqueous ammonia unloading pad;
8. Inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility but too close to the perimeter fence; and
9. 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-5**. A Safety Monitor, hired by the project owner yet reporting to the CBO 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 them in questions about the team’s 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.

Finally, a state-wide survey was conducted by staff 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 fire-fighting staff. However, staff has determined that the potential for both work-related and non-work 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 non-work related incidences, including 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 defibrillator; 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 many private and public locations (e.g., airports, factories, government buildings) maintaining on-site cardiac defibrillation devices. 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. Therefore, condition **WORKER SAFETY-6** is proposed which would require that a portable automatic cardiac defibrillator 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.

## **CONCLUSIONS AND RECOMMENDATIONS**

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Staff has reviewed the petition for new potential issues related to worker safety and fire protection. Based on this review, staff has determined that the approved Conditions of Certification together with three new proposed conditions would ensure a safe workplace during construction and operations.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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**WORKER SAFETY-4 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:**

- **Have over-all authority for coordination and implementation of all occupational safety and health practices, policies, and programs;**
- **Assure that the safety program for the project complies with Cal/OSHA & federal regulations related to power plant projects;**
- **Assure that all construction and commissioning workers and supervisors receive adequate safety training;**
- **Complete accident and safety-related incident investigations, emergency response reports for injuries, and inform the CPM of safety-related incidents; and**

- Assure that all the plans identified in Worker Safety-1 and-2 are implemented.

**Verification:** At least thirty (30) days prior to the start of project 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-5** 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 Worker Safety-4, implements all appropriate Cal/OSHA and 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-6** The project owner shall ensure that a portable automatic cardiac defibrillator (also know as an automatic external defibrillator or 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 its use 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 its use. The training program shall be submitted to the CPM for review and approval.

**Verification: At least thirty (30) days prior to the start of construction mobilization, the project owner shall submit to the CPM proof that a portable automatic cardiac defibrillator exists on site and a copy of the training and maintenance program for review and approval.**

## **REFERENCES**

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Shaw Environmental, Inc., June 18, 2007, Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project.



# **ENGINEERING ANALYSIS**



# FACILITY DESIGN

Prepared by: Shahab Khoshmashrab

## INTRODUCTION

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The amended project would employ air-cooled heat exchangers instead of the existing proposed once-through ocean water cooling system. It would also utilize a dual-train one-on-one (one combustion turbine generator, or CTG, one heat recovery steam generator, or HRSG, and one steam turbine generator, or STG) combined cycle configuration instead of the previously licensed two-on-one (two STGs, two HRSGs, and one STG) train combined cycle configuration.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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Facility Design Conditions of Certification in the original Commission Decision refer to the 2001 California Building Standards Codes (CBSC) as the applicable edition of this LORS. The applicable edition is the one in effect at the time initial design plans are submitted to the Commission's delegate Chief Building Official (CBO) for review and approval. The 2007 edition became effective on January 1, 2008. Accordingly, staff proposes the following modification to Condition of Certification **GEN-1**.

No other changes to the Facility Design LORS as described in the Commission Decision are applicable.

## ANALYSIS

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The changes proposed that could affect Facility Design are:

- Changing from once-through ocean water cooling of the steam condenser to a pair of fin-fan air coolers, or a pair of air-cooled backpressure heat exchangers, to cool spent steam from the two backpressure steam turbines; and
- Changing from a two-on-one combined cycle configuration to a dual-train one-on-one combined cycle configuration.

Condition of Certification **GEN-2, Table-1**, lists the major structures and equipment for which pertinent design documents must be submitted to the CBO for review and approval. As the result of the above proposed modifications, this table has been revised to delete the old items and add the new ones.

As described above, to acknowledge the effective date of the 2007 CBSC, staff proposes the following modification to Condition of Certification **GEN-1**.

## CONCLUSIONS AND RECOMMENDATIONS

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Staff has reviewed the petition for consistency with applicable engineering LORS, and in light of the following proposed modifications, staff has determined that the amended project would comply with those LORS.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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**GEN-1:** The project owner shall design, construct and inspect the project in accordance with the ~~2004~~ **2007** edition of the California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations), which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable LORS in effect at the time initial design plans are submitted to the CBO for review and approval. (The CBSC in effect is that edition that has been adopted by the California Building Standards Commission and published at least 180 days previously.) All transmission facilities (lines, switchyards, switching stations, and substations) are covered by the Transmission System Engineering Conditions of Certification.

In the event that the initial engineering designs are submitted to the CBO when a successor to the 2001 CBSC is in effect, the 2001 CBSC provisions identified herein shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction, or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

**Verification:** Within 30 days after receipt of the Certificate of Occupancy, the project owner shall submit to the California Energy Commission Compliance Project Manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation and inspection requirements of the applicable LORS and the Energy Commission's Decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the Certificate of Occupancy within 30 days of receipt from the CBO [~~2004~~ **2007** CBC, Section 109 – Certificate of Occupancy].

**GEN-2:** Prior to submittal of the initial engineering designs for CBO review, the project owner shall furnish to the CPM and to the CBO a schedule of facility design submittals, a Master Drawing List, and a Master Specifications List. The schedule shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM when requested.

**Verification:** At least 60 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, the Master Drawing List, and the Master Specifications List of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent design documents for the major structures and equipment listed in **Table-1** below. Major structures and equipment shall be added to or deleted from the table only with CPM approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

**Table 1: Major Structures and Equipment List**

<b>Equipment/System</b>	<b>Quantity (Plant)</b>
Combustion Turbine (CT) Foundation and Connections	2
HP/IP Steam Turbine (ST) Foundation and Connections	1
LP Steam Turbine (ST) Foundation and Connections	1
Combustion Turbine Generator Foundation and Connections	2
Steam Turbine Generator Foundation and Connections	1
Heat Recovery Steam Generator (HRSG) Structure, Foundation and Connections	2
Auxiliary Transformer Foundation and Connections	2
CT Inlet Air Plenum Structure, Foundation and Connections	2
Inlet Air Evaporative Cooler Structure, Foundation and Connections	2
HRSG Exhaust Stack, Foundation and Connections	2
Isolated Phase Bus Duct	2
HRSG Transition Duct from CTG — Structure	2
Secondary Unit Substation/Transformer	2
Electrical/Control Center	2
Condenser Structure, Foundation and Connections	1
Feed Water Pump Foundation and Connections	4
Condensate Pump Foundation and Connections	2
Feed Water Heater Foundation and Connections	2
Air Compressor Foundation and Connections	2
CT Water Injection Skid Foundation and Connections	2
CT Static Starter Skid Foundation and Connections	2
CT Mechanical Accessory Compartment Foundation and Connections	2
Switchgear Equipment Building Structure, Foundation and Connections	2
CT Generator Step-up Transformer Foundation and Connections	2
ST Generator Step-up Transformer Foundation and Connections	1
HRSG Blowdown Tank Foundation and Connections	2
Boiler Circulating Pump Connections	8
Condensate Circulating Pump Foundation and Connections	4
Fuel Gas Heater Foundation and Connections	2
ST Lube Oil Package Foundation and Connections	1
Drain Cooler Foundation and Connections	1

<b><u>Table-1: Major Structures and Equipment List</u></b>	
<b><u>Equipment</u></b>	<b><u>Quantity</u></b>
<b><u>Gas Turbine Enclosure</u></b>	<b><u>2</u></b>
<b><u>Gas Turbine Inlet Filter</u></b>	<b><u>2</u></b>
<b><u>Electrical Package</u></b>	<b><u>2</u></b>
<b><u>Lube Oil Cooler</u></b>	<b><u>2</u></b>
<b><u>Rotor Air Cooler (Fin-Fan)</u></b>	<b><u>2</u></b>
<b><u>Heat Recovery Steam Generator</u></b>	<b><u>2</u></b>
<b><u>HRSG Stack</u></b>	<b><u>2</u></b>
<b><u>Boiler Blow Down</u></b>	<b><u>2</u></b>
<b><u>Boiler Feedwater Pumps</u></b>	<b><u>2</u></b>
<b><u>Sampling Panel</u></b>	<b><u>2</u></b>
<b><u>Continuous Emissions Monitoring</u></b>	<b><u>2</u></b>
<b><u>SCR Skid</u></b>	<b><u>2</u></b>
<b><u>MV Switchgear</u></b>	<b><u>2</u></b>
<b><u>Generator Circuit Breaker</u></b>	<b><u>2</u></b>
<b><u>Auxiliary Transformer</u></b>	<b><u>2</u></b>
<b><u>Generator Transformer - Gas Turbine</u></b>	<b><u>2</u></b>
<b><u>Generator Transformer - Steam Turbine</u></b>	<b><u>2</u></b>
<b><u>Oil/Water Separator</u></b>	<b><u>2</u></b>
<b><u>Steam Turbine PCC</u></b>	<b><u>2</u></b>
<b><u>Gland Steam Condensers</u></b>	<b><u>2</u></b>
<b><u>Steam Turbine</u></b>	<b><u>2</u></b>
<b><u>ST Lube Oil Cooler</u></b>	<b><u>2</u></b>
<b><u>Steam Turbine Fin Fan Cooler</u></b>	<b><u>2</u></b>
<b><u>Condensate Polishing Fin Fan Cooler</u></b>	<b><u>2</u></b>
<b><u>Air Compressor Area</u></b>	<b><u>2</u></b>
<b><u>Balance of Plant PCC</u></b>	<b><u>2</u></b>
<b><u>Chemical Dosing Equipment</u></b>	<b><u>2</u></b>
<b><u>Deaerator / Drain Tanks / Condensate Pumps</u></b>	<b><u>2</u></b>
<b><u>Fuel Gas Conditioning/metering</u></b>	<b><u>1</u></b>
<b><u>Fuel Gas Compressors</u></b>	<b><u>2</u></b>
<b><u>Raw Water Water Tank</u></b>	<b><u>1</u></b>

<b><u>Demineralized Water Tank</u></b>	<b><u>1</u></b>
<b><u>Raw Water Forwarding Pumps</u></b>	<b><u>2</u></b>
<b><u>Electric Fire Water Pumps</u></b>	<b><u>1</u></b>
<b><u>Demineralized Water Forwarding Pumps</u></b>	<b><u>2</u></b>
<b><u>Fire Water Tank</u></b>	<b><u>1</u></b>

## **REFERENCES**

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CEC (California Energy Commission). 2005. Commission Decision for the El Segundo Power Redevelopment Project. Publication CEC-800-2005-001-CMF.

ESPRP (El Segundo Power Redevelopment Project). 2000. Application for Certification. Submitted to the California Energy Commission on December 18, 2000.

ESPRP (El Segundo Power Redevelopment Project). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project. Submitted to the California Energy Commission on June 19, 2007.



# **GEOLOGICAL AND PALEONTOLOGICAL RESOURCES**

Prepared by: Dal Hunter, Ph.D., C.E.G.

## **INTRODUCTION**

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The proposed amendment has no significant effects on geologic hazards or geologic/paleontologic resources. The conditions of certification remain adequate.

## **LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE**

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There are no new LORS and no LORS that have been modified since project certification.

## **ANALYSIS**

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Staff has reviewed the petition for potential environmental effects and consistency with applicable LORS. Based on this review, staff determined that the project, including the proposed amendment, should still be able to comply with all applicable LORS.

The proposed amendment indicates that the applicant (ESEC) may deliver oversize equipment, such as turbine-generators, via barges and a ramp constructed across the beach. The beach delivery is not expected to affect paleontological resources since the beach sands are very young, disturbed daily, and do not contain recoverable or significant fossils.

Most of the California coast has the potential for a tsunami (tidal wave) generated from an earthquake, submarine landslide, or distant volcanic eruption. The 1964 Alaskan earthquake generated tidal waves in Crescent City, California and even caused minor damage to docked boats as far south as Los Angeles. The probability of a tsunami striking the coast during the brief time a barge is unloading equipment is remote and not something that can be reasonably anticipated or mitigated. In most cases, there would be sufficient warning time to allow the barge to move safely out to sea. It is our understanding that the barge/ramp system will be designed to tolerate normal surge and tides.

## **CONCLUSIONS AND RECOMMENDATIONS**

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Staff has reviewed the petition for new potential issues related to geology and paleontology. Based on this review, staff has determined that the approved conditions of certification remain adequate to protect geologic resources and potential paleontologic resources, as well as minimize the risk related to potential geologic hazards.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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None.

## **REFERENCES**

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Shaw Environmental, Inc., June 18, 2007, Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project.

California Energy Commission. 2005. Commission Decision for the El Segundo Power Redevelopment Project. Publication CEC-800-2005-001-CMF.

Port of Los Angeles, May 2008, Draft Supplemental Environmental Impact Report (SEIS/SEIR) for the Pacific LA Marine Terminal LLC Crude Oil Terminal Project.

# POWER PLANT EFFICIENCY

Prepared by: Shahab Khoshmashrab

## INTRODUCTION

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The amended project would utilize a dual-train one-on-one (one combustion turbine generator, or CTG, one heat recovery steam generator, or HRSG, and one steam turbine generator, or STG) combined cycle configuration using two Siemens SGT6-5000F CTGs instead of the previously licensed two-on-one (two STGs, two HRSGs, and one STG) train combined cycle configuration using two General Electric (GE) Frame 7FA CTGs. This analysis examines the potential effect of these changes on plant efficiency.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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No LORS apply to project efficiency.

## ANALYSIS

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The only proposed change that could affect project efficiency is:

- Changing from a two-on-one combined cycle configuration utilizing two GE Frame 7FA CTGs to a dual-train one-on-one combined cycle configuration utilizing two Siemens SGT6-5000F CTGs.

The Siemens SGT6-5000F technology in a one-on-one combined cycle power train is nominally rated at 57.0 percent maximum full load efficiency lower heating value (LHV) under International Organization for Standardization (ISO) conditions (GTW, 2007). The GE Frame 7FA technology is nominally rated in a two-on-one train combined cycle configuration at 56.5 percent maximum full load efficiency LHV at ISO conditions (GTW, 2007). As seen above, the project's overall efficiency will improve slightly as the result of this amendment. No further analysis in the area of Power Plant Efficiency is necessary.

## CONCLUSIONS AND RECOMMENDATIONS

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The Power Plant Efficiency findings and conclusions incorporated in the original Commission Decision remain valid. No LORS apply to project efficiency.

## PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

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No conditions of certification apply to Power Plant Efficiency.

## REFERENCES

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GTW 2007 — Gas Turbine World 2007 Performance Specs. December 2006, pp. 29-35.



# POWER PLANT RELIABILITY

Prepared by: Shahab Khoshmashrab

## INTRODUCTION

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The proposed ESPRP would utilize the rapid response combined cycle technology, not available during the original licensing of the project, instead of the previously permitted advanced combined cycle technology that offers slower start time. The amended project would also employ air-cooled heat exchangers instead of the once-through ocean water cooling system permitted in the original Commission Decision, reducing the project's water consumption. This analysis examines the potential effect of these changes on plant reliability.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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No LORS apply to project reliability.

## ANALYSIS

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The changes proposed that could affect project reliability are:

- Utilizing the Rapid Response – Combined Cycle technology instead of the previously permitted combined cycle technology; and
- Changing from once-through ocean water cooling of the steam condenser to a pair of fin-fan air coolers, or a pair of air-cooled backpressure heat exchangers, to cool spent steam from the two backpressure steam turbines.

The project as previously permitted would utilize the advanced combined cycle technology. This technology can deliver power output at full load in up to three hours for warm and hot starts and in up to six hours for cold start. In comparison, the new rapid response technology can deliver 150 MW of power output within 10 minutes of unit startup and can achieve full load within 45 minutes for hot starts, 85 minutes for warm starts, and 125 minutes for cold starts (ESPRP 2007a). Therefore, the new rapid response technology would allow the project to respond more rapidly to the needs of the California electric market. The project as amended would enhance power supply reliability by providing operating flexibility (that is, the ability to start up, shut down, turn down, and provide load following and spinning reserve).

Changing from once-through ocean water cooling to air cooling as described above would significantly reduce the project's water consumption and thus its reliance on water usage.

Therefore, project reliability would improve as the result of the above-proposed changes. Staff believes no further analysis in the area of Power Plant Reliability is necessary.

## **CONCLUSIONS AND RECOMMENDATIONS**

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Project reliability would improve as the result of this amendment. The Power Plant Reliability findings and conclusions incorporated in the original Commission Decision remain valid. No LORS apply to project reliability.

## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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No conditions of certification apply to Power Plant Reliability.

## **REFERENCES**

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ESPRP (El Segundo Power Redevelopment). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project (00-AFC-14C). Received on June 19, 2007.

# TRANSMISSION SYSTEM ENGINEERING

Prepared by: Mark Hesters

## INTRODUCTION

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The amended project would utilize the rapid response combined cycle technology, not available during the original licensing of the project, instead of the previously permitted advanced combined cycle technology that offers slower start time. The maximum electrical output will be reduced from 630 MW to 560 MW.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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No change from original analysis.

## ANALYSIS

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The changes that were examined in relation to the projects' transmission interconnection are:

- Utilizing the rapid response – combined cycle technology instead of the previously permitted combined cycle technology; and
- Changing from once-through ocean water cooling of the steam condenser to a pair of fin-fan air coolers, or a pair of air-cooled backpressure heat exchangers, to cool spent steam from the two backpressure steam turbines.

The project as previously permitted would utilize advanced combined cycle technology. This technology would have delivered power output at full load in up to three hours for warm and hot starts and in up to six hours for cold starts. In comparison, the new technology can deliver 150 MW of power output within 10 minutes of unit startup and can achieve full load within 45 minutes for hot starts, 85 minutes for warm starts, and 125 minutes for cold starts (ESPR 2007a). Therefore, the new technology would allow the project to respond more rapidly to the needs of the California electricity market.

Since the project is reducing its maximum MW output, the capacity of the existing transmission lines does not need to be changed.

## CONCLUSIONS AND RECOMMENDATIONS

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There is no impact on the original Transmission Systems Engineering project analysis or conditions of certification. The findings and conclusions incorporated in the original Commission Decision remain valid.

## PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

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No new or modified conditions of certification apply to Transmission System Engineering.

## REFERENCES

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ESPR (El Segundo Power Redevelopment). 2007a. Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project (00-AFC-14C). Received on June 19, 2007.

**DECLARATION OF  
Joseph Douglas**

I, **Joseph Douglas**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Compliance Office** of the Siting, Transmission and Environmental Protection Division as a **Project Manager**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Executive Summary, Introduction, and Project Description** for the **EI Segundo Power Redevelopment Project Dry Cooling Amendment** based on my independent analysis of the Application for Certification, amendment and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: 6/6/10

Signed: 

At: Sacramento, California

# Joseph Douglas

---

**Experience** *November 2008 – Present* *State of California, California Energy Commission* *Sacramento, CA*

## **Siting, Compliance, Transmission & Environmental Protection, Project Manager**

- Coordinate and manage multi functional environmental and engineering team in reviewing and processing complex and controversial renewable energy facility projects.
- Critically review, evaluate and process Compliance submittals to assure continued project compliance with state and federal environmental and design requirements.
- Act as technical lead in processing project changes to ensure consistence of the compliance requirements.
- Conduct periodic on-site power plant visits and inspections during construction and operation.
- Review, edit, and evaluate regulatory/commission reports, testimony, briefs, and position papers.
- Publish project documents including Commission program reports, and Environmental Impact Reports and Initial Studies/Negative Declarations.
- Coordinate with Bureau of Land Management, U.S. Department of Energy, and U.S. Environmental Protection Agency to write and process Environmental Impact Statements for large renewable energy projects.
- Organize and conduct public workshops and meetings among energy staff, energy facility developers, regulatory agencies, government agencies, and the public to discuss siting concerns.
- Oversee the construction of licensed power plants.
- Plan and lead environmental and engineering team in the review of complex and controversial project amendments during construction.
- Represent staff at energy commission business meetings, make presentations, and answer questions from commissioners.

*March 2003 – November 2008* *State of California, Department of Transportation* *Oakland, CA*

## **Office of Environmental Analysis, Environmental Project Manager**

- Oversight of large transportation projects with state and federal involvement
- As NEPA lead agency - Writing and processing of environmental documents with specific time deadlines requirements
- Coordination with multiple agencies including: Federal Highway Administration, U.S. Fish and Wildlife Service, Army Corps of Engineers, EPA, State Historic Officer, Homeland Security, California Highway Patrol
- Partnership with local governments to implement growth/environmental strategies
- Organized multi-functional teams to determine project cost, scope, risk, impacts, and benefits in order to meet funding and programming deadlines
- Participated in Value Analysis studies and made recommendations regarding least environmentally damaging alternative
- Establish purpose and need of project to justify benefits of future capital cost expenditures
- Quality assurance and quality control for state and federal compliance of environmental regulations
- Participated in field studies to determine project impacts

*May 2000 - March 2003* *State of California, Department of Transportation* *Oakland, CA*

## **Right of Way Office, Cost and Impact Estimation**

- Determination of community impacts of large transportation projects
- Estimated costs, and time needed for acquisition of parcels, and relocation assistance
- Coordination with multiple disciplines within the Department including: engineering, survey, legal, and environmental to forecast cost
- Investigation of Assessors Parcel Numbers, Right of Way data maps, and property databases
- Research of city and county zoning codes, general plan, and property records
- Identified utility conflicts and estimated time and cost of relocation
- Property management services

# Joseph Douglas

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*August 1990 – May 2000*

*R.D. Douglas and Sons*

*Tampa, FL*

## **Contractor**

- Construction and remodeling of single family and commercial buildings
- Building and zoning code research and implementation
- Cost and schedule estimation
- Subcontractor supervision
- Delivered projects under tight deadlines

## **Education**

- University of South Florida – Tampa, FL
- Graduated 1999
- Bachelors of Science., Economics



**DECLARATION OF  
Brenner Munger**

I, **Brenner Munger**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Siting, Transmission and Environmental Protection Division as an **Air Resources Engineer**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Air Quality** for the **El Segundo Power Redevelopment Project Dry Cooling Amendment** based on my independent analysis of the Application for Certification, amendment and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: 6/8/10

Signed: Brenner Munger

At: Sacramento, California

## **RESUME**

RAYMOND BRENNER MUNGER

### **PROFESSIONAL EXPERIENCE**

Licensed Mechanical Engineer in California, Colorado and Hawaii with over 35 years of experience in a variety of technical and management positions in the environmental and power generation areas.

### **EDUCATION**

Bachelor of Science in Mechanical Engineering  
University of California, Santa Barbara, Graduated with honors, June 1970

Master of Science in Engineering  
University of California, Irvine, December 1972

Doctor of Philosophy in Engineering  
University of California, Irvine, December 1981

### **EXPERIENCE**

Dates: January 2010 to Present  
Title: Air Resources Engineer  
Siting, Transmission and Environmental Protection Division  
California Energy Commission, 1516 9th Street, Sacramento, CA 95814

Duties: Conducts staff assessments of air quality impact analyses prepared by project applicants in support of certification process for thermal power plant projects over 50 MW in California. Reviews compliance reports for power plants.

Dates: September 2004 to December 2009  
Title: Manager  
Power Supply Engineering Department (PSED)  
Hawaiian Electric Company, Inc., 820 Ward Avenue, Honolulu, HI 96814

Duties: Responsible for generation capital improvement programs, generation asset management programs and generation unit addition projects. Responsible for ~50 engineers and support personnel to provide design engineering, project engineering, project management and field engineering support for the capital improvement program (~\$32 million annual capital budget) for the existing power generation assets of Hawaiian Electric Company. Also responsible for the project management support for the generation unit additions for Hawaiian Electric Company, Maui Electric Company and Hawaii Electric Light Company. From 2004 to 2009, provided project management and engineering support for the completion of five major generation unit addition projects for HELCO, MECO and HECO totaling over \$480 million. Procured engineering consultants for generation unit additions through competitive bidding processes and managed consultant contracts for design engineering, project management, major equipment procurement, construction management and commissioning support for these major generation unit addition projects.

Dates: July 1995 to September 2004

Title: Manager

Power Supply Planning & Engineering Department  
Hawaiian Electric Company, Inc., 820 Ward Avenue, Honolulu, HI 96814

Duties: Responsible for ~50 engineers, planners and technical support personnel providing long range resource planning (Integrated Resource Planning and Generation Planning) in addition to the traditional engineering functions required for the capital improvement programs for power generation facilities. The scope of the planning and engineering support covered HECO, MECO and HELCO. The engineering support included the design engineering, project engineering and project management support for the capital improvement program for the existing power generation assets of Hawaiian Electric Company. Also responsible for the project management support for the generation unit additions for HECO, MECO and HELCO. For the IRP effort, served as Chair for the Supply-side Resource Advisory Group which consisted of representatives from government, environmental groups, academia, and industry.

Dates: June 1988 to June 1995

Title: Manager

Engineering Department  
Hawaiian Electric Company, Inc., 820 Ward Avenue, Honolulu, HI 96814

Duties: Managed department of ~80 engineers and support personnel to provide design engineering, project engineering and project management support for the capital improvement program for the power generation, transmission, substation and communications assets of Hawaiian Electric Company. Also responsible for the project management support for the generation unit additions for Hawaiian Electric Company, Maui Electric Company and Hawaii Electric Light Company. Procured consultants through competitive bidding processes and managed consultant contracts for design engineering, project management, major equipment procurement, construction management and commissioning support for these major generation, transmission and substation addition projects. Program responsibilities included the corporate renewable energy program and the corporate program for membership in the Electric Power Research Institute (Manager of EPRI Technology Transfer - METT).

Dates: August 1984 to June 1988

Title: Manager

Environmental Department  
Hawaiian Electric Company, Inc., 820 Ward Avenue, Honolulu, HI 96814

Duties: Responsible for overall environmental management programs for Hawaiian Electric Company (HECO), Maui Electric Company (MECO) and Hawaii Electric Light Company (HELCO). Managed ~16 engineers, environmental scientists and support personnel to provide air quality permitting, water quality permitting, compliance audits and assessments, ambient air quality monitoring, emissions source testing, water quality monitoring, noise monitoring, and laboratory support for HECO, MECO and HELCO. Topical areas of responsibility included air, water, hazardous wastes, noise and PCBs. Augmented in-house personnel with contractors and consultants on an on-going basis to manage work load and meet critical deadlines. Interfaced regularly with state and federal regulatory agencies on permitting, compliance monitoring and reporting, regulation development and enforcement matters. Reviewed state legislation and provided testimony to state legislative committees.

Dates: August 1981 to July 1984

Title: Senior Engineer and Program Manager  
Environmental Research & Technology (ERT), Inc., Newbury Park, CA 91320

Duties: Responsible for management and technical direction of project teams for a variety of studies and projects including: air quality impact assessments for cogeneration projects, resource recovery facilities and marine tanker operations using microscale (Gaussian-based) and regional photochemical air quality models; statistical analysis of aerometric and emissions data for source reconciliation determinations; development of modeling systems for emergency response systems for atmospheric releases of hazardous materials; and analytical evaluations of technical basis for proposed modifications of gasoline lead content regulations and nonattainment designations in California.

Dates: January 1973 to July 1981

Title: Air Pollution Research Specialist, Associate Air Resources Engineer and Assistant Engineering Specialist  
California Air Resources Board, Sacramento, CA 95814

Duties: Held several positions with increasing responsibilities. In final position (Air Pollution Research Specialist), responsible for the regional and microscale air quality modeling components of the nonattainment planning program for Sacramento Valley and San Joaquin Valley air basins. Conducted air quality modeling studies in support of regulation and model rule development by other ARB divisions and the evaluation of regulations proposed by other agencies. Assessed air quality impacts of specific projects using currently available Gaussian and numerical air quality models. Provided support and direction to local agency staff in air quality studies of specific projects. Prepared an air quality modeling guidelines document which identified air quality models and modeling procedures acceptable to the ARB in support of the NSR and PSD programs. As an Air Resources Engineer in the Planning Division, authored portions and edited all of a report titled "Emissions and Air Quality Assessment", ARB Report No. ARB/EP-76001.

## **LICENSES AND ORGANIZATIONS**

Registered Mechanical Engineer in California - ME16427  
Registered Professional Engineer in Colorado - No. 16333  
Registered Professional Engineer in Hawaii – No. 6127  
Associate Member, American Society of Mechanical Engineers

E-mail: [bmunger@energy.state.ca.us](mailto:bmunger@energy.state.ca.us)

**DECLARATION OF  
Richard York**

I, **Richard York**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Environmental Protection Office** of the **Energy Facilities Siting Division** as a **Planner III**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Biological Resources** for the El Segundo Major Amendment project based on my independent analysis of the application and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: June 7, 2010

Signed: 

At: Sacramento, California

# **RICHARD YORK**

## **WORK EXPERIENCE SUMMARY**

Experienced in biological resource assessment including endangered species surveys, field survey protocols, endangered species mitigation and monitoring, coordination with state and federal agencies, and wetland delineation. Educational background emphasized biological resources, plant identification and taxonomy, general ecology, and herbarium specimen curatorship.

## **WORK EXPERIENCE**

**1989 – to date**      **PLANNER II, California Energy Commission.** I provide independent biological resource assessments of proposed energy facilities and review implementation of biological resource conditions of certification required by the Warren-Alquist Act and the California Environmental Quality Act. Once energy facilities are constructed and operating, I am responsible for making sure each facility operates in compliance with associated biological resources conditions of certification. These conditions of certification involve endangered species protection, habitat restoration and monitoring, off-site habitat compensation, and wildlife surveys.

I am also involved with various preserves in the San Joaquin Valley (Semitropic Ridge and Lokern) that were established with Energy Commission mitigation funds. Also, I edited the endangered species and sensitive biological resource policy paper for the California Energy Commission's Energy Facilities Siting and Environmental Protection Division.

**1986 - 1989**      **BOTANIST, The Nature Conservancy.** Collected, mapped and computerized rare plant location and ecological information for the California Natural Diversity Data Base while under contract to the California Department of Fish and Game. Required statewide coordination with many other botanists, some field work, and management of contracts.

**1980 - 1986**      **BOTANIST, California Native Plant Society.** Compiled and co-edited the 3rd edition of the California Native Plant Society's statewide *Inventory of Rare and Endangered Vascular Plants of California*. Work involved field surveys, attendance at public meetings and statewide board meetings, coordination and supervision of volunteers, data base management and quality control, endangered species regulatory review and comment, coordination with state and federal agencies, and writing special plant status reports.

- Richard York -

**1975 - 1980**      **BOTANIST/RANGE TECHNICIAN** (Bureau Land Mgmt., Wyoming)  
**HERBARIUM ASSISTANT** (Humboldt State University)  
**RESEARCH ASSISTANT** (California Native Plant Society)  
**PARK AIDE** (California Department of Parks and Recreation)  
**PRIVATE BOTANICAL CONSULTANT** (Six Rivers Nat. Forest)

## ***EDUCATION***

- B. S. **BOTANY**, 1979, Humboldt State University, Arcata, California
- B. A. **PSYCHOLOGY**, 1979, Humboldt State University, Arcata, California

## ***AWARDS***

- 1992 RARE PLANT CONSERVATION AWARD – Calif. Native Plant Society

## ***PROFESSIONAL AFFILIATIONS***

- California Native Plant Society
- California Botanical Society
- The Nature Conservancy
- Interagency Botanists



**DECLARATION OF  
Dorothy Torres**

I, Dorothy Torres, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Protection Office as a Retired Annuitant.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the cultural resources analysis in the Cultural Resource section for the El Segundo Amendment 00-AFC-14C, Revised Staff Assessment based on my independent analysis of the Petition to Amend and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: 6/8/10

Signed: Dorothy Torres

At: Sacramento, California

**Dorothy E. Torres**

**EXPERIENCE:**

February 2009-  
Present

**Retired Annuitant: Cultural Unit**

Duties are the same as those required in the Planner II position.

September 2002-  
January 2009

**Planner II: Biology and Cultural Unit,**

Facilities Siting Division, California Energy Commission. Duties: As a Planner II, I identify, describe, and analyze complex cultural resources issues related to electrical energy production facilities, alternative energy technologies, energy research and development and Commission programs. This includes the preparation of sections of initial studies, environmental impact reports and Commission reports.

In addition, I prepare independent assessments of the cultural resources aspects of Notices of Intention, Applications for Certification, and Small Power Plant Exemptions. The final analyses include the preparation and presentation of expert technical testimony, which is presented at Commission hearings.

I also coordinate and work with federal, state, regional and local governments; cultural resources related agencies; environmental organization and universities; Native American or other ethnic groups; archaeological or historical professional organizations; and members of the general public regarding energy-related issues to assure their input into the Commission power plant siting process and other Commission programs.

Moreover, I lead or participate in workshops and meetings concerning Commission projects, programs and policies, amongst and between project applicants, staff, other governmental agencies, private organizations, and the public.

In addition, I examine and evaluate existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the visual, cultural aspects of proposed energy facilities on Commission programs. After permitting, I evaluate the licensee's compliance with conditions of certification for power plant facilities.

April 2001-  
August 2002

**Planner I: Cultural, Socioeconomic and Visual Unit, Systems Assessment and Facilities Division, California Energy Commission.** Duties: I gather, organize and analyze cultural resources data and identify issues, impacts and mitigation

measures ensuring compliance with the California Environmental Quality Act. I provide oversight for consultants working on siting applications in the area of cultural resources. I participate in workshops and meetings concerning Energy Commission projects and programs. In addition, I interact with Division technical staff and staff representing other Divisions, local and regional government staff/decision makers, federal and state agency representatives and consultants/experts in the areas of anthropology, archaeology, history and related fields. I prepare written assessments of energy related documents.

December 1998-  
March 2001

**Energy Analyst:** Community and Cultural Resources Unit, Energy Facilities Siting and Environmental Protection Division, California Energy Commission. Duties: I assist in gathering, organizing and analyzing cultural resources data and identify issues, impacts and mitigation measures. I assist in coordinating with local governments, resource protection agencies, environmental organizations and business organizations. Furthermore, I participate in workshops and meetings concerning Energy Commission projects and programs. I evaluate existing and proposed laws, ordinances, regulations, standards, and policies pertinent to the cultural resource aspect of proposed energy facilities. I prepare written assessments of energy related documents.

**EDUCATION:**

Spring 1988

M.A., Anthropology  
California State University, Sacramento

Spring 1980

B.A., Anthropology and History  
California State University, Sacramento

Professional  
Organizations

Society for California Archaeology  
Sacramento Archaeological Society



## DECLARATION OF

I, **Rick Tyler** declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission, and Environmental Protection Division as a Senior Mechanical Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I supervised preparation of the Revised Staff Assessment for Hazardous Materials Management and Worker Safety Fire Protection Sections for the El Segundo Power Development Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

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

Dated: 6/9/10 Signed: \_\_\_\_\_

At: Sacramento, California

RICK TYLER

Associate Mechanical Engineer

CALIFORNIA ENERGY COMMISSION

EDUCATION B.S., Mechanical Engineering, California State University, Sacramento. Extra course work in Statistics, Instrumentation, Technical Writing, Management; Toxicology, Risk Assessment, Environmental Chemistry, Hazardous Materials Management, Noise Measurement, and regulations regarding control of toxic substances.

Near completion of course work necessary to obtain a certificate in hazardous materials management from University of California, Davis.

EXPERIENCE

Jan. 1998- Present California Energy Commission - Senior Mechanical Engineer  
Energy Facility Siting and Environmental Protection Division

Responsible for review of Applications for Certification (applications for permitting) for large power plants including the review of handling practices associated with the use of hazardous and acutely hazardous materials, loss prevention, safety management practices, design of engineered equipment and safety systems associated with equipment involving hazardous materials use, evaluation of the potential for impacts associated with accidental releases and preparation and presentation of expert witness testimony and conditions of certification. Review of compliance submittals regarding conditions of certifications for hazardous materials handling, including Risk Management Plans Process Safety Management.

April 1985- Jan. 1998 California Energy Commission - Health and Safety  
Program Specialist; Energy Facility Siting and Environmental Protection Division.

Responsible for review of Public Health Risk Assessments, air quality, noise, industrial safety, and hazardous materials handling of Environmental Impact Reports on large power generating and waste to energy facilities, evaluation of health effects data related to toxic substances, development of recommendations regarding safe levels of exposure, effectiveness of measures to control criteria and non-criteria pollutants, emission factors, multimedia exposure models. Preparation of testimony providing Staff's position regarding public health, noise, industrial safety, hazardous materials handling, and air quality issues associated with proposed power plants. Advise Commissioners, Management, other Staff and the public regarding issues related to health risk assessment of hazardous materials handling.

Nov. 1977-  
April 1985

California Air Resources Board - Engineer (last 4 years Associate level)

Responsible for testing to determine pollution emission levels at major industrial facilities; including planning, supervision of field personnel, report preparation and case development for litigation; evaluate, select and acceptance-test instruments prior to purchase; design of instrumentation systems and oversight of their repair and maintenance; conduct inspections of industrial facilities to determine compliance with applicable pollution control regulations; improved quality assurance measures; selected and programmed a computer system to automate data collection and reduction; developed regulatory procedures and the instrument system necessary to certify and audit independent testing companies; prepared regulatory proposals and other presentations to classes at professional symposia and directly to the Air Resources Board at public hearings. As state representative, coordinated efforts with federal, local, and industrial representatives.

PROFESSIONAL  
AFFILIATIONS/  
LICENSES

Past President, Professional Engineers in California  
Government Fort Sutter Section;  
Past Chairman, Legislative Committee for Professional Association of Air Quality Specialists. Have passed the Engineer in Training exam.

PUBLICATIONS,  
PROFESSIONAL  
PRESENTATIONS  
AND  
ACCOMPLISHMENTS

Authored staff reports published by the California  
Air Resources Board and presented papers regarding  
continuous emission monitoring at symposiums.

Authored a paper entitled "A Comprehensive Approach to Health Risk Assessment", presented at the New York Conference on Solid Waste Management and Materials Policy.

Authored a paper entitled "Risk Assessment A Tool For Decision Makers" at the Association of Environmental Professionals AEP Conference on Public Policy and Environmental Challenges.

Conducted a seminar at University of California, Los Angeles for the Doctoral programs in Environmental Science and Public Health on the subject of "Health Risk Assessment".

Authored a paper entitled "Uncertainty Analysis -An Essential Component of Health Risk Assessment and Risk Management" presented at the EPA/ORNL expert workshop on Risk Assessment for Municipal Waste Combustion: Deposition, Uncertainty, and Research Needs.

Presented a talk on off-site consequence analysis for extremely hazardous materials releases. Presented at the workshop for administering agencies conducted by the City of Los Angeles Fire Department.

Evaluated, provided analysis and testimony regarding public health and hazardous materials management issues associated with the permitting of more than 20 major power plants throughout California.

Developed Departmental policy, prepared policy documents, regulations, staff instruction, and other guidance documents and reference materials for use in evaluation of public health and hazardous materials management aspects of proposed power plants.

Project Manager on contracts totaling more than \$500,000.

RES.RT

**DECLARATION OF**  
**Mark R. Hamblin**

I, Mark R. Hamblin declare as follows:

I am presently employed by the California Energy Commission in the Environmental Protection Office of the Siting, Transmission, Environmental Protection Division as a Planner II.

My professional qualifications and experience were included in the SA, and are incorporated by reference herein.

I prepared the revised staff testimony for the Land Use section for the El Segundo Power Redevelopment Project (00-AFC-14C) Addendum I to the Staff Analysis of Proposed Change to Dry Cooling and Other Project Changes based on my independent analysis of the Commission Decision, Petition To Amend the Final Commission Decision and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

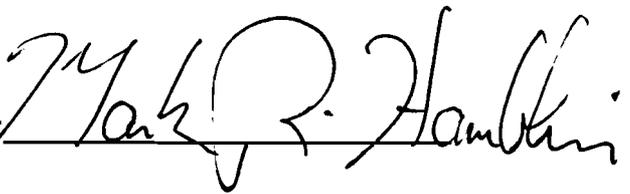
It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: June 8, 2010

Signed: \_\_\_\_\_

A handwritten signature in black ink that reads "Mark R. Hamblin". The signature is written in a cursive style and is positioned above a horizontal line that serves as a signature line.

At: Sacramento, California

# MARK R. HAMBLIN

## Summary

Public administrator/land use planner with 15 years experience addressing land use development matters of concern to citizens and government leaders. Expertise in interpreting public policy pertaining to land use and environmental assessment. Demonstrated ability in working with individuals, and on teams involved in the development permitting process.

## Professional Experience

### **California Energy Commission, Sacramento, CA.**

Planner II

November 2000 to present.

Prepares an independent technical analysis in the area(s) of land use, traffic & transportation, and visual resources to inform interested persons and to make recommendations to the Energy Commission regarding the consequences of a natural gas fired power generation plant proposal; reviews information provided by the applicant and other sources to assess the environmental effects of a proposal as required by the California Environmental Quality Act (CEQA), and the California Energy Commission siting regulations; evaluates project in accordance with federal, state and local laws, ordinances, regulations, standards (LORS); coordinates proposal with federal, state and local agencies; conducts field studies; oversees technical consultant(s); participates in public workshop(s) on proposal; presents sworn testimony during evidentiary hearings; implements compliance monitoring programs for projects approved by the Energy Commission to ensure that power plants are constructed and operated according to the conditions of certification of their license.

### **Yolo County Planning and Public Works Department, Woodland, CA.**

Associate Planner

June 1992 to October 2000.

Advised and assisted individuals in the processing of land use requests (general plan amendments, conditional use permits, subdivision maps, etc.); reviewed information provided by the applicant and other sources for consistency with the state zoning and planning law, the county General Plan, the county government code, and the requirements of the CEQA; collected and analyzed information pertaining to a land use request and presented it in a staff report for consideration by the county planning commission and/or county board of supervisors; board of supervisors liaison, and planning department staff person to citizen and inter-agency committees (county airport advisory committee, county habitat conservation plan steering committee, and community general plan citizen advisory committee(s)); drafted zoning ordinances and regulations; prepared environmental assessment documents in accordance with CEQA and NEPA (National Environmental Protection Act); hired and supervised consultants; executed county zoning administrator duties; conducted zone code enforcement; reviewed building plans for issuance of permits; answered questions at the public counter, or on the telephone regarding land use issues and development proposals in the County.

### **Yolo County Community Development Agency, Woodland, CA.**

Assistant Planner

January 1991 to June 1992.

Advised and assisted individuals in the processing of land use requests; reviewed information provided by the applicant and other sources for consistency with the county

General Plan, the state and county government code, and the requirements of CEQA; collected and analyzed information pertaining to a land use request and presented it in a staff report for consideration by the county planning commission; drafted zoning ordinances; prepared environmental assessment documents in accordance to the CEQA; supervised consultants; conducted zone code enforcement; reviewed building plans for issuance of permits; answered questions at the public counter, or on the telephone regarding land use and development in the County.

**Tulare County Planning and Development Department, Visalia, CA.**

Planning Technician II

March 1988 to January 1990.

Advised and assisted individuals in the processing of land use requests, specifically special-use permits, variances, parcel and subdivision maps; reviewed information provided by the applicant and other sources for consistency with the county General Plan, the state and county government code, and the requirements of CEQA; collected and evaluated information for presentation in a staff report on the proposed land use request for consideration by the county zoning administrator, site plan review committee, or planning commission; prepared environmental assessment documents in accordance with CEQA; conducted zone code enforcement; reviewed building plans for issuance of permits; answered questions at the public counter, or on the telephone regarding land use and development in the County.

## Education

**University of California, Davis Extension.** Coursework in California Land Use Planning and the California Environmental Quality Act 1988 to 1995.

**Cosumnes River College.** Coursework in Television and Radio Broadcasting 1990 to 1991.

**California State University, Bakersfield.** Master of Public Administration; August 1988. Concentration in Public Policy. Coursework in Business Administration and Political Science.

**California State University, Sacramento.** Bachelor of Science in Public Administration; May 1984. Concentration in Human Resources Management.

**Porterville College.** Associate in Arts Social Science; May 1982. Coursework in Administration of Justice.

## Awards

2001 Superior Accomplishment Award - Recognition of outstanding performance and contribution as a Team Member of the "21 Day, 4, 6, and 12 Month Processes Team." California Energy Commission.

2001 Superior Accomplishment Award - Recognition of outstanding performance and contribution as a Team Member of the "Expedited 4 Month AFC/SPPE Team," California Energy Commission.



**DECLARATION OF  
SHAHAB KHOSHMAHRAB**

I, **SHAHAB KHOSHMAHRAB**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Facilities Siting Division as a **MECHANICAL ENGINEER**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I participated in the preparation of the staff testimonies on **Noise and Vibration** for the **EI Segundo Power Redevelopment Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: June 9, 2010

Signed: 

At: Sacramento, California

**Shahab Khoshmashrab**  
Mechanical Engineer

**Experience Summary**

Nine years experience in the Mechanical, Civil, Structural, and Manufacturing Engineering fields involving engineering and manufacturing of various mechanical components and building structures. This experience includes QA/QC, construction/licensing of electric generating power plants, analysis of noise pollution, and engineering and policy analysis of thermal power plant regulatory issues.

**Education**

- California State University, Sacramento-- Bachelor of Science, Mechanical Engineering
- Registered Professional Engineer (Mechanical), California

**Professional Experience**

**2001-2004**--Mechanical Engineer, Systems Assessment and Facilities Siting-- California Energy Commission

Performed analysis of generating capacity, reliability, efficiency, noise and vibration, and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases.

**1998-2001**--Structural Engineer – Rankin & Rankin

Engineered concrete foundations, structural steel and sheet metal of various building structures including energy related structures such as fuel islands. Performed energy analysis/calculations of such structures and produced structural engineering detail drawings.

**1995-1998**--Manufacturing Engineer – Carpenter Advanced Technologies

Managed manufacturing projects of various mechanical components used in high tech medical and engineering equipment. Directed fabrication and inspection of first articles. Wrote and implemented QA/QC procedures and occupational safety procedures. Conducted developmental research of the most advanced manufacturing machines and processes including writing of formal reports. Developed project cost analysis. Developed/improved manufacturing processes.

# DECLARATION OF

Dr.Obed Odoemelam

I, **Obed Odoemelam** declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting, Transmission, and Environmental Protection Division as a Staff Toxicologist.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the revised staff testimony on **Public Health** for the El Segundo Power Development project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: 6/9/2016 Signed: 

At: Sacramento, California

## RESUME

DR. OBED ODOEMELAM

### EDUCATION:

- 1979-1981 University of California, Davis, California. Ph.D., Ecotoxicology
- 1976-1978 University of Wisconsin, Eau Claire, Wisconsin. M.S., Biology.
- 1972-1976 University of Wisconsin, Eau Claire, Wisconsin. B.S., Biology

### EXPERIENCE:

1989

The Present: California Energy Commission. Staff Toxicologist.

Responsible for the technical oversight of staffs from all Divisions in the Commission as well as outside consultants or University researchers who manage or conduct multi-disciplinary research in support of Commission programs. Research is in the following program areas: Energy conservation-related indoor pollution, power plant-related outdoor pollution, power plant-related waste management, alternative fuels-related health effects, waste water treatment, and the health effects of electromagnetic fields. Serve as scientific adviser to Commissioners and Commission staff on issues related to energy conservation. Serve on statewide advisory panels on issues related to multiple chemical sensitivity, ventilation standards, electromagnetic field regulation, health risk assessment, and outdoor pollution control technology. Testify as an expert witness at Commission hearings and before the California legislature on health issues related to energy development and conservation. Review research proposals and findings for policy implications, interact with federal and state agencies and industry on the establishment of exposure limits for environmental pollutants, and prepare reports for publication.

1985-1989 California Energy Commission.

Responsible for assessing the potential impacts of criteria and noncriteria pollutants and hazardous wastes associated with the construction, operation and decommissioning of specific power plant projects. Testified before the Commission in the power plant certification process, and interacted with federal and state agencies on the establishment of environmental limits for air and water pollutants.

1983-1985 California Department of Food and Agriculture.

Environmental Health Specialist.

Evaluated pesticide registration data regarding the health and environmental effects of agricultural chemicals. Prepared reports for public information in connection with the eradication of specific agricultural pests in California.

## DECLARATION OF AMANDA STENNICK

I, **AMANDA STENNICK** declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Protection Office of the Siting, Transmission, and Environmental Protection Division as a Planner III.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **SOCIOECONOMICS** for the **EI Segundo Revised Staff Analysis**, based on my independent analysis of the Application for Certification, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: June 7, 2010

Signed: 

At: Sacramento, California

## **AMANDA STENNICK - ENVIRONMENTAL PLANNER**

### **Education**

B.A., Urban and Economic Geography, University of California, Davis, 1986

Ms. Stennick is an environmental planner with more than 22 years experience in land use, socioeconomic, and public policy analysis for power plants and energy infrastructure, and industrial and residential development projects in California. Ms. Stennick has extensive professional planning experience in both the public and private sectors; her expertise includes NEPA and CEQA document preparation, land use analysis and regulatory requirements for Williamson Act cancellations, assessment of land use alternatives, socioeconomic and public policy analysis, and environmental justice analysis. A partial list of projects where she has written assessments or managed the preparation of environmental documents is provided below.

### **Land Use Assessment for Energy Projects**

Ivanpah Solar Project (FSA/EIS)

Blythe Transmission Line (FSA/EIS)

Analysis of service district boundaries (LAFCO/San Diego County) Orange Grove Energy Project

Land use and Williamson Act analysis for Panoche Energy Center, Starwood Power Project, Pastoria Energy Facility, Hydrogen Energy California

Land use and California Coastal Act consistency analysis for Humboldt Bay Repowering City of Pittsburg Trans Bay Cable Project

LNG facility, Port of Long Beach, CA.

### **Environmental Justice Analysis**

2001, 2003, and 2005 Environmental Performance Report for CEC

San Francisco Energy Cogeneration Project, Morro Bay Power Plant Project, El

Segundo Power Redevelopment Project

### **Infrastructure Projects**

Project Manager for EIR/EA for the Mammoth County Water District. Analyzed impacts resulting from lake water transfers and maintenance of in-stream flows in the Mammoth Lakes Basin; prepared land use, socioeconomics, recreation, and public services and utilities sections of EIR/EA.

Project Manager for Effluent Treatment Plant EIR for Simpson Paper Company (Humboldt County). Prepared land use, socioeconomics, recreation, public services and utilities, cumulative impacts sections, and mitigation monitoring.

Project Manager for Folsom/SAFCA Reoperation. Determined parameters of project description with respect to water modeling, project geographic boundaries, and agency jurisdictional boundaries; ensured compliance with federal, state, and local plans and policies.

Project Manager. Yolo County Powerline Ordinance. Developed land use policies and mitigation measures for placement of powerlines and substations in Yolo County.

Project Manager and principal author for Energy Component of the Public Services and Facilities Element of the Sacramento County General Plan.

### **Redevelopment and Residential Projects**

Project Manager: EIR for a Planned Development, General Plan Amendment, and rezone request for a 504-acre Business and Industrial Park expansion for the Port of Sacramento. Prepared work scope and budget for Public Improvements Plan and Specific Plan for an 80-acre Mixed Use/Water Related development, including a Mitigation Monitoring Plan and Statement of Overriding Considerations for the City of West Sacramento. With CDFG, developed regional approach to mitigation for project-impacted endangered species.

Project Manager : EIR for the Wildhorse Residential/Recreational Planned Development, (Davis, CA). Prepared land use, project alternatives, cumulative impacts sections; determined project alternatives based on traffic models and allowable housing densities.

### **Professional and Continuing Education**

California Environmental Quality Act (UC Davis, 1988)  
Subdivision Map Act (UC Davis, 1989)  
Fiscal Impact Analysis (UC Davis, 1991)  
APA Conference (San Francisco, 1994)  
Environmental Justice Conference (UC Berkeley, 1994)  
California Environmental Quality Act (California Energy Commission, 1998)  
Roundtable on Environmental Justice US/Mexico Border 1999  
Local Agency Formation Commission - LAFCO (UC Davis, 2000) 2000  
Geographic Information System – GIS (UC Davis, 2005)  
Mapping Your Community: GIS and Community Analysis (Sacramento, CA, 2006)  
Conservation Strategies, Easements, and the Williamson Act (Valley Springs, CA, 2008)  
Tribal Energy in California; Law Seminars International (Cabazon, CA, 2009)



**DECLARATION OF  
Paul Marshall**

I, **Paul Marshall**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Environmental Protection Office** of the **Energy Facilities Siting Division** as a **Planner III**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Soils and Water Resources** for the EI Segundo Major Amendment project based on my independent analysis of the application and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: June 7, 2010

Signed: *Matthew Saylor*

At: Sacramento, California

*for Paul Marshall*

## MATTHEW S. LAYTON

### Experience Summary

Twenty five years of experience in the electric power generation field, including regulatory compliance and modification; research and development; licensing of nuclear, coal-fired, peaking and combined cycle power plants; and engineering and policy analysis of regulatory issues.

### Education

B.S., Applied Mechanics, University of California, San Diego.

Registered Professional Engineer - Mechanical, California.

### Experience

**1987-present** – Senior Mechanical Engineer, Systems Assessment and Facilities Siting Division, California Energy Commission. Review and evaluate power plant proposals, identify issues and resolutions; coordinate with other agencies; and prepare testimony, in the areas of:

- Air quality resources and potential impacts, and mitigation measures;
- Public Health; and
- Transmission Line Safety and Nuisance.

Prepared Commission demonstration project process; contributed to the Energy Technology Status, Energy Development, and Electricity Reports; Project Manager for demonstration projects; evaluated demonstration test plans, procedures, data and reports; disseminated test results; and managed research and development contracts.

**1983-1986** -- Control Systems Engineer, Bechtel Power Corporation. Managed a multi-disciplined effort to environmentally qualify client's safety related nuclear plant equipment. Performed analyses, calculations and reviews against vendor test reports, NRC guidelines and plant normal and postulated accident conditions. Initiated purchase orders for testing and formulated test objectives and test plans. Developed and implemented plant equipment maintenance and surveillance program based on test results, vendor recommendations and industry operating experiences. Trained client in environmental qualification engineering analysis and equipment maintenance program. Prepared client for NRC audits and presentation.

**1981-1983** -- Engineer, GA Technologies, Inc. Supervised design and procurement of full-scale test assembly used to evaluate design changes to operating reactor graphite core assembly. Conducted experiment to determine the relationship of graphite oxidation rate to water concentration, temperature, and helium pressure. Environmentally qualified essential and safety related nuclear power plant equipment to comply with NRC guidelines.

## DECLARATION OF JAMES ADAMS

I, James Adams declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division as a Planner II.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the testimony on **Traffic and Transportation** for the **EI Segundo Revised Staff Analysis** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

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

Dated: 6/9/10 Signed:   
At: Sacramento, California

**James S. Adams**  
**Environmental Protection Office**  
**California Energy Commission**  
**1516 Ninth Street**  
**Sacramento, CA 95814-5504**  
**PH (916) 653-0702, FAX (916) 654-3882**  
**Jadams@energy.state.ca.us**

5/1999

Present **Environmental Planner**

Review applications for certification to acquire permits from the California Energy Commission to build electric generating power plants. Specific technical fields include socioeconomics and traffic and transportation.

11/1997

Present **Energy and Resource Consultant**

Provide clients with technical expertise on various issues related to natural resource use and development. Current activities include managing an Intervention by the Redwood Alliance before the California Public Utilities Commission regarding the decommissioning of the Humboldt Bay Power Plant's nuclear reactor.

9/1994--

10/1997 **Senior Analyst - Safe Energy Communication Council (SECC)**

Responsible for developing and/or implementing campaigns on various energy issues involving the promotion of energy efficiency and renewable energy and advocating less reliance on nuclear power. Managed educational outreach efforts to newspaper editorial writers throughout the U.S. to encourage coverage of energy issues. Participated in meetings and negotiations with key Clinton administration officials, members of Congress and staff, national coalitions, and grassroots organizations on important energy issues (e.g. U.S. Department of Energy Budget for Fiscal Years 1996-1998). Successfully raised \$140,000 from private foundations to support SECC activities.

6/1978--

12/1992 **Principal Consultant - Redwood Alliance**

Provided consulting services to the Alliance; a renewable energy/political advocacy organization. Major responsibilities included managing and/or participating in several interventions/appearances before the California Public Utilities Commission, California Energy Commission, California Legislature, U.S. Congress and the U.S. Nuclear Regulatory Commission. Issues included electric utility planning options, greater reliance on energy efficiency and renewable energy, nuclear power economic analyses, decommissioning cost estimates, and nuclear waste management and disposal.

2/1983--

8/1986 **Natural Resource Specialist**

Assisted private consulting, firms, non-profit corporations and government agencies in various projects related to the enhancement and protection of national forests in Northern California and Southern Oregon. This included contracts with the U.S. Forest Service, Fish and Wildlife Service, National Park Service, the California Coastal Conservancy, and private landowners.

6/1978--

present Consultant/Journalist/Paralegal/Lobbyist

Throughout the period of work outlined above, I have written a considerable amount of news articles and reports connected to ongoing-projects and issues of personal interest. The legal/administrative interventions have required extensive paralegal work to support attorneys, and technical expertise to identify and assist consultants. In addition, many of the projects required consulting services and lobbying, at the local, state and federal level whenever necessary, as well as working with the print and television media as appropriate.

From 1978 through 1984 I served on the Board of Directors for two local non-profit agencies devoted to sustainable community development, Redwood Community Development Council and Redwood Community Action Agency (RCAA). I also was hired on staff at RCAA as a natural resource specialist which is explained more fully above. I am proficient with computers, printers, fax machines and related equipment.

## **EDUCATION**

M.A. Social Science. Political science and natural resources emphasis. California State University at Humboldt. Graduated December 1988.

B.A. Political Science. Political and economic aspects of natural resource development, with a particular emphasis in forest ecology and appropriate technology. California State University at Humboldt. Graduated June

1978.

Academic

Honors. Member of Phi Gamma Mu Honor Society since 1986.

## **MILITARY SERVICE**

7/1969--

9/1975 U.S. Navy. Air Traffic Controller.  
Honorable Discharge.



# DECLARATION OF

Dr. Obed Odoemelam

I, **Obed Odoemelam** declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting, Transmission, and Environmental Protection Division as a Staff Toxicologist.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the revised staff testimony on **Transmission Line safety and Nuisance** for the El Segundo Power Development project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: 6/9/2010 Signed: 

At: Sacramento, California



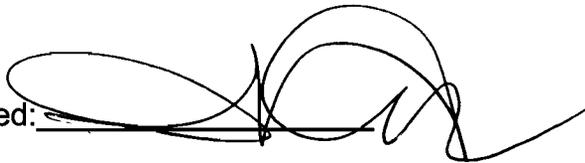
## DECLARATION OF DAVID FLORES

I, **David Flores** declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division as a **Planner 3, Supervisor**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared staff testimony on **Visual Resources** for the El Segundo Power Redevelopment Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: June 14, 2010 Signed: \_\_\_\_\_



At: Sacramento, California

## DAVID FLORES

### WORK EXPERIENCE

Sept. 1998  
to Present

**Planner 2.** California Energy Commission, Energy Facilities Siting and Protection Division.

- Provide technical analysis of proposed energy planning, conservation, and development programs on land use, visual and traffic and transportation resources. Specific tasks include: the analysis of potential impacts; identification of suitable mitigation measures; preparation of testimony; participate in public workshops; present sworn testimony during evidentiary hearings, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations.

March 29, 1988  
to September 12, 1998

**Senior Planner.** County of Yolo Planning and Public Works Department

Senior Planner - Current and Advanced Planning (Resources Management and Planning)

Responsibilities included the following:

- Administered the establishment of Planning schedules and timeframe completion schedules; Administration and staff support to Planning Commission and Board of Supervisors; Staff support and liaison to citizen's committees. Preparation of Environmental documents (Negative Declarations, preparation of Environmental Impact Reports and Categorical Exemptions) in accordance with State and Federal Regulations.

June 1, 1976  
to March 25, 1988

**Manager of Resources** Citizens Utilities Company of California

Responsibilities included the following:

- Coordinated, planned and developed semi-annual and annual construction and operating and maintenance budgets for all Northern California operations.
- Assisted in the development of rate and fee schedules before the California Public Utilities Commission for all Northern California Operations.
- Direct five employees and twenty-five employees in the outlying operations.
- Extensive experience in specification writing, project planning and scheduling, construction management, and site supervision

### EDUCATION

California State University @ Sacramento  
University of California @ Davis  
Major: Environmental Studies  
Minor: Business Administration

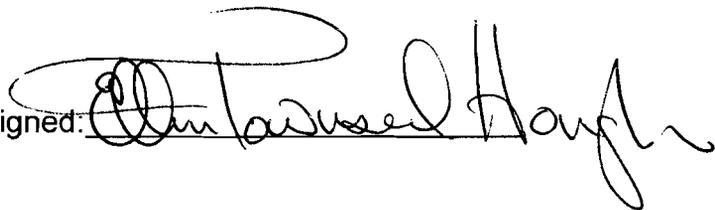
**DECLARATION OF  
Ellen Townsend-Hough**

I, **Ellen Townsend-Hough** declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Siting Office of the Siting Transmission & Environmental Protection Division as an Associate Mechanical Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the Revised Staff Analysis for the El Segundo Power Redevelopment Project for Waste Management based on my independent analysis of the El Segundo Power Plant Dry cooling Amendment and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: 6/8/10

Signed: 

At: Sacramento, California

# Ellen Townsend-Hough

## SUMMARY

I am a chemical engineer with 27 years of experience. My professional career has afforded me many unique growth and development opportunities. I have a working knowledge of the California Environmental Quality Act. My strengths are in analyzing and performing complex environmental engineering analyses, in areas such as Waste Management, Hazardous Materials Management, Worker Safety, and Water Resources. I worked as a policy advisor to a California Energy Commissioner for three years. I am also an US Environmental Protection Agency Environmental Justice trainer.

## PROFESSIONAL EXPERIENCE

### Writing

- Write letters, memos, negative declarations, environmental impact reports that require technical evaluation of mechanical engineering and environmental aspects of pollution control systems, environmental impacts, public health issues and worker safety.

### Technical Analysis and Presentation

- Performs mechanical engineering analysis of designs for complex mechanical engineering analysis of designs for systems such as combustion chambers and steam boilers, turbine generators, heat transfer systems, air quality abatement systems, cooling water tower systems, pumps and control systems
- Review and process compliance submittals in accordance with the California Environmental Quality Act, the Warren Alquist Act, the Federal Clean Air Act and the California and Federal Occupational Health and Safety Acts to assure compliance of projects
- Provides licensing recommendations and function as an expert witness in regulatory hearings.
- Provide public health impact analysis to assess the potential for impacts associated with project related air toxic/non-criteria pollutant emissions.
- Evaluate the potential of public exposure to pollutant emissions during routine operation and during incidents due to accidents or control equipment failure
- Provide an engineering analysis examining the likelihood of compliance with the design criteria for power plants and also examine site specific potential significant adverse environmental impacts

### Technical Skills

- Establish mitigation that reduces the potential for human exposure to levels which would not result in significant health impact or health risk in any segment of the exposed population.
- Assist with on-site audits and inspection to assure compliance with Commission decisions.
- Review and evaluate the pollution control technology applied to thermal power plants and other industrial energy conversion technologies.
- Work with the following software applications: WORD, Excel, and PowerPoint.

### Policy Advisor

- Provided policy, administrative and technical advice to the Commissioner Robert Pernell. My work with the Commissioner focused on the policy and environmental issues related to the Commission's power plant licensing, research and development and export programs.
- Track and provide research on varied California Energy Commission (CEC) programs. Prepare analysis of economic, environmental and public health impacts of programs, proposals and other Commission business items.
- Represent Commissioner's position in policy arenas and power plant siting discussions.
- Write and review comments articulating commission positions before other regulatory bodies including Air Resources Board, California Public Utilities Commission, and the Coastal Commission.
- Wrote speeches for the Commissioner's presentations.

## **EDUCATION**

Bachelor of Science, Chemical Engineering  
Drexel University, Philadelphia Pennsylvania

### Continuing Education

*Hazardous Material Management Certificate, University California Davis  
Urban Redevelopment and Environmental Law, University of California Berkley  
Analytical Skills, California Department of Personnel Administration (DPA) Training Center  
Legislative Process/Bill Analysis, DPA Training Center  
Federally Certified Environmental Justice Trainer*

***References furnished upon request.***



**DECLARATION OF  
SHAHAB KHOSHMAHRAB**

I, **SHAHAB KHOSHMAHRAB**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Facilities Siting Division as a **MECHANICAL ENGINEER**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I participated in the preparation of the staff testimony on **Facility Design** for the **El Segundo Power Redevelopment Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: 5/26/2010

Signed: 

At: Sacramento, California



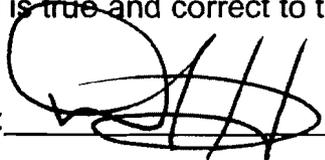
**DECLARATION OF  
Testimony of Dal Hunter, Ph.D., C.E.G.**

I, **Dal Hunter, Ph.D., C.E.G.**, declare as follows:

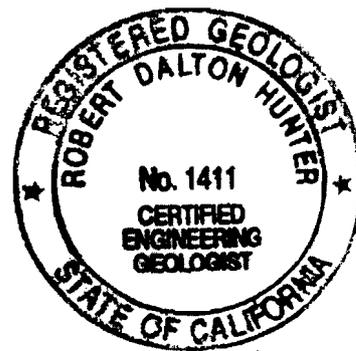
1. I am presently employed as a subcontractor to Aspen Environmental Group, a contractor to the California Energy Commission, Systems Assessment and Facilities Siting Division, as an engineering geologist.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **GEOLOGY AND PALEONTOLOGY** for the proposed **El Segundo Power II, LLC Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: June 9, 2010

Signed:  \_\_\_\_\_

At: Black Eagle Consulting, Inc.  
Reno, Nevada



47 3.31.11

# **Robert D. Hunter, Ph.D., C.E.G.**

## **Engineering Geologist**

### **Vice President**

#### **Education**

- Ph.D. – Geology – 1989 – University of Nevada, Reno
- M.S. – Geology – 1976 – University of California - Riverside
- B.S. – Earth Science – 1972 – California State University, Fullerton

#### **Registrations**

- Professional Geological Engineer – Nevada
- Registered Geologist – California
- Certified Engineering Geologist – California

#### **Experience**

1997 to Present: Black Eagle Consulting, Inc.; Vice President. Dr. Hunter is in charge of all phases of geochemical, geological, and geotechnical projects and is responsible for conducting, coordinating, and supervising geotechnical investigations for public and private sector clients. He is very familiar with design specifications and state and federal requirements.

Dr. Hunter has also provided geological, geotechnical, and paleontological review and written and oral testimony for California Energy Commission (CEC) power plant projects including:

- El Segundo Power Redevelopment Project (Coastal, including testimony and compliance monitoring)
- Magnolia Power Project (including compliance monitoring)
- Ocotillo Energy Project (Wind Turbines)
- Vernon-Malburg Generating Station
- Inland Empire Energy Center (including testimony and compliance monitoring)
- Palomar Energy Project
- Henrietta Peaker Project
- East Altamont Energy Center
- Avenal Energy Center
- Teayawa Energy Center monitoring
- Walnut Energy Center (including compliance monitoring)
- Riverside Energy Resource Center
- Salton Sea Unit 6 (Geothermal Turbines)
- National Modoc Power Plant
- Pastoria Energy Center
- Sun Valley Energy Project
- El Centro Unit 3 Repower Project
- AES Highgrove Project
- South Bay Replacement Project
- Vernon Power Plant

- Humboldt Bay Repowering Project
  - Victorville Power Project
  - Carlsbad Energy Center
  - San Gabriel Generating Station
  - Orange Grove
  - Chula Vista Energy Upgrade
  - Carrizo (Solar)
  - Kings River
  - Canyon Power Plant
  - Otay Mesa Generating Project (compliance monitoring)
  - Mountainview Power Plant Project (compliance monitoring)
  - Consumes Power Plant (compliance monitoring)
  - Sunrise Power Project (compliance monitoring )
  - Niland Power Project (compliance monitoring)
  - Panoche Power Plant (compliance monitoring)
- Attended Expert Witness Training Sponsored by CEC.

1978 to 1997: SEA, Incorporated; Geotechnical Manager, Engineering Geologist. Dr. Hunter was in charge of all phases of geotechnical projects for SEA, including project coordination and supervision, field exploration, geotechnical analysis, slope stability analysis, soil mechanics, engineering geochemistry, mineral and aggregate evaluations, and report preparation. Numerous investigations were undertaken on military, commercial, industrial, airport, residential, and roadway projects. He worked on many geothermal power plants, providing expertise in foundations design, slope stability, seismic assessment, geothermal hazard evaluation, expansive clay, and settlement problems. Project types included high-rise structures, airports, warehouses, shopping centers, apartments, subdivisions, storage tanks, roadways, mineral and aggregate evaluations, slope stability analyses, and fault studies.

1977 to 1978: Fugro (Ertec) Incorporated Consulting Engineers and Geologists; Staff Engineering Geologist; Long Beach, California.

### **Affiliations**

- Association of Engineering Geologists

### **Publications**

- Hunter, 1988, *Lime Induced Heave in Sulfate Bearing Clay Soils*, Journal of Geotechnical Engineering, ASCE, Vol. 14, No. 2, pp. 150-167.
- Hunter, 1989, *Applications of Stable Isotope Geochemistry in Engineering Geology*: Proceedings of the 25<sup>th</sup> Annual Symposium on Engineering Geology and Geotechnical Engineering.
- Hunter, 1993, *Evaluation of Potential Settlement Problems Related to Salt Dissolution in Foundation Soils*: Proceedings of the 29<sup>th</sup> Annual Symposium on Engineering Geology and Geotechnical Engineering.



## DECLARATION OF SHAHAB KHOSHMAHRAB

I, **SHAHAB KHOSHMAHRAB**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Facilities Siting Division as a **MECHANICAL ENGINEER**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I participated in the preparation of the staff testimonies on **Power Plant Efficiency and Power Plant Reliability** for the **El Segundo Power Redevelopment Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: 5/26/2010

Signed: 

At: Sacramento, California



**DECLARATION OF  
Mark Hesters**

I, Mark Hesters, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division, as a Senior Electrical Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on the **Transmission System Engineering** for the **El Segundo Redevelopment Project** (00-AFC-14C) based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

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

Dated: June 7, 2010\_\_

Signed: \_\_\_\_\_

At: Sacramento, California

Mark Hesters  
Associate Electrical Engineer

Mark Hesters has fourteen years of experience in electric power regulation. He worked in the Engineering Office of the California Energy Commission's Energy Facilities Siting & Environmental Protection Division since 1998 providing analysis of California transmission systems and testimony on transmission systems in several Commission power plant certification processes. Prior to that Mark worked in the CEC's Electricity Analysis Office providing lead analysis on Southern California Edison resource issues and modeling support for all areas of California. He holds a B.S. degree from the University of California at Davis in Environmental Policy Analysis and Planning.